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Cyborg Art: An Explorative and Critical Inquiry into Corporeal Human-Technology Convergence

A thesis submitted in partial fulfilment
of the requirements for the degree of Doctor of Philosophy
at the University of Waikato,

by

Elizabeth Margaretha Borst



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Abstract

This thesis introduces and examines the undervalued concept of corporeal human-technology interface art, or ‘cyborg art’, which describes literal, figural and metaphorical representations of increasing body and technology integration. The transforming (post)human being is therefore the focus; who we are today, and who or what we may become as humanity increasingly interfaces with technology. Theoretical analysis of cyborg imagery centres on the science fiction domain, in particular film and television, as opposed to art. Yet a profusion of cyborg art and art practices abound within contemporary society; each differing art form (for example, performance, interactive, digital, sculpture or painting), offering possible ‘symbolic function’ and ‘critical potential’ concerning increasing cyborgisation. I therefore argue in this thesis that cyborg art has social value, and reveal throughout the way this artistic focus depicts key ontological and sociological themes of body-technology merger. Seventy-two artworks are examined in total, each demonstrating relevant concerns and aspirations regarding present and envisioned impacts of technoscience.

The cyborg-inspired artworks included in this study are primarily situated within four fundamental dimensions of humanity: birth, death, gender and ethnicity; and within three main spheres of corporeal-technological developments: prosthetics, telematics and genetics. Key concepts and themes explored within these realms include ectogenesis, post-genderism, necrotic and ethno-cyborgs, augmentation and reconstruction, tele-erotics and tele-puppets, and transgenics. In addition, three new cyborgian concepts are introduced: the udopian cyborg, which is an aesthetic representing technology’s paradoxical dimension – technology as evoking fear and yearning, and having the potential to benefit and harm humanity; the permeative gaze of technoscience, which is a new technologised gaze focusing on how human skin no longer serves as a boundary and barrier to the inner corporeal realm; and lastly, triadic convergence, which denotes the way artists are increasingly creating entities which are a melding of animal, technological and human components.

Multimethod research serves as the methodological base for this thesis, as both qualitative and quantitative methods are incorporated into the research design. Hermeneutics is adopted as the analytical/interpretive perspective and approach. The empirical research includes semi-structured in-depth interviews, qualitative (artists') email questionnaires, and structured quantitative questionnaires. Triangulation is employed in order to obtain varied responses to, and perspectives on, technology and the technological epoch, art and cyborg art, and the cyborg. A theory of cyborg art is constructed by interweaving the collated findings with interview participants' responses to a selection of cyborg artworks, and theorists' perspectives on the aforementioned concepts, derived from visual culture, cyborg theory, and critical postmodern theory. The ultimate goal of this thesis is to present the underlying theoretical breadth and creative depth of cyborg art, and to demonstrate that cyborg art can act as a catalyst for increasing societal awareness of, and interest in, corporeal human-technology merger. I analyse the critical relevance of this under-examined artistic focus, and address why cyborg art should be recognised as a new postmodern art genre, and complementary to theoretical discussions of cyborgisation. I argue overall that cyborg art is a valid and critical sphere of inquiry into the increasing integration which exists between humanity and technology.

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Table of Contents

Abstract	i
Acknowledgements	iii
List of Artworks	ix
List of Figures	xv
List of Appendices	xvii
Introduction	1
The Cyborg and Cyborg Art: An Overview	14
Thesis Trajectory and Chapter Summaries	18
Chapter One: Foundational Theorists’ Perspectives and Frameworks	23
Donna Haraway: Technology, the Cyborg, and Feminism	23
Jennifer González: Cyborg Bodies	30
Chris Hables Gray: Cyborg Art and Aesthetics	33
Yvonne Volkart and Verena Kuni: Monstrous Bodies	37
‘Fissures’ in the Literature	42
Chapter Two: Research Fields and Theoretical Perspectives, and a Review of Public Responses to Art and Technology	47
Technoscience	50
Visual Culture	53
Critical Postmodern Theory (and Cyberfeminism)	59
Hermeneutics	65
Public Responses to Art and Technology	67
Chapter Three: Methodology and Data Analysis	73
Multimethod Research	73
<i>Semi-structured In-depth Interview Design</i>	75
Presentation of Artworks During Interviews	77
Interview Guide	80

Contributory Interview Strategies and Considerations	81
Interview Transcripts	83
<i>Questionnaires: Qualitative (Email) and Quantitative (Distributed)</i>	84
Analysis	85
<i>Interviews</i>	86
<i>Questionnaires</i>	88
<i>Composite Analysis</i>	89
Presentation of Artworks and Empirical Data Within Chapters	90
Chapter Four: The History of Corporeal Human-Technology Interface Art/	
Cyborg Art	95
1900 to 1960: The Emergence of Interface Art, Cybernetics, and the Cyborg	96
1961 and Beyond: Cyborg and Posthuman Art	103
<i>Science Fiction</i>	103
<i>Feminism</i>	113
<i>Posthumanism</i>	119
Chapter Five: The Cyborg, Technology, Art and Cyborg Art, and Corresponding	
Research Participants' Reflections	127
The Cyborg and Technology	127
<i>The Cyborg as an Organic and Inorganic Construct</i>	128
<i>The Cyborg as a Symbol and Cultural Icon</i>	132
Dystopian and Utopian Cyborgs	136
The Udopian Cyborg	139
The Dependent Cyborg	145
(Cyborg) Icons of Woman and Man	154
Interface Ethics	166
Art	169
Cyborg Art	176
Chapter Six: Cyborg Art Depicting Four Fundamental Dimensions of	
Humanity: Birth, Death, Gender and Ethnicity	185
Birth	186
<i>Ectogenesis</i>	190

Death	199
<i>Anatomical Art</i>	205
Gender	210
<i>Femininity</i>	210
<i>Androgyny and Post-genderism</i>	218
<i>Masculinity</i>	225
Ethnicity	230
<i>Indigeneity</i>	242
Chapter Seven: Cyborg Art Representing Three Key Corporeal-technological	
Realms: Prosthetics (Machinic), Telematics (Electronic), and Genetics (Biotechnic)	249
Prosthetics	252
<i>External</i>	252
Enhancement	254
Reconstruction	264
<i>Internal</i>	268
Telematics	275
<i>Connectivity</i>	276
<i>Virtuality</i>	284
<i>Interactivity</i>	287
Genetics	295
<i>Transgenics</i>	298
<i>Tribrids</i>	307
<i>Quadbrids</i>	320
Chapter Eight: Composite Analysis of Cyborg Art, and Concluding Evaluation of	
the Research Design	327
A Theory of Cyborg Art	327
<i>Cyborg Art Genre</i>	329
<i>The Symbolic Functions, Critical Potential, and Limitations of Cyborg Art</i>	332
The Relationship Between Humanity and Technology, and the Scope of Technology ...	335
Dissolving Physical/Bodily, Socio-cultural and Ideological Boundaries and Barriers ...	339
Dystopian, Utopian, Figural and Literal Interface Aesthetics and Body Resurgence	346
Politics, Ethics and Sociological Issues of Increasing Body-Technology Merger	355

Changing Epochal Perceptions and Aspirations, and Human Adaptation	364
Historical Record of Corporeal Human-Technology Integration	370
<i>Emerging (Cyborg) Ontology</i>	373
Evaluation of the Research Design	376
<i>Interviews</i>	376
Interview Guide	378
Transcribing	379
<i>Questionnaires</i>	380
<i>Methodology, Perspectives and Research Fields</i>	381
<i>Concluding Strengths and Weaknesses of the Research Project</i>	382
Conclusion and Future Visions for Cyborg Art	385
Sociology, Politics and Ethics	390
Future Visions	397
<i>Academia</i>	397
<i>Government</i>	405
<i>Business</i>	407
<i>Artists</i>	410
<i>Collaboration</i>	413
Appendices	419
References	461
Artworks in Chapters Four, Five, Six and Seven	500
Images in the Conclusion	507

List of Artworks

Cyborg Artworks in Order of Appearance in Thesis

- (i) *Image has been altered.* This caption, and a brief explanation, is placed underneath four artworks, as they were slightly altered (cropped) for inclusion in the thesis.
- (ii) Detailed information of each artwork is included in the Reference section; including size of artwork, materials used, location, and photo credit (where known and applicable).
- (iii) The title of an artwork is included in italics in the Reference section only when the title is known to be created by the artist. However, here, and within the body of the thesis, all titles are italicised for uniformity.

**Artists retain full copyright of all art images included in this thesis.*

Image No.		Page No. in Thesis	Reference Page No.
Chapter Four			
1	Umberto Boccioni, <i>Unique Forms of Continuity in Space</i> (1913), Bronze Sculpture.	p. 97	p. 500
2	Jacob Epstein, Torso in metal from the <i>Rock Drill</i> (1913-1914), Bronze Sculpture.	p. 97	p. 501
3	Raoul Hausmann, <i>Mechanical Head</i> or <i>The Spirit of Our Time</i> (1919), Assemblage Sculpture.	p. 99	p. 503
4	Raoul Hausmann, <i>Tatlin at Home</i> (1920), Photomontage.	p. 100	p. 503
5	Zdzislaw Beksiński, <i>Untitled</i> (1958), Sepia Drawing.	p. 102	p. 500
6	H. R. Giger, <i>Birth Machine</i> (1967), Pen and Ink Artwork. <i>*Image has been altered.</i> A border has been removed containing the text: Museum HR Giger.	p. 104	p. 502
7	H. R. Giger, <i>Death Machine I</i> (1970s), Airbrush Art.	p. 105	p. 502
8	David Finch, <i>Wolverine</i> (n.d.), Art Illustration.	p. 107	p. 502
9	Martin McKenna, <i>Cyborg</i> (2002), Pen and Ink Artwork.	p. 109	p. 505

10	Seongjin Kim, <i>Tears</i> (n.d.), Digital Oil Painting. <i>*Image has been altered. A border has been removed containing text, which has been included in the artwork discussion paragraph.</i>	p. 110	p. 503
11	Hajime Sorayama, <i>Gynoid</i> (1990s), Painting and Airbrush Art.	p. 112	p. 506
12	Faith Wilding, <i>Recombinant 1</i> (1993), Collage.	p. 115	p. 507
13	Lee Bul, <i>Cyborg W1-W4</i> (1998), Sculpture.	p. 117	p. 501
14	Viktor Koen, <i>Medical Breakthroughs</i> (2006), Digital Art Illustration.	p. 122	p. 504
15	Anders Sandberg, <i>Posthuman Meeting</i> (2002), Digital Art.	p. 124	p. 506

Chapter Five

16 & 16a	Isa Gordon, <i>The Psymbiote</i> (2001-2002), Titanium Glove Fashion Accessory.	p. 134	p. 502
17	Jan Doležálek, <i>Happiness in Slavery</i> (n.d.), Photomontage. <i>*Image has been altered. Text positioned on the left side of the artwork has been cropped.</i>	p. 137	p. 501
18	Viktor Koen, <i>Nutritionman</i> (2005), Digital Art Illustration.	p. 137	p. 504
19	Jan Doležálek, <i>Untitled</i> (2003), Graphic Art.	p. 141	p. 501
20	Murray McKeich, <i>Untitled</i> (n.d.), Digital Art.	p. 146	p. 505
21	Sanjay Kothari, <i>Untitled</i> (n.d.), Photo Illustration.	p. 147	p. 504
22	Ben Cooper, <i>Television Head</i> (n.d.), Painting.	p. 150	p. 501
23	Rua Pick, <i>Media and Child</i> (1995), Oil Painting.	p. 152	p. 505
24	Lynn Randolph, <i>The Annunciation of the Second Coming</i> (1995), Oil Painting.	p. 156	p. 506
25	Tina LaPorta, <i>Future Body</i> (1999), Digital Media Art.	p. 156	p. 504
26	Daniel Van Winkle, <i>Wireframe Torso</i> (1999), Computer/Graphic Art.	p. 156	p. 507
27	Jan Doležálek, <i>Bůh Závitu: Screw God</i> (2002), Paint and Airbrush Art.	p. 160	p. 501

28	Bob Thawley, <i>Renaissance Cyborg</i> (1993), Art Illustration.	p. 160	<i>p. 506</i>
29	Massimo Giacon, <i>Cyborg Jesus</i> (2004), Art Illustration.	p. 160	<i>p. 502</i>

Chapter Six

30	Faith Wilding, <i>Self-surveilling Embryo</i> (1997-1998), Three-Part Installation Art.	p. 187	<i>p. 507</i>
31	Heidi Taillefer, <i>Introspection</i> (1994), Painting.	p. 191	<i>p. 506</i>
32	Joachim Luetke, <i>Dream On</i> (n.d.), Painting.	p. 193	<i>p. 504</i>
33	H. R. Giger, <i>Birth Machine Baby</i> (1998), Bronze Sculpture.	p. 197	<i>p. 502</i>
34	Joachim Luetke, <i>Kreator: Enemy Of God</i> (2005), Digital Art.	p. 200	<i>p. 504</i>
35 & 35a	Christopher Conte, <i>BioMechanical Bronze Skull, Version 1</i> (2006), Bronze Sculpture.	pp. 202 & 203	<i>p. 501</i>
36	Gunther von Hagens, <i>Soccer Player</i> (2006), Anatomical Art.	p. 206	<i>p. 503</i>
37	Óscar Chichoni, <i>Mekanika</i> (2000), Art Illustration.	p. 211	<i>p. 501</i>
38	Fred Harper, <i>If I Had My Gloves On I'd Pick It Up</i> (2008), Oil Painting.	p. 214	<i>p. 503</i>
39	Victor Rinaldi, <i>Cybergirl – Russian Agent</i> (n.d.), Art Illustration.	p. 216	<i>p. 506</i>
40	Brice Vandemoortele, <i>Asian Cyborg</i> (2004), Textured Gaming Character.	p. 218	<i>p. 507</i>
41	Justin Fox, <i>Bionic</i> (2001), Digital Art.	p. 220	<i>p. 502</i>
42	Bob Thawley, <i>Armed Hermaphrodite</i> (n.d.), Art Illustration.	p. 223	<i>p. 506</i>
43	Rich Buckler, <i>Deathlok</i> (1974), Art Illustration.	p. 226	<i>p. 501</i>
44	Benedict Campbell, <i>Jass</i> (n.d.), Digital Art.	p. 228	<i>p. 501</i>
45	Lynn Randolph, <i>Cyborg</i> (1989), Oil Painting.	p. 231	<i>p. 505</i>
46	Pasqual Ferry, <i>Natasha Irons as Steel</i> (2003), Art Illustration.	p. 234	<i>p. 502</i>
47	Mike McKone, <i>Cyborg</i> (2004), Art Illustration.	p. 236	<i>p. 505</i>

48	Philip Hitchcock, <i>The Black Knight</i> (2007), Sculpture.	p. 240	p. 503
49	Guillermo Gómez-Peña, <i>El Mexterminator</i> (1998), Photograph of Artist/Performance Art.	p. 244	p. 502
50	Wellington Artificial Limb Centre & Cornel Winiata, <i>Cornel Winiata</i> (2006), Photograph of Designer/Artificial Limb Recipient.	p. 246	p. 507

Chapter Seven

51	Stelarc, <i>Handwriting – Third Hand: Evolution</i> (1982), Performance Art.	p. 256	p. 506
52 & 52a	Takashi Murakami, <i>Second Mission Project Ko²</i> (1999- 2000), Series of Three Sculptures. <i>*Image 52a has been altered: The bottom section of this photograph has been cropped, as another sculpture was partially visible.</i>	p. 259	p. 505
53	Judson Huss, <i>Bellum (The Survivor)</i> (1980), Oil Painting.	p. 262	p. 503
54	Matthew Barney, <i>Aimee Mullins as the Cheetah Lady</i> (2002), Art Film Character.	p. 265	p. 500
55	Sanjay Kothari, <i>Digital</i> (2003), Photo Illustration.	p. 269	p. 504
56	Fred Harper, <i>Gear Head</i> (2007), Oil Painting.	p. 271	p. 503
57	Yukito Kishiro, <i>Battle Angel Alita</i> (1991), Art Illustration.	p. 273	p. 504
58	Masamune Shirow, <i>Major Motoko Kusanagi</i> (1991), Art Illustration.	p. 274	p. 506
59	Justin Fox, <i>Fembot</i> (2002), Digital Art.	p. 279	p. 502
60	Christos Magganas, <i>Hermes</i> (1997), Digital Art Illustration.	p. 281	p. 505
61	Andrew Kincaid, <i>Cyborg</i> (2007), Character/Model Art.	p. 285	p. 503
62	Stahl Stenslie, <i>CyberSM</i> (1993-1994), Computer Interactive Art.	p. 288	p. 506
63	Marcel.lí Antúnez Roca, <i>Epizoo</i> (1994), Performance/Interactive Art.	p. 292	p. 500

64	Eduardo Kac, <i>Telepresence Garment</i> (1995-1996), Performance/Interactive Art.	p. 294	p. 503
65	Patricia Piccinini, <i>The Young Family</i> (2002-2003), Sculpture.	p. 300	p. 505
66	Daniel Lee, <i>Shepherd I</i> (2004), Photographic Art.	p. 302	p. 504
67	Viktor Koen, <i>Plug</i> (2000), Digital Art.	p. 308	p. 504
68	Joachim Luetke, <i>Dark Karma</i> (1999), Sculpture.	p. 310	p. 504
69	Dave McKean, <i>Feeding the Machine</i> (1999), Graphic Art.	p. 314	p. 505
70	Philip Hitchcock, <i>Overlord</i> (1997), Sculpture.	p. 316	p. 503
71	Murray McKeich, <i>Untitled</i> (1997), Digital Art.	p. 319	p. 505
72	Heidi Taillefer, <i>Venus Envy</i> (1999-2000), Oil Painting.	p. 322	p. 506

Conclusion

The following images do not have corresponding numbers as they are not part of the main cyborg art analysis. However, they are included in the thesis as they contribute to the 'future visions' of cyborg art, and are placed alongside suggestions made in the final Future Visions section.

<i>No image number</i>	Alannah Currie, <i>MAdGE</i> (Mothers Against Genetic Engineering in Food and the Environment) (2003), Billboard.	p. 398	p. 507
<i>No image number</i>	Dolce & Gabbana, <i>Dolce Gabbana and the Allegory of Birth</i> (2007, March), Fashion Advertisement.	p. 398	p. 507
<i>No image number</i>	Elizabeth Borst & Robin Sung, <i>Tora Cy</i> (2005), Graphic Art.	p. 409	p. 507

List of Figures

- Figure 1 *Thesis Focus Diagram*; showing the two key dimensions of this study: cyborg art and responses to a selection of cyborg art images, and the ultimate aim of the study, which is to explore how human beings are changing as a result of increasing human and technology integration. p. 8
- Figure 2 *Cyborg Art Research Wheel*; showing the ten key interlocking components of this study. p. 9
- Figure 3 *Focus, Perspectives, Fields, and Methodology Chart*. A visual representation and synopsis of the research elements of this study. p. 13
- Figure 4 *Changing Paradigms Table*. The paradigmatic turns and cultural shifts forming the foundation and infrastructure for the cyborg art analysis. p. 48
- Figure 5 *Questionnaire Results: Question Two*; showing the options most often selected by respondents when asked what they deemed a cyborg to be. p. 130
- Figure 6 *Three Main Spheres of Corporeal Developments*. Findings from Question 15 included in the hand-distributed questionnaire. p. 251
- Figure 7 *Theorising Cyborg Art*. The symbolic functions and critical potential of cyborg art, demonstrating the theoretical significance of this artistic focus. pp. 332-334

List of Appendices

Appendix A	Information Pertaining to the Research Participants.	p. 419
Appendix B	Stream One Interview Guide for Semi-structured In-depth Interviews.	p. 421
Appendix C	Stream Two Interview Guide for Semi-structured In-depth Interviews.	p. 431
Appendix D	Two-part Transcription Key.	p. 443
Appendix E	Transcript Collation and Analysis Chart.	p. 445
Appendix F	Structured Qualitative Email Questionnaire.	p. 447
Appendix G	Artists' Response Analysis Chart.	p. 451
Appendix H	Structured Hand-distributed Questionnaire.	p. 453
Appendix I	Examples of Questionnaire Data Placed into Microsoft Word and Excel for Analysis.	p. 459

Introduction

This study examines cyborg art, which is a term and concept that describes various visual explorations of organic and artificial melding. The term cyborg is a contraction of *cybernetic organism*, signifying a synthesis of organic and inorganic realms. While this definition includes the merger of technology with non-human organisms, I specifically draw on corporeal cyborg art in order to explore the *changing posthuman body*. This focus centres on technology no longer existing as an attachment or tool, but incorporated within or altering the body's inherent structures. I argue in this thesis that artistic depictions of cyborgs contribute to ontological understanding of human-technology merger, fostering awareness of the technological trajectories that are increasingly envisioned. I suggest that cyborg art visually presents ideas and themes relating to changing human corporeality, which are often inexpressible in words alone. In addition, I draw attention to the way cyborg art has the potential to serve as a catalyst for amplifying questions raised by the ever-evolving developments of technoscience, and the social, political and ethical debates which arise in conjunction with these diverse technologies. Michael Zimmerman affirms that "Only by questioning the presuppositions, perils, and promises of the technological age will humanity have any hope of discovering authentic ways of living within the dangerous and the wondrous possibilities opened up by that age" (1990, p. xxi). Ultimately, this study has been inspired by Chris Hables Gray's call for critics to pay attention to the way the human body is transforming via technological convergence, and how these interfaces are depicted in art; or what he refers to as "cyborg art" (1998, para. 2).

I centre my analysis on examining the way many artists depict changing human "physical ontology" today (Dixon, 2003, p. 1), in order to explore transforming human perceptions and lived realities in relation to technology. Steven Best and Douglas Kellner contend that when "human beings begin to merge intimately with their machines, fusing flesh with silicon chips and steel, human identity itself comes into question" (2001, p. 152). Eduardo Kac adds that "the very notion of what it

means to be human is at stake” as a result of the disappearance of species boundaries regarding biotechnologies (2005, p. 244). Interrogating the “implicit metaphysical and theological values” of cyborg and posthuman representations is therefore critically important as they aid our understanding of “what it means to be human” at the beginning of the twenty-first century (Graham, 2002, p. x).

Advanced cyborgian technologies altering human bodies and perceptions include pacemakers, synthetic organs and valves, artificial joints and ligaments, genetic engineering and testing, assisted or artificial reproduction technologies, external gestation (ectogenesis), xenotransplantation, cloning, cryonics, the creation of transgenic entities, biotelematic implants, and direct carbon and silicon links (neuron and electronic fusion) (Naam, 2005; Perkowitz, 2004). Familiar ‘actual’ cyborgs in existence today include Jesse Sullivan and Claudia Mitchell, who have both lost limbs as a result of traumatic accidents. Sullivan lost both his arms, while Mitchell lost her left arm. Currently, they each have high-tech bionic prosthetic limbs which, when worn, can be manipulated via their thought processes. This is achieved by surgically rerouting the severed shoulder nerves into the chest area using a technique known as nerve reinnervation. The rerouted nerves connect with electrical fibres within the prosthetic limb enabling mobility (Klein, 2006; Murray, 2005).

Eduardo Kac, a well-known artist and author of *Telepresence and Bio Art: Networking Humans, Rabbits, and Robots* (2005), and Kevin Warwick, a Professor of cybernetics and the author of *I, Cyborg* (2002), are also deemed contemporary ‘literal’ cyborgs. In the past, Kac and Warwick have both had biotelematic devices implanted into their bodies enabling direct communication with computer networks. Kac (2005) created *Time Capsule* in 1997, which involved the insertion of a microchip into his ankle, sealed in biocompatible glass. Information was stored on this chip and transmitted to the internet via low energy radio signals. A year later, Warwick had a silicon chip transponder surgically implanted into his upper left arm, which communicated – via radio signals – with computer systems. When Warwick (2002) entered his work environment, signals were activated which opened doors,

greeted him, and offered updated email account details. Donald Norman suggests that personal-use telematic implants will increasingly become available to members of the public, and will continue to profoundly alter the relationships we have with each other. He contends that “We are close to the point where video cameras and memory chips will be tiny enough to be implanted within our bodies” (Norman, 2001, p. 37).

Steve Mann is another literal (telematic) cyborg. Mann is a Professor of electrical and computer engineering and author of *Cyborg: Digital Destiny and Human Possibility in the Age of the Wearable Computer* (2001). Mann has worn his self-designed WearComp, which is a merger of computer, camera, and video-recorder/phone, continuously for over 20 years. The WearComp has developed from a bulky headset with antenna in the early 1980s, to a pair of ordinary-looking bifocal eyeglasses today. Mann (2001) sees the world through the eyes of a cyborg; he is able to freeze frame, enlarge, block out, record and delete sights experienced during his day-to-day life, and he can also communicate with others via a web link. Mann regards his equipment as a second skin, and an extension of his nervous system. His ultimate goal is to understand what it may feel like to be a posthuman being.

Technology can also extend a person’s life, and the quality of his or her life. Well-known examples include the late Christopher Reeve (the actor chiefly known for his film portrayal of the cult comic book character *Superman*), who suffered a paralyzing horse-riding accident in 1995, and Professor Stephen Hawking, the renowned mathematician, physicist, and theorist, who has Lou Gehrig’s disease, which leaves him unable to walk or speak. An advanced body-technology interface wheelchair improved Reeve’s life until his death in 2004, as researchers were able to connect an attachable portable ventilator tray to his chair (Sege, 2006). Hawking’s computerised wheelchair enables him to write documents, generate simulated speech, and provides direct and constant access to the internet (Redding, 1998).

Despite the enormous contributions and benefits many of these technologies can offer humanity and the human body, theorists rightly continue to critically examine and

question how these technologies will impact on human existence and evolution. Mann for instance asks, “How will we post-humans grapple with the awesome powers to reinvent humanity and society that technology has bestowed on us?” (2001, p. 2). Chris Hables Gray (1998, 2002), Jennifer González (1995), Donna Haraway (1991a, 1997), Yvonne Volkart (2004-2005a), Verena Kuni (2004-2005a) and others suggest that one way we can grapple with our altering bodily ontology is to use art and imagery to address, explore, question, examine, envision and exchange ideas on this emerging phenomenon, and I share this perspective. As Best and Kellner contend, “Unless we first imagine various futures, both good and bad...we will have nothing to guide us in the constitution of a viable world...” (2001, p. 276).

I argue that cyborg art alludes to many important and relevant themes regarding mounting body-technology convergence, including actual interfaces (predominantly relating to prosthetics); sites of possible being (prefigurative representations); transgression (the crossing of traditional Western ideological boundaries and binaries, such as male/female, organic/artificial, nature/culture, human/animal, born/made and public/private); and cyborgian paradox (the human desires and fears felt towards advanced technologies, and the ‘miracles’ and ‘monstrosities’ which can be created). I suggest that cyborg art also points to the dehumanisation of corporeal technologies (the monitoring, testing and surveillance of the body); the instability of the symbiotic body/identity as constituting soft (warm) flesh and hard (cold) machinery; and the way skin no longer acts as a barrier to the inner corporeal realm. These themes, along with others, are discussed in Chapters Four to Seven aligned with key artworks. Chapter Eight builds on these ideas in order to develop a theory of cyborg art.

I focus my investigation on two key interlocking dimensions relating to the escalating integration between humanity and technology: (1) art depicting body-technology merger, or body (skin/viscera) and technology (metal/synthetic) melding, and (2) research participants’ responses to a selection of cyborg art images and to the concepts of the cyborg, cyborg art, art, and technology. The inspiration for this study is also derived from two key concerns: (1) the lack of emphasis, importance and

attention given to artistic representations of human bodies interfaced with technology, and (2) the significant lack of empirical research undertaken regarding “the interface” or cyborgisation. Many individuals may be unaware of the extent of advancing technologies in existence today, yet these developments generate knowledge and mechanisms for determining future trajectories. Engineered technologies and discovered techniques may also be difficult to reject once they have been created (Critical Art Ensemble, 1996). Therefore, it is imperative that both experts and laypersons are informed and knowledgeable regarding how these technologies may or may not benefit humanity, and the risks associated with new technologies. I argue throughout this thesis that cyborg art can foster awareness of human and technology links, thereby able to increase interest in advancing forms of corporeal interfaces.

As such, the art perspective of this study draws on cognitivism, which suggests that artworks can present ideas and concepts – political, social, and ontological – as opposed to focusing on surface aesthetics, and presenting/evoking only feelings and emotions. Art is therefore deemed to offer society tangible rewards (Freeland, 2001; Gaut, 2007; Graham, 2005). At present, theoretical discussions that centre on cyborg imagery and aesthetics relate predominantly to science fiction films, television shows and literature, rather than art. Additionally, most cyborg art, whether situated within popular culture, fine art, or performance art realms, is presented on the internet, which has the potential to reach a large audience. Despite this, cultural theory and analysis relating to cyborg art remains limited, adding to its elusiveness as a concept, and lack of recognition as an art genre. I am unaware of any single publication or doctoral study centring on this artistic focus, and to my knowledge, only six essays have been written which (directly or indirectly) focus on cyborg art and aesthetics.

These key ‘cyborg art’ essays, which I introduce and discuss in Chapter One, are: *Envisioning Cyborg Bodies: Notes From Current Research* (1995), written by Jennifer González; *Cyborgs, Attention, and Aesthetics* (1998) and *In Defence of Prefigurative Art: The Aesthetics and Ethics of Orlan and Stelarc* (2002), both written by Chris Hables Gray; *Monstrous Bodies: The Disarranged Gender Body as*

an Arena for Monstrous Subject Relations (2004-2005), written by Yvonne Volkart; and *Cyborg Configurations as Formations of (Self-)Creation in the Fantasy Space of Technological Creation (I): Old and New Mythologies of Artificial Humans*, written by Verena Kuni, also between 2004 and 2005. Kuni extended her analysis in a following *Cyborg Configurations (II)* essay written during this time, which I briefly refer to in Chapter One. Yet, although I have assembled 72 artworks for this study, only three were sourced from these essays. This is due to the criteria I set regarding specific cyborg configurations (see p. 92), in addition to the study's overall aesthetic focus, which is the representation of flesh and metal merger or the melding of organic and inorganic forms, and a focus on human adaptation and thus human contours. Nonetheless, this study builds on González's, Gray's, Volkart's and Kuni's essays, presenting an extended analysis of cyborg art as relevant and critical today.

Furthermore, to my knowledge, there have been no empirical studies conducted which focus on how people feel about corporeal human-technology convergence, and how they respond to and interpret artworks or images which depict cyborgisation. I argue that this constitutes a significant oversight within the broad field of cyborgology or human and technology interface inquiry. David Kreps agrees, identifying that cyborgology is "largely unsupported by empirical evidence" and is often found to consist more of "a great deal of hype and theorising which is often pure rhetoric" (n.d., para. 4). This thesis counteracts this trend by interviewing and surveying members of the public in order to gain their thoughts on the cyborg and cyborg art. I believe that the impact of, and knowledge pertaining to, cyborg theory and cyborg art is diminished and impeded substantially without public contribution.

I employ three differing empirical data collection methods in this study: (1) In-depth interviewing of non-experts (or laypersons); (2) Qualitative email questionnaires sent to artists whose works are included in this study; and (3) Quantitative questionnaires hand distributed to members of the general public. The interviews were designed to obtain participants' individual responses to a selection of cyborg art images, as well as their general thoughts on body and technology amalgamation. The structured

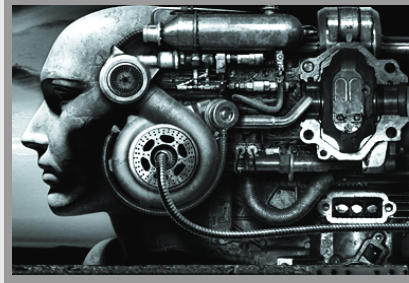
artists' email questionnaire was developed in order to gain information on how artists feel their work may relate to the concept of the cyborg, and ideas on their underlying artistic intent. Lastly, the hand-distributed questionnaire was designed to act as a support to the qualitative research by providing quantitative information relating to the concept of the cyborg and technologies in existence today. I utilise corresponding cultural theory, and writers' perspectives on the artworks included in this thesis in tandem with the empirically obtained data, to examine cyborg aesthetics in depth.

The following questions have been created to address and identify the focus of my investigation: (1) What are the impacts and effects of cyborg art on members of the general public? (2) What are the meanings and intentions embedded within cyborg imagery? (3) How are subjectivity, gender and ethnicity represented in cyborg art? (4) Can cyborg art be a vehicle for increasing social and ethical awareness of developing technologies? (5) Can cyborg art enhance public knowledge and increase participation in discussions and decision-making concerning these developments? (6) What does it mean to be human today regarding mounting technological convergence and influence? (7) Who (or what) are we becoming in relation to increasing body and technology interface? and finally, (8) Is the cyborg a symbol for contemporary society, and a cultural icon representing a new and altered or enhanced human being?

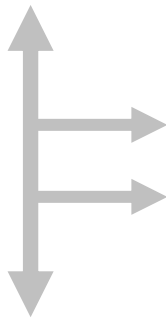
Cyborg art encompasses a variety of organic-inorganic interconnections, yet this study builds on Gray's premise that "Cyborg art can be defined as art that interrogates/explores the meanings of cyborgization, especially the intimate relationships between the human body (including the body politic) and technology" (1998, para. 8). The *Thesis Focus Diagram* (Figure 1), presented on the following page, visually demonstrates, and provides an overview of, the two key dimensions of this study: cyborg art, and research participants' responses to a selection of cyborg art images. The artwork included in Figure 1 was created by Jan Doležálek, a recognised Czechoslovakian graphic/media artist who has centred his artistic focus on figural body and technology integration for several years. Doležálek's untitled artwork (Image 19, p. 141) is discussed in Chapter Five aligned with the utopian concept.

1. Cyborg art

Literal, figural and metaphorical representations of increasing corporeal human-technology interface.



1. Theory and genre creation (grouping and analysis of cyborg art).
2. Possibility for symbolic function and critical potential (cyborg art as a catalyst for public interest, awareness, contribution, knowledge and debate).



Thesis focus:

To examine and understand *who we are today and who we are becoming* as increasingly corporeally interfaced and integrated with technology. The overarching aim of the study is to explore how human beings are corporeally/ontologically changing, by examining artistic representations of increasing body and technology convergence.

2. Research participant responses to a selection of cyborg art images

Responses and interpretations from non-experts (laypersons) to a selection of cyborg art images presented during in-depth interviews.

1. *Responses to, and interpretations of:*
 - a) Artwork.
 - b) Concepts examined by artwork.
2. *Discussions concerning ontological and sociological issues:*
 - a) Relating to the artwork specifically.
 - b) Relating to humanity in general and/or human body and technology merger.

Figure 1. *Thesis Focus Diagram*; showing the two key dimensions of this study: cyborg art and responses to a selection of cyborg art images, and the ultimate aim of the study, which is to explore how human beings are changing as a result of increasing human and technology integration.

To assist my investigation, I weave together ideas drawn from the interdisciplinary approach of visual culture, the research fields of technoscience and cyborgology, the emerging premise of posthumanism, and the sociological perspective of critical postmodern theory (and its allied perspective of cyberfeminism). I utilise ideas from these research and conceptual spheres in order to create an in-depth examination and analysis of how artists are presenting our changing ontology back to us via imagery and performances, and how people respond to these representations. The *Cyborg Art Research Wheel*, presented below, shows the linkage between the ten key dimensions of this study. Cyborg Art is shown in the centre of the wheel, signifying its importance in this investigation. The top three text boxes: Technology, The Body, and The Visual, show the study’s main focus; the human body as altered via technology and visually represented, and culminating, in the form of cyborg art. The cyborg is located in the centre of the diamond formed by these four fundamental research elements, identifying its status as an entity which can represent our increasing technological interface in an escalating technological age.

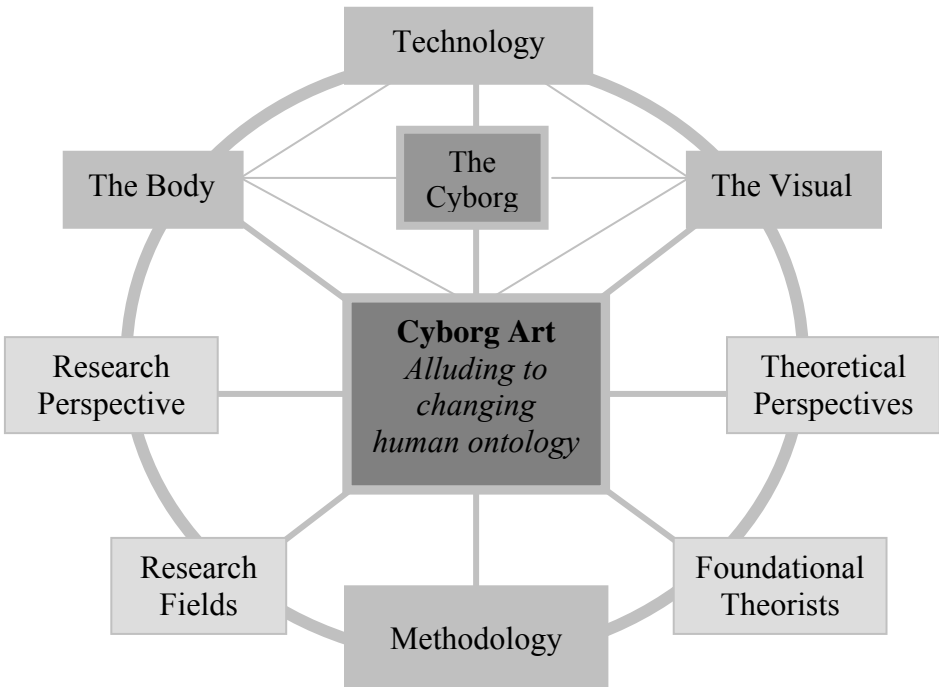


Figure 2. *Cyborg Art Research Wheel*; showing the ten key interlocking components of this study.

The body, as opposed to the mind, has become a central topic of discussion and analysis today due to the intersection of the body and technology, and the way the body is now often viewed as fluid – able to be shaped and altered via technology (Pitts, 2003; Williams & Bendelow, 1998). Anne Cranny-Francis emphasises that “One of the most popular subjects of recent writing about the body is the effect of technology on twentieth-century understandings of the ‘human’ body” (1995, p. 88). Historically, the body was represented as passive and ‘weaker’ than the mind, which was deemed active, spiritual, and rational (Lupton, 1995). However, increasingly there is a renewed focus on what bodies identify, what they do, what they mean, what they are having done to them, and how they are changing (Bell, 2001; Farnell, 2000). The body is now considered a vital part of who we are, rather than simply being viewed as a container or portable vessel for the mind. Tomás Maldonado rightly comments that “Our body is not, as is commonly believed, what we *have*. It is – whether we like it or not – what we *are*” (2003, p. 18; emphasis in original). This has implications for post-corporeal analysis, discussed in Chapter Four.

Technology also constitutes a key focus within theoretical and research-based ‘human body’ investigations, due to its prominence in society and its encroachment on and into our bodies. Technology is changing us, the way we live, and the way we see ourselves and others. As Nick Mansfield states, “The social and personal impact of technology has become one of the defining issues of the present” (2000, p. 148). I examine three main spheres of corporeal developments in this study, specifically addressed in Chapter Seven, in order to undertake and offer a broad inquiry into technology’s scope. These are *prosthetics*, which focuses on machinic developments and devices such as artificial/synthetic limbs, organs, and joints for both enhancing and reconstructing the body; *telematics*, which is the merger of computer and telecommunications technologies, such as virtual reality and telepresence (thus focusing on digital/electronic technologies); and *genetics*, which is situated within the biotechnological research sphere. I focus on transgenics and species blending specifically. Biotechnology uses living organisms to create new ‘products’ and to alter organisms already in existence. I examine the way each of these key research

spheres are having a profound effect on humanity and the human body today, and the way artists envision the possible impacts of these technologies in the future.

The ‘visual’ is also a central topic of analysis, discussion and debate within contemporary Western society. This is due to the abundance of images in our lives (Holloway & Beck, 2005; Mirzoeff, 1999). The concept of ‘visual dominance’ is increasingly becoming an integral component of First World cultures due to the ever-increasing ways of viewing, distributing and accessing all types of imagery, artworks, signs and symbols (Pajaczkowska, 2000). The prevalence of the visual is impacting on individuals situated within these societies – and the actual societies themselves – in a multitude of ways. Under modernism, written text or verbal dialogue were often deemed superior, yet within the postmodern mood or era, visual images are considered socially relevant, as they show us how we exist and how we are changing, particularly regarding our ties to technology (Jenks, 1995; Mitchell, 1994).

The remaining five elements on the *Cyborg Art Research Wheel* – Research Perspective and Fields, Theoretical Perspectives, Foundational Theorists, and Methodology – provide contextual and foundational information with which to develop a theory of cyborg art, and are introduced and discussed in the following three chapters. The research perspective that forms the basis of this study is interpretive sociology, with a focus on inductive ontological investigation and theory building, where interpretive data is obtained from ‘non-experts’, as opposed to deductive inquiry and theory testing, which focuses on epistemology or knowledge-based data sourced from ‘experts’. Interpretive sociology gathers information and meaning of how individuals comprehend their existence within the world, and how their perspectives link to social structures and cultural ideologies (Alexander, 2003).

The methodology adopted for this study is multimethod research, whereby both qualitative and quantitative data collection methods are used and incorporated into the overall design. Mixed method social inquiry is founded on the construction of triangulation, where each method provides a different perspective towards a research

topic (Brewer & Hunter, 1989; Denzin, 1978; Greene, 2007). The qualitative research: the interviews and email questionnaire, takes precedence in this study, and the quantitative research: the hand-distributed questionnaire, constitutes the secondary auxiliary research method. The triad of research methods employed in this study merges with the triad of research aims, which are: (1) to introduce the topic of cyborg art and to develop both a genre and theory of cyborg art; (2) to analyse the key themes formed by the participants' responses to selected cyborg artworks and to present tangible examples of these themes by way of participants' verbatim quotations; and lastly, (3) to identify the significance of this topic for understanding metaphysical ideas and social issues associated with the emerging 'techno-body'.

The key research dimensions of this study are included in the *Focus, Perspectives, Fields, and Methodology Chart* (Figure 3), presented on the following page. This chart provides a detailed synopsis of the way these elements link together to form a comprehensive investigation into cyborg art. Each of these contributory elements not only embeds my argument contextually and theoretically, but facilitates the structure, focus and strength of my argument. This chart also demonstrates that I address both sociological concerns and ontological themes relevant to contemporary society. Societal impacts include inequalities regarding access to digital resources and medical technologies, and regarding contributions to decision-making processes. The types of technologies created, and which technologies continue to be investigated and which technologies are ultimately deemed too precarious to be developed further, are also key concerns. Ontological impacts centre on what constitutes a cyborg or posthuman body today, and in the future. Relevant concerns include how the interface is perceived overall and how increasing human integration with technology is changing everyday existence. Cyborg ontology centres on what it *is* and what it *means* to be human in an increasingly technologised world (Haraway, 1991a). A brief overview of the history of the cyborg and cyborg art is included following Figure 3, in order to provide background information on these concepts before my foundational theorists' perspectives are outlined and examined in Chapter One.

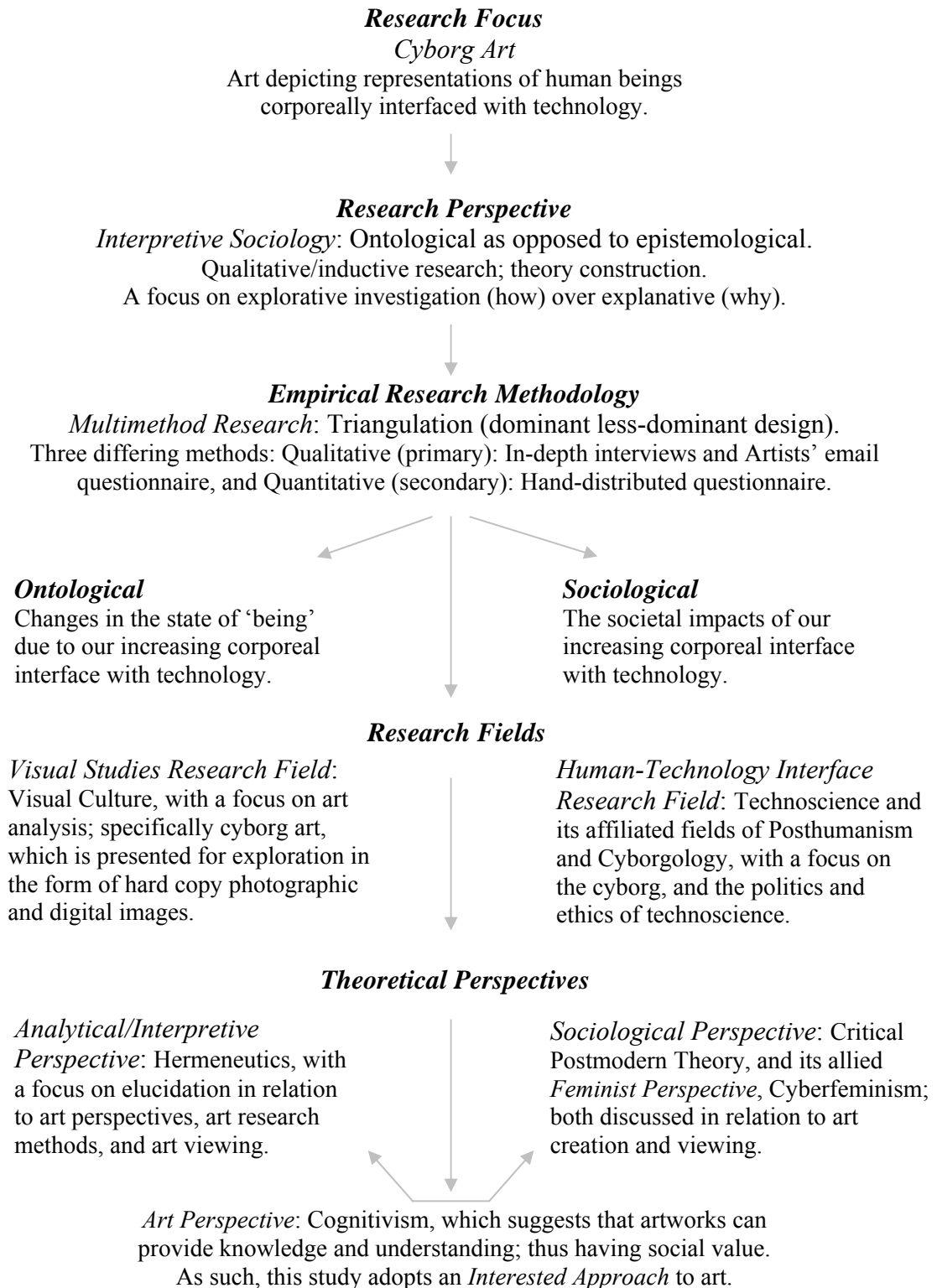


Figure 3. *Focus, Perspectives, Fields, and Methodology Chart*. A visual representation and synopsis of the research elements of this study.

The Cyborg and Cyborg Art: An Overview

The ‘human/machine hybrid’ cyborg has a history within scholarly discussion and research dating back to the mid-twentieth century, and within science fiction literature, imagery and film, from the 1960s onwards. Norbert Wiener, a renowned mathematician, coined the term ‘cybernetics’ in 1948, which is the theoretical premise underpinning the cyborg’s functioning system. Wiener (1961) argued that humans, machines and animals all have similar cybernetic homeostasis body systems, or input-output feedback loops of control and communication. Yet the term ‘cyborg’ was not coined until 1960, when Manfred Clynes (a scientist and computer expert) and Nathan Kline (a psychologist) created the neologism to identify the scope and consequences of body and technology links and body adaptations. Clynes and Kline (1995) envisioned the cyborg as an organic-artificial symbiotic construct, able to function autonomously, and withstand the harshness of environments such as outer space. As such, the cyborg was initially proposed and designed as an organic (human or animal) entity, altered through the use of, and interfaced with, technology.

Quintessential cyborgs are still considered to be based on the concept of cybernetics or systems; viewed as network communication entities (Haraway, 1991a; Kunzru, 1997; Murphie & Potts, 2003) or informational pathways; where they exist as a “flow between carbon-based organic components and silicon-based electronic components...” (Hayles, 1999, p. 2). However, theorists also suggest that a cyborg can be a person who rides a bicycle or wears glasses (Halacy, 1965), or who is constantly connected to computer networks (Mann, 2001). Even a person who has been immunised can be considered a cyborg, due to the way the body is permanently modified by the vaccine (Gray, Mentor, & Figueroa-Sarriera, 1995). For the purpose of this study, I situate my focus in the centre of these two perspectives. I dispute the notion that cyclists are cyborgs, deeming this view too broad to be of any theoretical use. This view also centres more on tool use rather than body-technology convergence. I also do not view the cyborg as based on communication systems

alone, as I believe this definition is too intangible to have any substantial critical application, and too abstract to be understood by members of the general public.

Therefore, the focus of cyborg art pertaining to this study centres on a human being interfaced with body technologies, systems and manufactured products, as this type of imagery provides more readily apparent representations of the interface, thereby facilitating discussion of this concept. It is to be noted that American theorist and art critic Jack Burnham (1968) coined the term cyborg art in the late 1960s. His analysis centred on the dynamics between mid to late-twentieth century art and technology, where this junction, and the mass of post-war developments transpiring, signified (and required) an ideological shift towards art's endeavours and aesthetics. Artworks, in Burnham's view, could increasingly be deemed systems, rather than viewed as objects (Whitelaw, 2004). However, Burnham's (1968) conceptualisation of cyborg or cybernetic art was based more on machine-based cybernetics. As such, his focus centred on sculpture, automation and robotic systems and processes, as opposed to the human body interfaced with technology. Digital installation art and interactive media art can therefore be considered an extension of Burnham's art focus.

I suggest, and show in this study, that there are three main ways the cyborg concept is used within technoscience, cultural theory, literature, film, imagery and art. Firstly, as a literal cyborg, where a human being may have a prosthesis such as an artificial limb or organ; secondly, as a figural cyborg, which represents imaginative ways human bodies may actually be interfaced with technology; and thirdly, the metaphorical cyborg, which uses the concept of the cyborg – as a conjoining of separate ideas or entities – to allude to ethical, political and cultural aspects associated with organic and inorganic melding. The metaphorical cyborg is frequently used within cultural theory to convey stories about who we are today and who or what we may become in the future (Haraway, 1991a; Murphie & Potts, 2003).

Theorists such as Giuseppe Longo (2003) suggest that it is vital that changing human ontology and corporeality is addressed metaphorically because this is the main way in

which we can extrapolate the often complex and at times unfathomable ideas relating to the developments and accelerated speed of technoscience. Longo emphasises that “The classical instruments of rational prediction are not very efficient in a highly complex world that is evolving ever more rapidly” (2003, p. 24). Arnold Hauser (1982) adds that there is always a grain of ‘truth’ in any artwork, and I support his sentiment, believing that even the most abstract metaphorical cyborg artworks offer fundamentally important and critical ideas on changing human ontology.

The cyborg is regarded as an entity (or a system) that constitutes a merger of, or the interface between, biomaterial and various forms of technology. However, in this study I focus specifically on cyborg artworks and imagery that depict a human being integrated, or fused with technology. I also discuss, to a lesser extent, human beings who have been altered via the use of technology, such as plastinates (anatomical art cadaver specimens), transgenic entities, and human beings transformed into disembodied or virtual beings. These forms of cyborg or posthuman imagery do not depict a melding of flesh and metal (or organic and inorganic mix) as such; therefore a few artworks examined in this study do not share this prevailing aesthetic focus. González (1995, p. 268) uses the terms “mechanical cyborg”, which she states is “a techno-human amalgamation”, and “organic cyborg”, which she defines as “a monster of multiple species”, to distinguish between what she believes are two key cyborg taxonomies represented in art and imagery today, and my focus is the former.

Nonetheless, González (1995) affirms that there are overlaps in the domain of cyborg types and this is noted throughout this study, in particular, regarding the triadic configurations which are now depicted by various artists. Triadic entities or ‘tribrids’ are represented as a merger of human, animal and machine components, and quadratic entities or ‘quadbrids’ are represented as a convergence of human, animal and machine components, *and* plant matter. However, although tribrids are increasingly depicted in art, the concept of quadratic merger is rare. I have found only one artwork, to date, which focuses on this imagery: Heidi Taillefer’s oil painting *Venus Envy* (Image 72, p. 322), which is the final artwork discussed in this study.

The cyborg is also discussed in Western society as a discursive and critical *tool* for addressing the increasing integration between humanity and technology (Graham, 2002); as a chief *protagonist* of our current (cyborg) society (Bell, 2000; Gray, 2001) or of the postmodern era (Balsamo, 2000; Best & Kellner, 2001); as a cultural *icon* (Hayles, 1999); and as a feminist icon (Adam, 2002; Haraway, 1991a). The cyborg is also often viewed as an exemplary *symbolic* figure of contemporary Western society (Benesch, 2002); a symbol of unity (Kull, 2001), and a “symbol of humanity on the brink of colossal change” (Short, 2005, p. 161). These perspectives contribute to the cyborg art analysis which introduces the concept of using the cyborg within art to present symbolism and iconism relating to changing humanity today.

The cyborg artworks which I have selected for this study present an eclectic mix of high art, popular art, and illustrative, digital, graphic, photographic, assemblage, comic book, performance, interactive and anatomical art. Additionally, a myriad of techniques have been used to create the artworks, including oil painting, sculpture, collage, sketch/drawing, airbrush, and model work. The materials which the artists have used are just as diverse, ranging from household items such as scissors, rulers, wax, hair, wiring, metals and fabric, through to applications such as bronze and silicon. Advanced machinic, electronic, and telematic devices, equipment and attachments, are also used within the ‘techno-body’ performances. Moreover, actual human bodies are used as art objects, both alive and *dead*, such as Gunther von Hagens’ plastination cadavers (Image 36, p. 206).

The nationalities of the 54 artists whose works are included in this thesis are also diverse; including American, Australian, English, German, Greek, Italian, Japanese, Mexican, New Zealand, Norwegian, Spanish and Swiss. Twenty-five different countries are represented in total. This study therefore examines a growing global exploration of cyborg art. Most of the artists are well-known in their fields and several focus specifically on human body and technology fusion. Selected artists are also writers and theorists of technology and the body, providing invaluable knowledge, thoughts and ideas pertaining to technology both as a concept and as a

construct. The perspective of this study promotes artists as global innovators, both seekers and producers of meaning, sharing their ideas with us visually (Wilson, 2002). Artists are often regarded as provocateurs and visionaries, generating avenues, questions and constructive criticism which assists the comprehension of our relationship with technology in more tangible ways (Volkart, 2004-2005b). Andrew Murphie and John Potts rightly acknowledge “artists as the ‘antennae’ of society, foreshadowing in their art the social impact of technological change” (2003, p. 39). Artists exploring human-technology or organic-artificial links have the freedom to express their ideas in greater depth, as the consequences of their explorations are often not as severe as actual experimentation within technoscience (Wilson, 2002).

Thesis Trajectory and Chapter Summaries

This final section presents brief chapter summaries setting out the study’s trajectory. Chapter One provides a theoretical background of the cyborg and cyborg art; Chapter Two and Three present research perspectives and methodology, respectively; Chapter Four is a historical overview of cyborg art; Chapters Five, Six and Seven present key research findings; while Chapter Eight is the closing analysis and discussion chapter.

Chapter One introduces the five foundational theorists of this study. Donna Haraway heads this discussion, as she is the acclaimed feminist author of the celebrated mid 1980s Cyborg Manifesto. In her Manifesto, Haraway focuses on the cyborg as a metaphoric, political and rebellious figure of salvation within technoscience. Jennifer González has written a foundational essay which links cyborg bodies depicted in art and imagery with cyborg analysis and theory. Chris Hables Gray merges the critical function of art with the critical function of the cyborg, creating the concept of cyborg art (and cyborg aesthetics) as a unifying thread linking these two ideas. Lastly, I introduce Yvonne Volkart and Verena Kuni, who have each written essays focusing on cyborg bodies and gender representation in relation to art. These five theorists inspire both the trajectory and focus of this study. I examine each of these theorists’

premises in this chapter, and draw on supplementary theorists' views in order to illuminate their claims. Key investigative fissures or analytical gaps which I suggest exist within the literature regarding cyborg and posthuman theorising, body-technology synthesis in general, and cyborg art, are also addressed in this chapter. These noted analytical gaps are subsequently explored within the body of the thesis.

Chapter Two focuses on building knowledge of the research fields adopted for this study – technoscience and visual culture – and the sociological and analytical perspectives employed – critical postmodern theory and hermeneutics, respectively. The aim of this chapter is to present a contextual and philosophical backdrop for the examination of the cyborg art images. Additionally, examples of empirically sourced public responses to art and technology are included in this chapter, in order to offer examples of the types of research which has been conducted in the past, and to draw attention to the lack of empirical research which exists within the field of cyborgology in general, and relating to cyborg art specifically.

Chapter Three is the methodology chapter and outlines aspects of the planning, design and implementation of the interviews, the artists' email questionnaire, and the hand-distributed postal-return questionnaire. Multimethod research and triangulation are introduced and discussed, and I demonstrate how this approach was employed in order to foster the sourcing of diverse data. Contributory interview strategies and considerations are also discussed, such as the techniques used to facilitate the interviewing process, and concerns over the graphic nature of a selection of the artworks and how these were dealt with. The interview transcribing process and key transcription components are also addressed in this chapter. Additionally, empirical data analysis procedures pertaining to the interviews and questionnaires are outlined, and analysis charts created to show the processes which were employed are included in the appendices, along with a comprehensive two-part transcription key. Lastly, the manner in which the art images are presented and embedded within Chapters Four, Five, Six and Seven are also outlined in this chapter.

Chapter Four introduces the cyborg artworks within a historical framework, and is divided into two sections. The first section is dated 1900 to 1960 and briefly examines artworks which allude to emerging body and technology integration and interface. I also discuss when (and why) the concepts of cybernetics and the cyborg were created. The second section is dated 1961 to present day, and provides a more in-depth introduction to cyborg art, situated within three central Western conceptual realms: science fiction, feminism and posthumanism. This section also introduces and explores related theoretical premises pertaining to each realm.

Chapter Five introduces the interview and questionnaire data aligned with selected artworks. This chapter presents key ways the interview participants, artists, and questionnaire respondents felt about the concept of the cyborg, technology, art, and cyborg art, thus providing a knowledge base for Chapters Six and Seven, which are more topic-focused. There are five key elements which contribute to the discussion of the cyborg art images: background information on the artists; contributory writers' ideas and views on the artists and/or their works; research participant responses; my own interpretations; and cultural theory relating to the artworks. These are used to varying degrees within the discussion of each artwork, depending on the availability of information, and the theoretical significance of the ideas the artwork alludes to.

Chapter Six examines how artists are depicting the interface in relation to four key dimensions of humanity: birth, death, gender and ethnicity. The Birth and gestation section focuses on ectogenesis, which is recurring imagery noted within cyborg art. The section on Death and necrotic cyborgs does not have a key focus, but imagery relating to neomorts, the human skull, and cadaver art are explored. The Gender section examines feminine, masculine and androgynous representations, transgressive imagery, and post-gender depictions. The final Ethnicity section centres on non-white and indigenous cyborgs. Mexican performance artist Guillermo Gómez-Peña and one of his 'ethno-cyborg' personas forms a key component of this section as Gómez-Peña is one of only a few non-European and non-Asian artists to include race, body and technology themes and aesthetics within his artistic explorations and art practices.

Chapter Seven focuses on the three main spheres of corporeal-technological development in existence today. Prosthetic technologies head this chapter as these are the most established and familiar. Performance artist Stelarc's ideas on augmentation play a central role in this section due to his focus on this topic. Telematics follows prosthetics, as this form of technology is most prevalent within Western society today. Telematics in art is presented predominantly via performance art imagery in order to show tangibly how the body can be linked with, and affected by, telematic devices. The Genetics section discusses biotechnology and genetic engineering, and the way artists are figuratively and metaphorically depicting increasing human and animal genetic blending (transgenics), human, animal and technology fusion (triadic convergence), and human, animal, technology and plant merger (quadratic melding).

Chapter Eight is the final chapter, and focuses on a composite analysis of the cyborg artworks and the empirical data. Discussions surrounding the artworks and the findings obtained from the interviews and questionnaires are interwoven with the foundational and theoretical perspectives of this study. Emphasis is placed on developing a theory of cyborg art, and demonstrating why cyborg art should be accepted as a recognised and valid sphere of research today. Moreover, an evaluation section is included towards the end of this chapter in order to assess the choices made regarding the research perspectives, fields and methodology selected, and the overall design, focus, implementation and trajectory of the study, in addition to addressing the project's key strengths and limitations.

Lastly, the Conclusion provides an overview and 'summing up' of the concepts examined and the main findings. I draw attention to key ideas pertaining to cyborg art, and conclude with a discussion of how these ideas impact on society, and are thus relevant today. Twenty-five key suggestions for the future are also included following this discussion, outlining tangible ways cyborg art can be made more accessible to the public, and how people can contribute to cyborg art's value. This list is extensive as my goal in this thesis is not only to explore cyborg art and to develop a theory and genre of cyborg art, but also to encourage links between cyborg art and the public.

Chapter One

Foundational Theorists' Perspectives and Frameworks

This literature review chapter introduces the foundational theorists' premises, via key essays, relating to the concepts of technology, cyborg art, and the cyborg, and ontological analysis relating to changing humanity. These theorists – Donna Haraway, Jennifer González, Chris Hables Gray, Yvonne Volkart and Verena Kuni – are discussed in chronological order, regarding the year their essays were published. This review explores how and why body and technology links are increasingly represented back to us, via cyborg art and aesthetics. The final section of this chapter addresses analytical gaps pertaining to cyborg art noted within the literature.

Donna Haraway: Technology, the Cyborg, and Feminism

Donna Haraway is a historian of science, a cultural theorist, a feminist, and the foundational theorist of cyborg theory. In 1985, she wrote a groundbreaking article (a Cyborg Manifesto), where her version of the cyborg was introduced for political and feminist purpose and insight. Haraway's reworked essay *A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century*, included as the eighth chapter in her well-known 1991 book *Simians, Cyborgs, and Women: The Reinvention of Nature*, is used as the key text for this review.

Haraway (1991a) writes about the cyborg as a metaphorical and literal human/machine hybrid. She reconceptualises the cyborg as a rebellious boundary creature ready to take on the challenges of our technologised society. Haraway uses the cyborg as a potent metaphor for addressing increasing human and technological interconnections. One of Haraway's (1991a) key arguments is that the cyborg represents – more than any other symbol – the dissolution of boundaries and binaries

prevalent to Western society; binaries such as reality/appearance, whole/part, agent/resource, maker/made, active/passive, right/wrong, truth/illusion, total/partial, and God/man. Elaine Graham agrees with Haraway's views, suggesting that "Cyborgs thus transcend the processes of dualism upon which western modernity, patriarchy and colonialism has been founded..." (2001, p. 243). Haraway (1991a) claims that one of the most powerful boundaries the cyborg ruptures is that of gender, arguing that cyborgs are creatures embedded within a post-gendered world. She supports a utopian tradition of imagining a world without gender. Her cyborg does not represent androgyny as such; more a fluid, oscillating gender, or a pre-oedipal symbiosis (Haraway, 1991a) – a symbolic hermaphroditism. These ideas are addressed in the Gender section within Chapter Six aligned with selected artworks.

Haraway (1991a) acknowledges that the cyborg was derived from technologies developed in the mid-twentieth century, including communications and medical technology, prosthetics research, and biotechnology. As such, she claims that the cyborg has no origin, being instead the illicit progeny of the combinations of capitalism, patriarchy, and the military. However, Haraway (1991a) is adamant that this illegitimate status enables the cyborg to be unfaithful to its origins, allowing for freedom of expression and existence. She argues that being or becoming a cyborg is a matter of survival, and she wants women in particular to be these survivors. Nonetheless, Haraway maintains that in order to survive, women must lose their socially constructed technological naivety and lack of skills. Robert Wilson (1995) agrees with Haraway, arguing that the solution to being a discursive cyborg is not to reject technology, but rather to understand it well enough to utilise it for constructive purposes. Haraway (1991a) contends that for women to recognise themselves as fully implicated in the postindustrial and information-driven world, without restraint and fear, they must first free themselves of the need to derive knowledge and political insight from female identity markers such as 'purity' and 'mothering'. Haraway ends her Manifesto with a poignant quote: "Though both are bound in the spiral dance, I would rather be a cyborg than a goddess" (1991a, p. 181). Here, she is alluding to the importance of women to regenerate themselves by learning about technology, rather

than retreating into the (constructed) world of nature. Haraway (1991a) argues that the conceptualisation of nature as a source of promise for women and as a place of innocence and security – as promoted by ecofeminists – is fatally undermined.

Haraway (1991a) points to what she believes are the three crucial boundaries that have been breached by technoscience. The first is between the human and the animal, as a consequence of rapid biotechnological developments, which I address in the final section of Chapter Seven. The second leaky distinction is between the organism and the machine, which is the most common and identifiable element of the cyborg, and which this study focuses on throughout. The third dissolving boundary is between the physical and the non-physical. Haraway emphasises that cyborgs are “ether, quintessence”, made of air and atmosphere as they are increasingly communication signals; light and clean electromagnetic waves (1991a, p. 153). She is alluding to human integration with communications technology and virtuality, which I also address in Chapter Seven. Murphie and Potts (2003, p. 128) agree with Haraway that the quintessential cyborg is a communications entity; where cyborgs are based on information processes, which have crept “under our skin”.

Haraway (1991a) also claims that there are two possible future worlds which the cyborg will inhabit; a dystopian world where control over the planet and others is absolute, and a utopian world, where human beings have joint kinships with animals and machines, and are not afraid of the identities derived from these kinships. She argues that technologised society must be viewed from both these perspectives simultaneously, as these differing standpoints reveal important and often unimaginable forms of knowledge and understanding. Haraway contends that “Single vision produces worse illusions than double vision or many-headed monsters” (1991a, p. 154). Overall, she argues for both pleasure and responsibility in addressing the confusion of ruptured boundaries and possible worlds, and believes that the cyborg is an “imaginative resource” fostering affinity and negotiation politics (Haraway, 1991a, p. 150). Haraway suggests that the cyborg evokes new frameworks for accountability regarding the changing dynamics between human and machine.

Haraway's views on the cyborg existing as a social metaphor and symbol are shared by other theorists. Sue Short (2005, p. 189) feels that the cyborg is an "important cultural phenomenon" as it can serve as a compelling catalyst for debate regarding human and technology merger, and as a discussion tool and analytical device for addressing current societal concerns. Graham (2001) claims that the cyborg is a metaphor for our increasing interdependency with technology, while Klaus Benesch (2002) believes that cyborgs are symbols expressing the encroachment of technology into our lives and onto and into our bodies. Katherine Hayles (1995) argues that the cyborg is both a discursive product and a technological object; both figurative and metaphoric and literal/real. Murphie and Potts add that the cyborg "exists as an ambiguous figure – part reality, part fiction, part metaphor – in the crossover between science, technology, SF and cultural theory" (2003, p. 97). Haraway (1991a) identifies that the cyborg is a creature of fiction; an imagined or figurative entity, *and* reality and lived experience; an actual material entity. She surmises that there are already numerous disturbing and exciting interconnections or couplings between organisms and machines within contemporary postindustrial society.

Philosophers who have influenced Haraway's work include Charles Peirce (1839-1914), Alfred North Whitehead (1861-1947), and Martin Heidegger (1889-1976) (Haraway, 2000, p. 21). I draw attention to Heidegger in this study due to his theoretical focus on ontology, technology, and art, and their junction. Heidegger was a renowned German philosopher, and is often recognised as the key philosopher of an all-inclusive technological society; a "theorist par excellence of the digital future" (Kroker, 2004, p. 40). He is considered one of the most influential regarding technology's effects on us metaphysically (Feenberg, 1999). Heidegger believed that modern technology is more than a human activity; it is a way of thinking, and a mode of living. He felt that operational processes inherent within modern technology become increasingly powerful, and that people begin to think in a calculative manner, both towards the environment and each other, due to technology's influence. Heidegger referred to this new mode of thinking and action as the technological understanding of being; which he defined as "the essence of technology" (1977, p. 4).

However, Haraway does not altogether agree with Heidegger's (1977) theories regarding technology's effects on ontology, believing that his argument is too "dogmatic and has no sense of the kind of creativity of natural scientific inquiry" (Haraway, 2000, pp. 22-23). She feels his ideas are too negative and centre on "technological instrumentality", rather than on scientific inquiry as a rich semiotic and material practice (Haraway, 2000, p. 23). Yet, I suggest that Heidegger's perspectives are increasingly relevant today, as human beings are able to control, manipulate, and extract energy and resources, such as water, food, minerals, organs, cells and genes from the earth and the earth's peoples and animals, through the use of technology. Heidegger referred to these resources as "standing reserves" (1977, p. 19). These activities are chiefly orchestrated by people in power who can sell others the dream of being able to remain younger, stronger, and more attractive for longer.

Overall, there has been renewed interest in Heidegger's ontological philosophy. This is because advances in technology and the ever-evolving posthuman or cyborg body continue to define new modes of human existence (Ebersole, 1995). Mark Poster surmises that "We must therefore rethink the question of technology in the context of bioengineering, globally networked computing and, above all, in relation to the figure of the post-human body or the cyborg" (2002, pp. 16-17). R. L. Rutsky (1999) directly links Heidegger's ideas to the metaphorical cyborg, as the cyborg is conceptualised as open and fluid and opposes the dogma of efficiency. This is Haraway's (1991a) thesis; that the cyborg as an ironic myth, metaphor and symbol, can alter people's perceptions of each other and technology in a positive (and playful) way. Her cyborg is creative, contradictory and flexible, promoting combinations and political responsibility regarding technology's impacts. Paul Standish (1999, p. 425) affirms that "The cyborg points us toward other ways to be" in the technological age.

In relation to cyborg imagery, Haraway claims in her Manifesto that disempowering ideologies of everyday life can be tackled by "exploiting the cyborg image" (1991a, p. 180). She writes that bodies are maps of power and that "cyborg imagery can suggest a way out of the maze of dualisms in which we have explained our bodies

and our tools to ourselves” (1991a, p. 181). However, Haraway does not include clear and concrete examples in her Manifesto to support her claims, nor does she identify tangibly how the power of cyborg imagery can help humanity. These omissions became the inspiration for this research project. I became curious as to what kinds of cyborg images Haraway may be referring to and what types of cyborg configurations may be represented in art. Although she does not include this focus in her Manifesto, Haraway does include a number of Lynn Randolph’s paintings in her 1997 book *Modest_Witness@Second_Millennium.Femaleman[©]_Meets_OncoMouseTM. Feminism and Technoscience*, commenting that Randolph’s works are “an extraordinary intellectual and physical gift” (Haraway, 1997, p. vii). Haraway feels that the themes Randolph often expresses in her artworks unite with her own, fostering deeper insights into the implosion of technical, organic, political, and economic systems. She also discusses Randolph’s painting *Cyborg* (1989) in her 1992 essay *The Promises of Monsters: A Regenerative Politics for Inappropriate/d Others*. As such, I draw on this essay during my discussion of *Cyborg* in Chapter Six. I also discuss Randolph’s 1995 painting *The Annunciation of the Second Coming* in Chapter Five.

The major criticisms directed at Haraway’s Manifesto include that it is too utopian and apolitical in its content, and that the cyborg myth is overly celebratory (Schueller, 2005). Haraway’s aspirations can also be deemed unrealistic, and her ideas can be considered more metaphoric, poetic and descriptive, rather than material. Peta Cook (2004) feels that her discussion on gender often seems to focus on post-gender cyborg fictions at the expense of gendered realities. Judy Wajcman agrees with this sentiment, suggesting that “Haraway is much stronger at providing evocative figurations of a new feminist subjectivity than she is at providing guidelines for a practical emancipatory politics” (2004, p. 101). These critiques are valid to some extent, as Haraway does centre her discussion on metaphoric analysis rather than on practical strategies for overcoming current disenfranchising ideologies.

However, I suggest that Haraway’s intention regarding the Manifesto was specifically to be provocative in order to encourage alternative political and ontological thinking

regarding human, and particularly women's, integration with technology. Haraway is acutely aware of women's lived realities and their positioning in the world. She uses the figure of the cyborg in a politically playful way to encourage women to recognise their positioning in contemporary society. Rather than offering a step-by-step guide on how this recognition can be achieved, Haraway chooses to expose and rupture disempowering attitudes towards women in an unconventional way. She does this by employing a metaphorical figure which is blasphemous, ironic and transformational. Chela Sandoval affirms that Haraway's cyborg, "reproaches, challenges, transforms, and shocks" (1995, p. 411). Ultimately, Haraway is a visionary writer, conveying her ideas and solutions encapsulated within a mix of poetic prose and academic research.

Another criticism linked to Haraway's ideas is the way cyborgs have historically been represented in film and television as excessively – physically and ideologically – gendered, which works against Haraway's fluid and post-gendered concept. The concern is that contemporary images of female cyborgs are already 'tainted' as they are often either presented as sexualised and acquiescent, or as sexualised assassins (Cook, 2004; Devoss, 2000; Wajcman, 2004). Critics therefore question how the cyborg can be a symbol of empowerment for women and thus a feminist icon. Yet, imagery is also created which shatters traditional forms of female cyborg types. I introduce these new versions and show how they define new modes of representation and iconism. Haraway also subverts and appropriates the historically male-defined research-based and entertainment cyborg, in order to present a future female-defined political cyborg. She employs her rebellious figure to encourage women to break free from hegemonic patriarchal ideologies, which often condition women to be passive, technologically inept, and only deemed to be users of technology, and not designers.

In sum, issues of power and agency are central to Haraway's reading of the cyborg (Bell, 2001), and despite her ironic tones, Haraway embodies strong ethical elements in her writing as she envisages renewed relationships between human beings and non-humans that do not rest on exploitation. Haraway imagines a world beyond the limitations of race, class and gender, and she refuses to adopt absolutist responses to

the ethical, ecological and political dilemmas of technoscience (Graham, 2001). Haraway's *Manifesto* presents a unique vision for readers as it posits the subject not in a human form, but in a constantly reproducing cyborg form, which signifies a shifting subjectivity (Hara, 2001). Haraway (1991a, 1991b) uses the cyborg as a figure and an icon for hybrid, blended, split, partial and contradictory subjectivities; for gay, lesbian, and postcolonial identities, and for all those who are oppressed, repressed, displaced, and positioned as having marginal identities (Foster, 2005).

Jennifer González: Cyborg Bodies

Jennifer González was one of the first theorists to unite historical and contemporary cyborg imagery and art with Haraway's cyborg theory, developing her own unique perspectives on this emerging concept. González includes five cyborg images in her ground-breaking essay *Envisioning Cyborg Bodies: Notes From Current Research* (1995), in order to introduce 'cyborg body' imagery and representation. She suggests that the cyborg body in art and imagery represents embodied reality as historical and current states of being, but also explores possible future beings in the form of utopian or dystopian fantasies. Tomas (1995a) and Benesch (2002) agree that the cyborg has become a vision of humanity today, whilst also igniting ideas on what may constitute potential (post)human configurations. González (1995) adds that the cyborg is both a literal and a figurative entity in accordance with Haraway's views.

González (1995, p. 267) argues that "The image of the cyborg body functions as a site of condensation and displacement", which relates to the utopian concept I introduce in this study. She claims that the cyborg image contains on its surface and in its content "the multiple fears and desires of a culture caught in the process of transformation" (González, 1995, p. 267). For this reason, González suggests that the cyborg is a symptom of technological developments. Benesch agrees, emphasising that the cyborg allows us "to articulate metaphorically what cannot be articulated literally: the concept of human identity" (2002, p. 30). The cyborg image presents

changes to the human body and identity which cannot always be clearly identified, in addition to exploring the impacts of these changes (González, 1995).

González (1995) centres her analysis on images of female cyborg bodies, beginning with an exploration of *L'Horlogère*, which is a pre-industrial era print of a woman interfaced with a clock. González suggests that this image represents the female amalgam as objectified, and despite the woman's sophisticated representation, she remains a "decorative artifact" (1995, p. 269). González claims that this form of imagery has not altered dramatically since the era in which this print was created, as conventional ideals regarding gender remain for the most part unchallenged. Theorists such as Peta Cook, Judy Wajcman, Claudia Springer, Gill Kirkup, and Daniëlle Devoss agree that representations of female cyborgs often conform to traditional ideals. I examine their views in this study, yet I note that there also exists cyborg artworks which shatter long-held notions of women as passive, decorative and objectified, and these transgressive works are discussed in Chapter Six.

González (1995) also argues that cyborg artworks must be viewed in their form and not just noted for the fact that they exist, but also considered in terms of how and why they exist, and for the immense value they contribute to society, as this study seeks to explicate. Additionally, González (1995) suggests that visual images of cyborg bodies have become ubiquitous because the current ontological model of normative 'natural' human beings no longer adequately represent the current postmodern epoch. This incongruence has created the need for the cyborg body and concept, as humanity has outgrown representations of human beings as natural bodies situated in an increasingly unnatural context. The cyborg therefore becomes a historical record for humanity's altering corporeality and ontology, while ever-emerging new cyborg configurations continue to provide new opportunities for ontological exploration.

González (1995) further argues that images of cyborgs have historically reoccurred at moments of radical cultural change. She believes that the cyborg body in art and imagery in any historical context "turns the inside out", serving as a reflection of the

underlying ideologies and often veiled social structures of any “given historical consciousness” (González, 1995, p. 272). I support González’s views, and argue that the cyborg artworks included in this study (dating from the 1960s onwards) form a cohesive genre relating to the present postmodern epoch. I suggest that many artists focusing on body and technology links do so with political and ethical engagement, which lies at the heart of critical postmodern art practices (Koscianski, 2003).

One of the early twentieth century artworks González discusses in her essay is Raoul Hausmann’s ironic assemblage sculpture *Mechanical Head* or *The Spirit of Our Time* (1919) (Image 3, p. 99), which I introduce in Chapter Four. González (1995) explores how this artwork represents the zeitgeist (or the spirit) of the early twentieth century, which Hausmann alludes to in his title. Hausmann’s mechanised man is shown submerged by the gadgets and artefacts of his rapidly changing epoch. I also include Hausmann’s photomontage *Tatlin at Home* (1920) (Image 4, p. 100) in this chapter, which again shows a man altered by the impacts of technology and science. These works metaphorically show the effects of technology on the way human beings think.

Lastly, González (1995) rightly points out that cyborgs will not more readily exist free of the social inequities and detrimental conditions which pertain to ‘human’ beings. Social problems of inequality and unfounded expectations associated with gender roles will remain a facet of increasing cyborgisation. Cook (2004) agrees that disempowering ideologies will not be eradicated as a result of advanced technological discoveries or creations. She argues that a division between the techno-elite and the techno-poor will linger. This will be particularly evident regarding access to technologies such as computers, the internet, and medical procedures and tests (Clark, 2003; Feenberg, 1999; Gray, 2001; Stock, 2002; Zimmerman, 1990). As Gray asks, and states, “As more cyborgian technologies become available, who will have access to them? Only the rich and well-insured” (2001, p. 72). Gray (2002) adds that decisions concerning technological usage and integration, and what technologies and techniques are eventually developed, should be made democratically. These concerns are intrinsic to cyborgisation and are discussed in Chapters Five, Seven and Eight.

Chris Hables Gray: Cyborg Art and Aesthetics

Chris Hables Gray has written several articles and acclaimed books on cyborgology and cyborgisation, and two essays which specifically deal with cyborg art and aesthetics. Gray is the only theorist, to my knowledge, who focuses clearly on “the cyborg” and “art” combined as a concept, and developed as a discursive tool. He introduces the concept of cyborg art in his 1998 essay *Cyborgs, Attention, and Aesthetics*, in order to heighten the level of understanding concerning cyborg representation in general. Gray (1998) draws attention to the way Western society is becoming what he calls a ‘cyborg society’. He calls for critics to pay attention to imagery identifying this emerging and increasing phenomenon, and to recognise the extent of the fusions which exist between humans and technology today. Gray suggests that we – as cyborg citizens – will benefit from examining cyborg artworks and art practices as this artistic focus interrogates and explores the meanings of current convergences, experiences, and visions, which are all part of the cyborg debate. Gray contends that “Historically, it seems there is a trajectory in cyborg art (and perhaps all art) of ever increasing modes of claiming attention” (1998, para. 8). I agree with this view, and suggest that artists are increasingly creating sumptuous and transgressive artworks not only to address existing and envisioned configurations, but also to draw attention to why these representations are being created and shared.

Gray (1998) observes that the cyborg concept simultaneously strengthens and explodes binaries, such as born/made, living/inanimate, natural/artificial, and organic/machinic, as the cyborg can only exist as a combination of these supposed binary states. This is also González’s, Graham’s, and Kuni’s premise. González (1995) claims that the contradictions and tensions inherent within the cyborg image both condense and displace these binaries, while Graham (2002) feels that the cyborg queries the ontological purity (or hygiene) of these ideological binaries, and exposes them as fabrications because it transgresses these binaries while still existing. Kuni (2004-2005a) contends that the cyborg is bound by these dualisms but also

overcomes them; therefore existing as both sides of the organic-inorganic divide. These ideas are linked to the utopian concept I have developed in order to address the paradoxical state and aesthetic of the cyborg body and concept.

Gray draws on González's (1995) ideas pertaining to cyborg art and imagery in his essay, particularly her discussion of Robert Longo's apocalyptic 1986 installation sculpture *All You Zombies: Truth Before God*, which shows a violent hermaphroditic cyborg soldier preparing for war, against him/herself, the world and God. Gray (1998) contends that this type of self-rejection of cyborgisation is not common in relation to actual interfaces; however, Longo's dystopian imagery is a familiar cyborg aesthetic shown in art, as discussed throughout this thesis. During my research, I found many more dystopian artworks than utopian representations or positive portrayals of the interface, and I address this prevalence in Chapters Five and Eight.

In his subsequent 2002 essay *In Defence of Prefigurative Art: The Aesthetics and Ethics of Orlan and Stelarc*, Gray discusses two performance artists who have both been performing their body art for over 30 years. Orlan is a French artist who focuses on the processes and results of cosmetic surgery in a transgressive way. As such, her surgeries are not framed as restorative practice, but rather as subversive practice. Orlan opts for local anaesthetics so that she can choreograph her operation-performances. Gray (2002) argues that Orlan undertakes her risky surgeries because she feels we have the right to choose our own embodiments and futures. Stelarc is an Australian artist who uses robotics, medical instruments, prostheses, virtual reality systems and the internet to explore and increase the parameters of the body during his performances. Stelarc believes that the body has become obsolete today, as machines are often out-performing the body. I introduce and discuss Stelarc's well-known 1982 artwork *Handwriting – Third Hand: Evolution* (Image 51, p. 256) in Chapter Seven.

Gray (2002) maintains that Orlan's and Stelarc's art is about seeing the world in new ways and expressing that vision. With the aid of technology, these artists can communicate and share their evocative ideas, using telematic technologies in order to

include observers and audiences in their works. Gray emphasises that both Orlan and Stelarc negotiate complicated relationships with technology and medical experts for the extreme manipulation and modification of their bodies, thereby directly subverting the procedures which often limit these technologies to expert usage and control. Most cyborgian augmentation, reconstruction and restoration technologies are derived from the military and industry development (Gray, 2002; Haraway, 1991a). Gray believes that Orlan's and Stelarc's art opens up new possibilities for envisioning future human beings. He argues that Orlan and Stelarc "manifest a cyborg epistemology in their work" (Gray, 2002, p. 190), and claims that:

(1) the canvas is their own body, which meets (2) medical technoscience in (3) sites around the globe, where it is (4) enhanced, not rehabilitated, through (5) experimentation. Their approach is that (6) art must change the world: (7) the will triumphs over technology, and (8) art triumphs over science. (Gray, 2002, p. 190)

Gray suggests that Orlan's and Stelarc's agency, their bodies, the technologies which they utilise, the public, and the ideologies and traditions they explore and rupture are all intertwined together dynamically, creating new ways of thinking about human and technology integration. Gray (2002) argues that we need this new, open and dynamic cyborg epistemology today in order to relate to and understand the consequences of the interface, and human adaptation and change.

Orlan and Stelarc are explicitly involved in seeking out and defining new ethical understandings and conditions regarding cyborgisation. This is crucially important today as bodies and lives become increasingly interwoven with technological systems. Gray surmises that Orlan's and Stelarc's art is not only a "political reflection on cyborgization, but it goes much further. Their work, which is themselves, is a direct attempt to shape our cyborg future. It is prefigurative art" (2002, p. 181). Gray refers to their work as "prefigurative embodiment and ethics through aesthetics" (2002, p. 187). Gray uses the term 'prefigurative' not simply to mean 'suggest' or 'imagine'; his sense and usage of prefiguration goes much deeper than this. He refers to prefiguration as an antecedent; which describes an event or an experience which is actively working towards something. As Gray states, Orlan and Stelarc tangibly make a future "by living it" (2002, p. 181). Benesch (2002) also uses the term prefigure in

relation to the cyborg as a phenomenon that heralds stories concerning its future, reflects on stories concerning its existence and alleviates growing tensions between its human and technological hybrid state. Gray (2002) views prefigurative art overall as an action, or praxis; a setting up of an idea which uses an enlightened path or a theoretical background as its foundation. Gray includes one of Orlan's favourite slogans in his essay: "Remember the future" (2002, p. 191). He argues that this is what prefigurative cyborg art should do. Gray feels that Orlan and Stelarc remember the future by experiencing it, via their technological adaptations and interfaces.

Gray (2002) ardently believes that art can provide something tangible for society. He feels that art should be functional and utilitarian, that it should act on both viewers and creators. He resolutely believes that art should compel us to be altered by the viewing experience. Gray writes, "If I had to use just one word to judge art by, that word would be *compelling*. Art, in my opinion, is something that stimulates our senses; art compels us to think, to feel and change" (2002, p. 184; emphasis in original). Heidegger's (1978) argument was similar; he believed that (great) art could examine a social epoch and the human beings (or as Gray states, the cyborgs) within it, and re-present entrenched societal ideologies, structures and developments back to the people. Heidegger (1978) believed that through art, ideas about an epoch could be disclosed or 'unconcealed'. He held that "*Truth* is unconcealment", but this does not mean that beings, ideas and artefacts become "immediately accessible" (Lovitt, 1977, p. xxxiv; emphasis in original). Heidegger claimed that art acts as a "passage way" to humanity (1978, p. 166), by offering modes of truth and knowledge which are more fundamental than what is traditionally understood as aesthetic experience gained from art. He viewed art as functional; having the capacity to incite ontological disclosure, which is a key premise of this study. Hauser (1982, p. 5) agrees that "Works of art are deposits of experiences" that are directed towards practical ends. He feels that art can alter a person's perception, thus serving as a catalyst for the authentic awareness of existence. Hauser argues that the function of art does not "consist merely in opening people's eyes, but also in preventing their closing their eyes again to facts, difficult tasks, uncomfortable solutions, and tragic alternatives" (1982, p. 311).

Gray ultimately feels that art can ignite resistance to destructive socio-political conventions, by opening up avenues for facilitating societal awareness. He concludes that “art should be, and actually is, a major source of our insights about our cyborg society...” (Gray, 2002, p. 181). Yvonne Volkart and Verena Kuni share many of Gray’s views and focus their academic interest on the increase in cyborg-inspired artworks created at the turn of the new millennium. They discuss this phenomenon within essays presented on the expansive online media art website *Medienkunstnetz*.

Yvonne Volkart and Verena Kuni: Monstrous Bodies

Volkart includes a selection of contemporary new media art images in her 2004-2005 essay *Monstrous Bodies: The Disarranged Gender Body as an Arena for Monstrous Subject Relations*. Her main argument is that gender acts as the common denominator within most ‘monstrous body’ depictions, and that on the whole, there are two differing representations of the monstrous cyborg or chimera; one, an abhorrent mutant, and the other, a flawless and seamless entity. Volkart claims that monstrous chimeras are predominantly female entities, who have become deviant, or who in some way transgress their gender norms. Claudia Springer (1996) and Dánielle Devoss (2000) agree that gender is a key theme explored within cyborg imagery; however, they focus their discussion on gender binaries rather than female abjection.

Volkart (2004-2005a) contends that the reproductive power of the female body is often depicted as an object of veneration and fascination *and* condemnation and fear because of a woman’s ability to reproduce. She adds that the female body is often shown as excluded from the reproduction process altogether. I agree with Volkart as I have located several artworks which evocatively depict reproduction aligned with advanced technologies, evoking machinic themes of artificially assisted gestation and external gestation. These include Faith Wilding’s artwork *Self-surveilling Embryo* (Image 30, p. 187), and Joachim Luetke’s painting *Dream On* (Image 32, p. 193), which I discuss in Chapter Six. However, Heidi Taillefer (2008) has created *Venus*

Envy (Image 72, p. 322) as a celebration of the ‘monstrous’ pregnant female cyborg body, in all its contrasting – appealing and frightening – glory.

Volkart draws attention to the way prominent German video artist Björn Melhus chillingly examines themes relating to cloning, artificial reproduction technologies, and issues of control in his 1998 artwork *Again and Again (The Borderer)*. Melhus uses his own body (as the cyborg protagonist) to present himself as a God-like creator who continues to multiply and replicate himself, until he eventually falls into a black hole. However, this hole does not denote death as such, but rather “the uterus machine in action, which has replaced death...” (Volkart, 2004-2005a, p. 7). Volkart suggests that Melhus’ artwork explores the permeability of nature, technology, corporeality and subjectivity, which are key themes examined within this thesis.

Another key argument Volkart (2004-2005a) presents in her essay is the way some artists seem to portray hybrids, monsters and mutants as spectacles of fascination and horror, rather than creating these entities to address political or ethical issues; although she acknowledges that images depicting physical deformations or radical adaptations can still symbolise changes transpiring in contemporary society on a socio-political level. I propose that radical cyborg or posthuman artworks are not primarily created to incite voyeuristic viewing, and defend this position throughout this study by demonstrating how these artworks relate emphatically to social, ethical and political issues. Volkart (2004-2005a) discusses Swiss artist Olaf Breuning’s image of *Sibylle* (1997) with regard to the spectacle of horror-fascination, as this image shows a mutilated half animal and half human female, lying on her side. Breuning’s mutant has an amputated lower right leg, webbed and flattened pod-like fingers on her left hand, a large red clown nose, large red round cartoon mouse-like ears, and horns. Her right breast is covered with a circular object resembling a miniature dartboard and her right shoulder is dotted with sparsely distributed fur. Yet this image, while both fascinating and disturbing, may signify injurious implications relating to the concept of female beauty, and the dangers and bizarreness of striving for ‘perfection’. *Sibylle* may also allude to the perils of genetic engineering and the

political issues surrounding the uses and effects of biotechnologies. As such, *Sibylle*'s political and social content may be considered just as powerful as her imagery.

Verena Kuni also discusses transmutations and transgressive cyborg bodies in her essay *Cyborg Configurations as Formations of (Self-)Creation in the Fantasy Space of Technological Creation (I): Old and New Mythologies of Artificial Humans* (2004-2005a). Kuni focuses on the comparisons between historical and contemporary artificial humans by examining their bodily continuities and discontinuities. One of her central arguments is that many cyborg configurations in the arts as well as in popular culture are modeled after the human body image in order to address how and why the human body is changing so rapidly. Kuni suggests that cyborgs are predominantly given human contours in order to enable viewers to connect with these representations, and to imagine an "almost endless spectrum of possible embodiments" (2004-2005a, p. 2). Kuni affirms that the human silhouette represents familiarity, enhancing the viewer-artwork relationship, despite the often radical imagery which is shown in cyborg or posthuman art.

I agree with Kuni's premise; as such, I centre my research focus on artworks which show the human body altered by and/or interfaced with, technology. This increases the impact that cyborg artworks can have, in terms of conveying key issues surrounding cyborgisation and changing human ontology. Zoë Sofia (1996) adds that contemporary 'techno-body' illustrations should aim to highlight the human element in the body-technology equation in order to signify a challenge to the pull of the machine. Emphasising human contours also fosters recognition that human beings can live in a symbiotic partnership with technology, without losing their so-called humanness, essence or will. However, human-form cyborgs also imply a longing to overcome human vulnerability, frailty, and mortality (Kuni, 2004-2005a). This desire is also pertinent to posthuman theory, discussed in Chapter Four.

Kuni (2004-2005a) contends that most cyborgs are defined from an anthropocentric perspective as they originate in the human imagination and are predominantly

compared to human beings. She suggests that because the cyborg continues to be presented in more or less human form, it will continue to be judged and defined from a human perspective (rather than from a combinatorial cyborg perspective), which she believes is restrictive. Gray discusses a related concern in his 2001 book *Cyborg Citizen: Politics in the Posthuman Age*, regarding human augmentation and reconstruction and increasing human and technology interconnections in general. He argues for the need to create a new Cyborg Bill of Rights (pp. 26-29), as the Human Bill of Rights is no longer adequate because of the effects and potential impacts associated with current and developing technologies. This is a valid concern, as legislation, which is developed from ideologies relating to the way human beings live (or ought to) their lives, is becoming outmoded as the concept of humanity rapidly transforms (Feenberg, 1999; González, 1995; Gray, 2001; Stock, 2002).

In relation to gender, Kuni (2004-2005a) observes that most of the historical stories and associated images that deal with cyborgs or artificial humans are marked either by conventional gender characteristics, and/or male or female sexuality. This supports Springer's (1996), Volkart's (2004-2005a), and other theorists' assertions that gender plays a pivotal role within most cyborg representation. However, Kuni questions whether cyborgs even require a gender; whether the sexual act of procreation is now even necessary if cyborgs cannot or do not produce off-spring. This questioning of 'cyborg gender' is linked to the questioning or avoidance of 'cyborg ethnicity'; whether cyborgs have or even require an ethnicity in the posthuman age. I address these concerns in Chapter Six, drawing on interview participants' responses in order to examine these issues in depth. Kuni (2004-2005a) concludes that individuals who do not profit from traditional relations of power such as women and 'others', may find the transgressive cyborg more appealing, and be more likely to discover cyborg potential for themselves. This is precisely Haraway's (1991a) argument, and is part of the reason why the cyborg has become a celebrated feminist icon.

Kuni develops her themes further in her subsequent 2004-2005 essay, *Cyborg Configurations as Formations of (Self-)Creation in the Imagination Space of*

Technological (Re)production (II): The Promises of Monsters and Posthuman Anthropomorphisms. In this essay, Kuni draws on various new media cyborg artworks in order to discuss her ideas in a similar manner to Volkart (2004-2005a). She believes that the appeal of transgressive ‘monsters’ inherent within cyborg imagery is that they deviate from the norm, whereby the cyborg is neither a total stranger nor a completely familiar figure; rather, existing in an in-between zone and therefore possessing the potential for resistance (Kuni, 2004-2005b). I agree with this perspective. Cyborg configurations can show tangible signs of resistance to social expectations and traditions, not only by exposing hidden social forces within their aesthetics, but also demonstrating the invasiveness and controlling nature of these forces and ideologies. This is discussed in the following chapter, aligned with critical postmodern art. The notion of resistance is also linked to Gray’s (2002) discussion of Orlan and Stelarc, as he suggests that these artists tangibly control and subvert medical and military technologies in accordance with their own desires.

Kuni (2004-2005b) includes Natasha Vita-More’s diagrammatical artwork *Primo Posthuman* (2000) and Tina LaPorta’s 1999 media artwork *Future Body* (Image 25, p. 156) in her essay, as these artworks depict a technological upgrading of the human body. Vita-More is a Transhumanist and an Extropian. These are terms used to refer to individuals who are optimistic regarding the technological future, and concerning the use of technology to extend the duration of the body (More, 2003). *Primo Posthuman* shows an upgradeable body which is endorsed as being able to overcome political, cultural, biological and psychological limits and constraints; thereby facilitating and enhancing evolutionary progress. Conversely, *Future Body* depicts human contours in code, and is a body liberated from its materiality, thereby representing themes of post-corporeality and virtuality. Kuni feels that these artworks explore the posthuman body in ways which enhance and extend theoretical analysis.

The essays which González, Gray, Volkart, and Kuni have written on cyborg art and imagery demonstrate the growing importance being placed on artistic representations of body and technology integration. These theorists have each assembled various

cyborg-inspired artworks in order to examine this developing artistic focus as a critical phenomenon. What I bring to this body of knowledge, in addition to a more persistent and lengthy analysis of cyborg art, is much-needed empirical data. In this study I have created a link between the general public, the artworks, and the artists, in order to provide an in-depth examination of cyborg art. I end this chapter by addressing some of the key analytical gaps noted within cyborg art discussion overall.

‘Fissures’ in the Literature

As demonstrated by this review, many relevant issues have already been examined in relation to cyborg art. However, I suggest that there are still important concepts and concerns which remain under-developed. The first is the lack of importance given to, and emphasis on, public or laypersons’ responses to body-technology interface, and regarding their responses to cyborg art and imagery specifically. To my knowledge, there has been no empirical research conducted on attitudes towards, and impacts of, cyborg art or aesthetics carried out by academic researchers involved with cyborg analysis. I suggest that the lack of empirical research carried out in this field contributes to the view that cyborg theory pertaining to how the cyborg is perceived can be seen as unsubstantiated theoretical analysis (Kreps, n.d.). After over two decades of academic discussion concerning increasing cyborgisation, theorists have rarely noted how the general public feel about these issues. Chris Hables Gray’s, Heidi Figueroa-Sarriera’s and Steven Mentor’s cult classic *The Cyborg Handbook* (1995) is a leading and exceptional text focusing on cyborgology, yet this book also does not include explicit contributions from the general public or ‘cyborg citizens’.

Furthermore, the cyborg is often theorised as both a literal and figurative entity. However, the differences between these two spheres are often not expanded upon clearly within academic theorising. I therefore introduce discussions in this study which tease out these differences, in order for readers to understand more clearly what types of corporeal technologies exist today, and which technologies are

conceptualised and fictional. Differentiation between the terms ‘cyborg’ and ‘posthuman’ also requires attention, as theorists focusing on human-technology interface often use these terms interchangeably, or suggest that the cyborg is in transition to the posthuman state. I address this issue in Chapter Four.

In addition, many theorists, and my interview participants, as shown in Chapter Five (see pp. 128-129), suggest that the cyborg is both an organic-based human being adapted by technology, and an artificial construct, such as a robot or an android. Yet theorists for the most part do not address the inherent differences between these two states. I suggest that this can cause confusion for readers as to what type of cyborg configuration is being addressed. Science fiction films, books and television shows also represent the cyborg as being both a human-first and an inorganic-based entity. For example, *Robocop* (1987) is a human being adapted by, and interfaced with, technology, while *The Terminator* (1984) is an anthropomorphic robot/machine created to function like a human being. I believe that the differences between these two states have not been clearly defined within academic theorising, particularly relating to the premise that the cyborg can serve as a symbol and cultural icon for changing *human* ontology. I address this issue in Chapters Five and Eight. However, it is to be noted that it can be difficult to determine how artists view the cyborg concept. Nevertheless, many of the artworks selected for this study are known organic-based cyborgs or human beings integrated with technology in some way.

Moreover, while many cyborg and feminist theorists discuss gender representation and technology aligned with the cyborg concept, they omit discussions of the relatively few female artists exploring the interface. This thesis includes cyborg-inspired artworks created by 47 male artists, and seven female artists. In addition, only two artworks depict the fictional cyborg character presented as noticeably non-Caucasian, and only two images identify that the actual performing artist or art subject shown, is not of European or Asian origin. I have also been unable to locate an artwork which explicitly depicts a black or indigenous female cyborg character, where cultural elements are visually expressed. I suggest that these omissions and

discrepancies require analysis. I believe that the absence of inquiry into these gender and ethnicity imbalances further creates a lack of recognition of the representational inequities that exist today, whilst also exacerbating the cultural ideologies which place European males at the pinnacle of technological progression and artistic praxis.

Another area of research which I believe requires theoretical examination relates to the concept of post-hybrid convergence, and its representation in art and imagery. To my knowledge, triadic and quadratic mergers have not been examined to date. Tribrids, in particular, are becoming increasingly common in contemporary digital works, paintings, sculptures and collages. I suggest that artists are creating these transgressive representations as a way to explore the possible changing genetic composition of the human body; corporeal melding with animal and machine; and a surpassing of the hybrid state. Admittedly, the artistic depiction of quadratic convergence is rare; however, the theoretical ideas informing this concept are gaining momentum. All ‘matter’ is increasingly regarded as interrelated today, with common origins (Haraway, 2000). These ideas are addressed with reference to the lone quadbrid included in this study: Heidi Taillefer’s *Venus Envy* (Image 72, p. 322).

Overall, there is a lack of awareness and examination of cyborg art as a concept. I am unaware of any theorist that has, to date, explored the quantity, diversity and quality of cyborg artworks which exist today. Cyborg art therefore has little presence in academic theorising, nor as a collection shown in museums and galleries or included in books, films, television shows, or via the internet. One of the reasons why cyborg art may be under-examined, under-recognised and therefore undervalued today is due to the way several writers who focus on cyborg themes and cyborg theory do not seem to be aware of the full range of cyborg performances, paintings and sculptures which exist. For instance, in 1996, Claudia Springer stated that “The figure of the cyborg – part human and part machine – is now common in fiction, films, television, comic books, magazines, computer games, and video games and can also be found in the works of scientists and contemporary cultural theorists” (1996, p. 18). Springer excludes ‘art’ from this list. Two years later, Adam Bostic wrote that “Cyborg

narrativity emerges as a matrix uniting science, technology, cultural theory, popular imagery and entertainment...” (1998, p. 361). Bostic also neglects to mention art as contributing to this matrix. In 2000, Judith Squires suggested that “Cyborgs are becoming pretty ubiquitous. Our films, popular fictions and theoretical writings are littered with them” (2000, p. 360). A year later, Elaine Graham surmised that the cyborg has become a key figure depicted in “comics, films and novels” (2001, p. 242). In 2004, Judy Wajcman wrote, “Indeed, so ubiquitous is the cyborg figure in popular culture, science fiction books and films, and academic writing that – perhaps, appropriately – it has taken on a life of its own...” (2004, p. 93). These theorists also omit art from their ‘cyborg setting’ lists. I address this gap in the literature by analysing 72 artworks created by 54 artists over the past 100 years, to clearly show that cyborg art exists as an art theme and focus, and has symbolic function today.

Finally, I suggest that the differing ways artists and commentators have used, and continue to use, the terminology ‘cyborg art’ has not been adequately addressed to date. Cyborg art can also be linked to concepts and artistic ventures which do not signify body-technology configurations. For instance, theorists and artists such as Elizabeth Menon (2004), Guido Alvarez (2008), and Joergen Bork (n.d.), use the term cyborg art in a broad manner, with reference to digital applications. As an example, Alvarez (2008), who is an American media artist and ‘hyper-scholar’, has developed a novel interdisciplinary multimedia book entitled *Cyborg Art: Génesis* (2008). Alvarez uses and explores hybrid media techniques in this book, merging poetry, illustration, fine art and photography, to create his eclectic vision of what he calls typopetry. As such, writers and artists use the term “cyborg” interchangeably with the terms “media/digital/virtual” to signify media processes and outcomes. However, I suggest that using the phrase ‘cyborg art’ to define media technology can cause confusion, as I feel this form of art is based more on using technology as a tool to create something external to the body, rather than being suggestive of corporeal interface. I make my stance clear on this issue by identifying that cyborg art, in my definition, is an artistic focus which represents the changing form and function of the human body as a result of its increased corporeal integration with technology.

To conclude, this introductory chapter has provided a theoretical foundation for the following chapters. I have outlined how my foundational theorists explore the increasing integration and interface between the human body and technology, its possible impacts, and the way this merger is visually represented. I have identified how the cyborg metaphor has been presented and deployed within theory, and how the concepts of “the cyborg body” and “art and aesthetics” were combined, in order to tangibly define and acknowledge the phenomenon of corporeal human-technology interface art, or cyborg art. I also demonstrated how Haraway’s, González’s, Gray’s, Volkart’s, and Kuni’s ideas are in many ways interwoven, in a shared quest to comprehend how technology is changing us, and how this is represented in art. Additionally, I discussed the analytical gaps which I perceive exist within literature concerning cyborgology and cyborg art. Before I present an overview of my research methodology and the research findings, I introduce and consider the key research fields and theoretical perspectives which form the underlying infrastructure for this research project, each also linked to the foundational theorists’ key ideas.

Chapter Two

Research Fields and Theoretical Perspectives, and a Review of Public Responses to Art and Technology

The research fields and theoretical perspectives introduced in this chapter constitute the context and the underpinning framework supporting the examination and analysis of cyborg art. Technoscience is the field of research and development that combines various technologies with scientific endeavours and its effects, while visual culture is the field of research that examines the abundance and diversity of art and imagery prevalent in society today. Critical postmodern theory serves as the sociological perspective, with its allied perspective of cyberfeminism. Critical postmodernism is positioned mid-way between modern and postmodern ideals, and is thus ideally suited to analysing the politically-charged yet irreverent cyborg concept. Hermeneutics serves as the analytical/interpretive perspective, and focuses on elucidation and understanding of experienced and observed phenomena.

These research fields and perspectives are part of several paradigmatic ‘turns’ and cultural ‘shifts’, which have transpired since the mid-twentieth century, which is around the time the cyborg concept was developed. The *Changing Paradigms Table* (Figure 4), included on the following page, presents these interlocking turns and cultural shifts in a summarised format. Steve Fuller (2006) refers to technoscience as a paradigm turn in itself, while Best and Kellner (2001) discuss the posthuman turn, which refers to transforming humanity as a broad phenomenon. Visual culture is a component of the pictorial turn (Mitchell, 1994) or visual turn (Jenks, 1995), which is prevalent under postmodernism and the media/digital age. Critical postmodern theory, as its name suggests, is a dimension of the postmodern turn (Best & Kellner, 1997); while hermeneutics constitutes a part of the interpretive or hermeneutic turn (Bohman, Hiley, & Shusterman, 1991; Hoy, 1993). ‘Turns’ and ‘shifts’ relating to the cyborg, ontology, and corporeality are also included in the following table.

Paradigm Turns and Cultural Shifts Within Cyborg Art's Fields and Perspectives		
Research Fields and Perspectives	Mid to Late-Twentieth Century 'Turns': Theorists	Corresponding Cultural 'Shifts': Premise
Research Fields Human-Technology Merger Research Field: 1. <i>Technoscience</i> <i>Posthumanism</i> 2. Interdisciplinary Visual Studies Research Field: <i>Visual Culture</i>	 <i>Technoscientific Turn</i> (Fuller, 2006) <i>Posthuman Turn</i> (Best & Kellner, 2001) <i>Pictorial or Visual Turn</i> (Jenks, 1995; Mitchell, 1994)	 Shift from the machine to data and biotechnology Shift from human ontology to posthuman ontology Shift from a focus on written text and verbal dialogue to the visual
Theoretical Perspectives 1. Sociological Perspective: <i>Critical Postmodern Theory</i> 2. Analytical/Interpretive Perspective: <i>Hermeneutics</i>	 <i>Postmodern Turn</i> (Best & Kellner, 1997) <i>Interpretive or Hermeneutic Turn</i> (Bohman, Hiley & Shusterman, 1991; Hoy, 1993)	 Shift from modernism to postmodernism Shift from a focus on evaluation and judgment to interpretation and perspectives
Key theoretical premises embedded within the research fields and perspectives		
Ontology	<i>Ontological Turn</i> (Barnett, 2004)	Shift from a focus on epistemology to ontology
Cyborg	<i>Cyborg Turn</i> (Warner, 2000)	Shift from a focus on the organic human body to the organic-inorganic cyborg
Body	<i>Corporeal Turn</i> (Sheets-Johnstone, 1992; Tambornino, 2002)	Shift from a focus on the mind to the body

Figure 4. *Changing Paradigms Table*. The paradigmatic turns and cultural shifts forming the foundation and infrastructure for the cyborg art analysis.

A review of empirical research focusing on public responses to art and technology is also included in this chapter. The surveys presented in this final section focus on art and technology separately, as to my knowledge, there has yet to emerge any research which centres specifically on responses and attitudes towards visual representations of body and technology integration (other than the present study). Nevertheless, this review offers insight into the way members of the general public feel about art and technology. Biotechnology is the most frequently surveyed form of technology; as such, it is the focus of the review. This is due to its unknown and seemingly perilous overtones, far-reaching consequences, and economic implications (Bowring, 2003).

I embed this study within the discipline and perspective of interpretive sociology, focusing on cyborg theory and representation, and ontological and sociological inquiry. Interpretive sociology focuses on how people make meaning in their worlds, and how meaning is maintained within social systems and structures. Interpretive sociology has its roots in hermeneutics, which is the reading or interpretation of texts or objects in order to uncover embedded meanings (Alexander, 2003). Ontology is the study, understanding, or theory of being (Heim, 1993), or the characteristics of reality (Harvey, 1992); how human beings exist (or are perceived to exist) within their defined epoch. The challenge of an interpretive investigation such as this is to examine and understand not only how people's ideas and thoughts concerning their own ontological being are formed and exist, but also to attain a peripheral or etic vision in order to fully explore changing ontology from a societal perspective (Heim, 1993). I achieve this by merging the empirical research findings with cultural theorists' and writers' premises on human-technology integration – both broadly, with a focus on humanity, and specifically, with a focus on the techno-body.

This study therefore constitutes part of the “growing collection of work concerned with putting the body back into sociology” (Shilling, 2003, p. 17), by showing how the body is affected by technological interface, and how this in turn affects human existence. David Bell (2001) states that bodies are now important sites of control, power and signification situated in interlocking social systems, including historical,

geographical and cultural (and I would add technological and economic). The body provides a tangible base on which to construct a sense of self or selves, as opposed to relying on social and cultural dimensions such as religion and heritage (Shilling, 2003). The body is a visible surface; therefore, shifting perspectives can be visually experienced. Simon Williams and Gillian Bendelow suggest that the unity or marriage existing between art and sociological realms potentially provides “a fruitful alliance, one of particular relevance to newly evolving debates on the relationship between body and society” (1998, p. 189).

Technoscience

Technoscience is the merger and fusion of technology and science-based research and is firmly embedded within our present Western epoch, or what Steve Dixon calls our “techno-zeitgeist” (2004, p. 22). These developments include artificial limbs, kidneys and bones, joints such as hips, knees, elbows and wrists, and synthetic organs, hearts, and valves (Brooks, 2002; Perkowitz, 2004). Genetic engineering, assisted reproductive technologies, pre-implantation genetic diagnosis, stem cell research (Genome, 2008; Sandel, 2007), and telematic technologies such as telepresence, virtual reality (Ascott, 2003; Grau, 2003), biotelematic implants (Kac, 2005; Warwick, 2002), and tele/video-surgery and tele-medicine (Thacker, 2000), are also under continuous development and refinement. Nanotechnology and technologies such as cryonics, external gestation, cloning, and the creation of transgenic entities are also in various stages of development in the new millennium (Best & Kellner, 2001; Gray, 2001; Kac, 2005). Best and Kellner rightly affirm that “Recent scientific and technological breakthroughs demonstrate that the gap is being bridged between science fiction and science fact, between literary imagination and mind-boggling technoscientific realities” (2001, p. 103).

These developments are also advancing at an accelerated pace, and constitute more than just mere applications of science or technology. They are intricately woven

within cultural systems, and therefore need to be perceived *as* culture (Poster, 2002). Technology is not just artificial; it involves values and ethical concerns shaped by political and economic determinants (Murphie & Potts, 2003). Humanity is entangled with technology; each affecting the other. The escalating links between humanity and technology calls into question the immutability of boundaries between animals, machines and humans, between the artificial and the natural, and between what is thought of as born as opposed to made (Graham, 2002).

Advanced technologies also introduce more choices for people. There are enormous benefits aligned with technological integration and use, particularly regarding medical and communication technologies. However, there are also substantial intrusions and negative impacts, such as invasion of privacy (Stock, 2002), lack of public information and involvement (Beck, 1997), and the commercialisation of developments and applications (Elliot, 2005; Stock, 2002). The politics of class, ethnicity and gender are also implicitly embedded within developing technologies as the gap between those who have access to resources and those who do not is growing (Booth & Flanagan, 2002). Furthermore, in contemporary society men predominantly design and invent technologies and systems, which enables them to have more control over decisions made, as well as more power over the dissemination of knowledge gained (Gray, 2001; Wajcman, 2004).

A reawakening of Heidegger's (1977) concerns in the context of the cyborg and technoscience is therefore necessary, principally regarding bioengineering and communications technology, as these can significantly change human corporeality, society and ideology (Poster, 2002). Theorists therefore suggest there is a need to develop a new biopolitics and bioethics (Balsamo, 1995; Mizrach, n.d.; Shildrick, 1997), or cyborg ethics today (Gray, Mentor, & Figueroa-Sarriera, 1995; Haraway, 2000; Warwick, 2003). New ethical frameworks such as Gray's proposed Cyborg Bill of Rights are necessary in order to deal more adequately with the approaching and encroaching interface (2001, pp. 26-29). Best and Kellner agree that "we need to comprehend how our lives are being shaped and controlled" (2001, p. 13).

Moreover, members of society should be encouraged to contribute to discussions and debates concerning technoscientific developments, in order to ensure everyone feels responsible for what is eventually developed and pursued (Beck, 1997; Feenberg, 1995; Haraway, 2000). Theorists acknowledge that currently, designers, engineers, physicians, the military and business leaders have more control over the trajectories envisioned than democratically elected political representatives. This is due to technoscience, for the most part, existing as a profit-making enterprise (Best & Kellner, 2001; Feenberg, 1999). For this reason, it is difficult to create systems that enable unproblematic public contribution and the effective dissemination of knowledge from expert to non-expert. Nevertheless, technology should be governed, managed, and debated in the same manner as any other political and societal issue, and this is not achieved at present (Fortunati, Katz, & Riccini, 2003). The politics and ethics of technology and technoscience are discussed in Chapter Five broadly and in Chapter Seven regarding biotechnology.

Posthumanism is an underlying theoretical premise and conceptual framework relating to the technoscientific age, and is a term often used to identify how the ‘natural’ human being is surpassed both ontologically and ideologically as a result of biotechnological developments (Best & Kellner, 2001; Hayles, 1999; Mann, 2001; Murphie & Potts, 2003). Ihab Hassan, who is an American literary theorist, was one of the first to use the term posthumanism in his writings. In his 1977 essay *Prometheus as Performer: Toward a Posthumanist Culture?* he refers to posthumanism as a “dubious neologism” (1977, p. 212). His concern is that the modernist form of human consciousness is already changing, and points to humanity already on the cusp of developing into posthumans. I deploy the term posthumanism in this study as an umbrella concept denoting human transformation in general. The concept of the posthuman, and the manner in which the cyborg and the posthuman are intertwined, are examined in the final section of Chapter Four.

Lastly, cyborgology is a term used to express a focus on the embodiment of human-technology merger specifically; how the human body is changing due to its increasing

fusion with technological devices and systems (Gray, Mentor, & Figueroa-Sarriera, 1995). I note that postmodernism has been a catalyst for a renewed interest in the body, as the body is increasingly viewed as a project; adaptable, malleable, controllable, and mutable (Eagleton, 1996). The intimate interconnections we now have with machines (and animals) also encourages a radical rethinking of the body, as traditional boundaries and discrete categories are increasingly difficult to uphold (Bell, 2001). Cyborg art is a component of this rethinking as this artistic focus renders visible the effects of cyborgisation and the changing (post)human form, in order for us to see the actual and predetermined corporeal changes that technoscience can generate. Visual culture is a fitting research field in which to situate and examine cyborg representations, as cyborg art and art practices exist in both fine art and popular art realms. Nicholas Mirzoeff (1999) states that within postmodernism, there is an undisputed dominance of the image, and that our epoch can best be understood visually. I support this view, combining the body, technology and the visual together in an explorative triangle of inquiry culminating at the focal point of cyborg art.

Visual Culture

Visual culture exists as an overlap of cultural, communication and media studies, and art history, and is a relatively new interdisciplinary subject which has been gaining momentum since the 1990s. Prior to this time, art and images were studied separately, particularly as art (such as painting and sculpture) was considered high culture, and imagery (such as film, television, and gaming) considered popular culture (Schirato & Webb, 2004). Visual culture explores the links between ‘high’/fine and ‘low’/mass art; the abundance of images in our lives; and the reasons for their profusion within contemporary society. Visual culture aims to understand, interpret, and explain visual texts (Barnard, 2001; Rose, 2001a). It is to be noted that this study focuses on sculpture, painting, illustration, digital and performance art, and does not include works which have been created to sell products; although music compact disc, book and magazine cover artworks are included. The artworks selected for this study were

also largely sourced via the internet; a place which González (2003) rightly contends is increasingly becoming a new site for art presentation, viewing, and discussion.

Visual culture tends not to focus on museums and galleries as places for investigation. Rather, its interests lie more in art and imagery presented via television and computer screens, or located within environments such as the cinema, shopping malls, theme parks, and gaming halls, and on the streets (Duncum, 2001; Mirzoeff, 1999). The “ubiquity of visual culture today” includes signs, brochures, postcards, and postage stamps, in addition to art (Holloway & Beck, 2005, p. 3). Artworks and images do not exist in a vacuum; they are intimately interwoven with social events, structures and ideologies existent within culture and thus people’s daily lives (Banks, 2001). For this reason, the particular zeitgeist of an era has significant impacts on both the creation of an artwork and the subsequent interpretations which are generated (Beatson & Beatson, 1994). As such, postmodernism is considered an integral and important component of this study, and a context for examining the cyborg artworks and the research participants’ responses.

Artworks and images remain powerful elements of current society as their visual aesthetics can induce both joy and cause offence. Art represents manifestations of our fears, ethical and moral attitudes, jealousies, insecurities and social concerns (Freedberg, 1989; Mitchell, 2005). Art historians, critics, and visual culture theorists, have found that many people living in Western society have an overwhelmingly paradoxical attitude towards art and images (Novitz, 1992), oscillating between feeling pleasure and fear, belief and distrust, and devotion and scepticism (Garoian & Gaudelius, 2001; Jenks, 1995; Mitchell, 2005). As David Freedberg evocatively contends, “People are sexually aroused by pictures and sculptures; they break pictures and sculptures; they mutilate them, kiss them, cry before them, and go on journeys to them; they are calmed by them, stirred by them, and incited to revolt” (1989, p. 1).

David Novitz (1992) claims that many people also undervalue the role of art in our society and culture. This is because art was viewed under modernism as being

detached from everyday life. Conversely, popular art forms such as music, comic books, romance novels, videos, films, reality television programmes, and soap operas, are deemed to relate more to people's lives in tangible ways. The irony of art is that it is often considered to have no bearing on our lives, yet artworks are deemed "the bearers of our cultural heritage" (Novitz, 1992, p. 20). This study demonstrates how cyborg art is inherently linked to everyday contexts, concerns and fears, thereby having something of value to say via its chosen aesthetics. Gray argues that art should be inherently utilitarian. He writes, "I think it should have some use-value" (Gray, 2002, p. 184). Dilman Gotshalk agrees with this perspective, stating that "In a sense the functional aspect of works of art is the most fundamental of all" (1962, p. 156). Gray believes that art must challenge ideologies, by disrupting normative notions of subjectivity and identity/bodily inscriptions. Critical postmodern art (discussed presently) does this through humour and ethical engagement, enabling us to see our lives from differing perspectives and external viewpoints (Koscianski, 2003).

The art perspective of this study is therefore cognition theory or cognitivism, which claims that art is valuable and functional because it can teach us something; not in the sense of factual knowledge, but rather by providing understanding and awareness (Gaut, 2007; Graham, 2005; Young, 2001). Cognitivism centres on the way art can encourage learning and provide us with "nontrivial knowledge" (Thomson-Jones, 2005, p. 375). Art has cognitive power in that it facilitates people's understanding of their environment (Freeland, 2001), illuminating and enlightening their experiences (Novitz, 1992). Matthew Kieran adds that "Art stretches, extends and revolutionises the ways we come to see the world. It is one of the most powerful means of cultivating our perceptual capacities" (2005, p. 147). As mentioned, Heidegger (1978) was one of the first theorists to promote this approach and sentiment regarding human and technology links, believing that art could help 'save' humanity from its teleological fate of thinking in a machinic manner, and existing in a machinic state.

As such, the art premise for this study is based on an 'interested approach' as opposed to a 'disinterested approach'. An interested approach centres on the impacts of the

viewing experience, possible foreknowledge of an artist, knowledge surrounding a particular artwork, interpretation of potential messages, and the possible catalytic power of artworks. Conversely, a disinterested approach promotes the art viewing experience in a neutral and detached way, without the pursuit of foreknowledge, or the analytical investigation of possible messages (Alexander, 2003; Brand, 1998; Carroll, 1999). I draw on cyborg art as a medium for “corporeal reflection” (Sheets-Johnstone, 1992, p. 15); as a way to engage with the concept of the cyborg body.

As shown, many theorists firmly believe in the power and value of art. Nonetheless, there are also several theorists and art critics who argue against the functionality of art, believing that art has no inherent use value. Art is also often seen as a leisure pastime, an extra to a world dominated by science, technology and business ideals (Reid, 1968). The perception is that art is too trivial and too closely aligned with emotions and expression to be discussed in terms of function and political potency (Beatson & Beatson, 1994). Morris Philipson (1961) suggests that only science can represent truths/facts, while art can only express ideas, which have no significant societal importance. He argues that art “cannot offer intelligent meaning of an original kind. It cannot discover” (Philipson, 1961, p. iv).

Moreover, Donald Kuspit (2004) does not believe that artists can be facilitators of individual and social awareness or understanding. He claims that “The artist is not exactly the best person to educate us to the realities of the world nor the best person to help us endure and even overcome our suffering” (Kuspit, 2004, p. 37). Kuspit is suggesting that artists do not have the authority/legitimacy to provide us with insights, answers, or options regarding social problems. This is a perspective I disagree with. I take the view that artists have just as much facility as theorists and researchers in showing us versions and visions of our changing world, and ourselves embedded within that world. This is because artists often specifically seek to explore social and bodily issues, and they represent what they find back to us in compelling ways (Wilson, 2002). Many artists whose works are included in this study are also theorists and writers, such as Guillermo Gómez-Peña, Stahl Stenslie, Isa Gordon,

Eduardo Kac, Stelarc, and Faith Wilding. Their written work and expression thus enhances awareness of the messages and themes which are included in their artworks.

Jean Baudrillard, the controversial French postmodern theorist, also contends (on very different grounds) that contemporary art has no critical value. Baudrillard has always had an interest in art and supports art on many levels, even exhibiting his own photographic works. However, his writings from the 1980s onwards centre on the way cultural artefacts such as art are increasingly reduced to a “system of signs” (Kellner, n.d., para. 4). Baudrillard (1989) refers to himself as iconoclastic as he mistrusts art today, believing it to be derivative of politics, existing only as constructed ideology, and therefore devoid of critical function. Baudrillard argues that “Art has no critical meaning and offers no dialectical solution” (1989, p. 180). He claims that under postmodernism, hyper-real images are more ‘real’ than reality, existing only as simulacra; copies without an original (Baudrillard, 1981, 1994).

Baudrillard (1993) believes that artworks are now part of a new ‘transaesthetics’, where boundaries and distinctiveness have dissolved and are replaced by illusion and inertia. He suggests that numerous art genres can coexist together under postmodernism, inhabiting the “same culture space; only because they arouse nothing but profound indifference in us...” (Baudrillard, 1993, p. 15). Baudrillard adds that within postmodern society, soulless art can be found anywhere, not only in museums and galleries, but also in the banality of the streets. He asserts that artists and observers simply experience a “genial sharing of nullity” (Baudrillard, 2005a, p. 28), ultimately suggesting that those of us who believe in the power of art in terms of its potential function are naïve and are all being duped (Baudrillard, 2005b).

However, I suggest that Baudrillard overstates the lack of integrity in art today, and take the view that contemporary art is highly original and meaningful, as it does not centre its attention on mirroring society or signifying prevailing historical and traditional (religious) ideological symbolism. Rather, art today seeks to bring to light aspects of society which may be hidden from view, and shows us envisioned

trajectories which we may or may not be aware of, but which inevitably affects us. Art under postmodernism also breaks free from the restraints placed on it under modernism as artists today reject modernist purism and adherence to strict genre and style rules (Best & Kellner, 1997; Woods, 1999). Many of the cyborg artworks included in this study represent postmodern ideals of openness, play, plurality, transgression, irony, rebellion, ambiguity, and multiplicity. In addition, indigenous cultures and individuals situated on the margins of society can present their own unique perspectives on society via their art practices (Featherstone, 1991). This ensures that art today is a broader and less ethnocentric and Eurocentric enterprise, thereby offering society substantial cultural and social rewards.

I support the view that art is a unique form of communication as it does not require the rules of society or language to exist (Luhmann, 2000; Lyotard, 1992). Art can therefore explore dimensions of a culture which go beyond what is often determined as being acceptable, thereby igniting new ways of thinking about social issues and dilemmas. Art also arises out of the human need to create a tangible and more permanent marker of a memory. As such, it is an authentic enterprise aiming to encapsulate a thought, theory or concept in visual form (Mumford, 1960). Contemporary art is a rapprochement; a way to link technology, science and public knowledge (Wilson, 2002). However, it is to be noted that the claims concerning the power of art are difficult to prove (Foster & Blau, 1989; Gray, 2005), and I argue are rarely supported with evidence. I address this issue within Chapters Five and Eight.

The theoretical perspectives of critical postmodern theory, cyberfeminism and hermeneutics are now introduced, and are used in conjunction in this thesis to foster a greater awareness and comprehension of my overall research approach, and how I engage with the sourced empirical findings. Including a cultural or sociological perspective or paradigm – in this case critical postmodern theory – within an interpretive investigation, situates a study within a particular historical or socio-political perspective, thus heightening the levels of understanding which can be gained concerning the phenomenon under investigation (Creswell, 1998).

Critical Postmodern Theory (and Cyberfeminism)

Critical postmodern theory, also referred to as strategic or oppositional postmodernism (Lemert, 1997), does not support the apolitical sentiments of radical postmodernists such as Baudrillard (Boje, 2001). Rather, critical postmodern theory combines the positive elements of modernism, with its ideas of reason and political/social critique and understanding, with postmodern sentiments, such as a focus on perspectives, amalgamations, fluidity and non-hierarchical structures. David Boje presents his views on this perspective in his 2001 online essay, *What is Critical Postmodern Theory?* He contends that this approach combines postmodern theory, critical theory (postcolonial studies and feminism), and critical pedagogy with praxis, and is committed to enabling those who have a limited voice in society to be heard and represented. As stated, I sourced the views of laypersons in this study, as opposed to obtaining experts' perspectives. My aim was to understand how people situated away from the academic or commercial realms of body and technology integration feel about the way it is represented, in addition to discovering how they view and experience the interconnections between technology and their own lives.

Key themes of postmodernism include the collapse of master narratives, the breakdown between expert and non-expert, the celebration of many voices and perspectives, and multiple transgressed boundaries (Featherstone, 1991). Structure, order, certainty, and destructive political powers are dismissed and rejected, while principles of chaos, chance, spontaneity, experimentation, and fluid identities are embraced (Best & Kellner, 1997; Jencks, 1992; Lyon, 1994). Postmodernism emerged in the 1960s, as people increasingly began to protest against war and authoritative political power and decision-making (Best & Kellner, 1997). The cyborg concept was also created in 1960; hence, both postmodernism and the cyborg are mid-twentieth century creations and both present and examine the risks and dangers, in addition to the excitement and potential, of living in the technoscientific era (Best & Kellner, 1997). The cyborg is often referred to as the key representative

of the postmodern paradigm (Wajcman, 2004), an exemplary postmodern figure (Squires, 2000), and a fitting metaphor with which to scrutinise postmodernism.

Postmodernism followed modernism, which existed as a paradigm between the eighteenth century and the mid-twentieth century (Featherstone, 1991; Jencks, 1992). Modernism was built on a belief in reason, logic, individualism, and secular humanism. The dominant doctrine of this period was the existence of a universal 'Truth' or grand narrative and the belief that all natural and social knowledge was accessible, and when found, would lead to societal progress, human emancipation and control (Best & Kellner, 1997). Modernism asserted that there was an inherent order (and therefore 'laws') to both the natural and social worlds, and that these laws could be fully understood through continuous scientific development and knowledge accretion. However, social problems such as ethnocentrism, anthropocentrism, gender, ethnic and class domination, and a disregard for traditional cultural beliefs and practices, were also viewed as facets of modernism (Cahoone, 1996).

Postmodernism also has a dark side and is often viewed as nihilistic, hedonistic, pessimistic, superficial, rootless, apolitical and cloaked in individual cynicism and scepticism, due to dissolving societal boundaries, values and meanings (Best & Kellner, 1997). Political and economic concerns such as Third World poverty and debt, capitalism and over-consumption, ecological destruction, globalisation, war, drugs, crime, and a looming sexual crisis (HIV/AIDS), are all considered major problems of this epoch (Wilson, 1992). Theorists believe that these often interlocking social dimensions generate the nihilism that has existed in the past few decades, as many of the highest human values such as loyalty, integrity, meritocracy, and altruism have become devalued, creating apathy and despair (Best & Kellner, 1997).

Nevertheless, postmodernism is also celebrated for its eclectic, open and non-linear vision, and opposition to modernism's disempowering and hierarchical ideals. The postmodern world is looked upon as contingent, diverse and unstable, a world where many interpretations are given voice. Postmodernism respects difference and

celebrates regional and local (peripheral) cultures where heterogeneity and cultural fusions are embraced (Jencks, 1992). Under postmodernism, people of colour, colonised peoples (Harvey, 1992), and those previously considered on the margins of society coexist together, creating new social experiences (Best & Kellner, 1997). Lifestyles, genders and sexualities all converge in a pluralism of perspectives and in a bricolage of forms (Jencks, 1992). The postmodern mood also revels in irony and indeterminacy of meaning, where theory does not search for truth, but rather exists more as a form of play and exploration (Best & Kellner, 1997).

Yet, many theorists are not convinced that modernism has simply ‘ceased’. Ben Agger (2002) suggests that modernism remains our societal framework; however, the cultural changes which have recently transpired require new postmodern attitudes and perceptions. He begins his 2002 book *Postponing the Postmodern* with the claim that “We are not yet at a moment that could be called postmodernity, and may never be. Modernity is still our history, our framework. But changes in culture, commerce, and communications, such as the Internet, require certain ‘postmodern’ modes of knowing” (Agger, 2002, p. 3). Marshall Berman (1992) and Jürgen Habermas (1998) refer to modernity as an incomplete or unfinished project, while Matei Călinescu (1987), Anna Yeatman (1991), and Ihab Hassan (1996) suggest that our current epoch is a mid-way point between modernism and postmodernism. Best and Kellner (1997, 2001) agree with this premise, and suggest that we need to recognise a new mode of postmodern theory within a critical multiperspectivist transdisciplinary framework. Boje (2001) refers to this mid-way perspective as critical postmodern theory. He disputes claims that postmodernism is without ethical, moral or critical accountability, and I support this stance. Critical postmodern theorists believe that individuals living in contemporary society continue to strive for a better society and take action towards finding solutions to global and local problems, as opposed to the nihilistic sentiments that often accompany the postmodern perspective (Boje, 2001).

In relation to art, critical postmodern theorists support Gray’s (1998, 2002) views on the functionality of art, believing that art today can disrupt erosive social systems,

due to the way art can visually present “the fragmentation of society” (Koscianski, 2003, p. 4). Critical postmodern artists explore facets of the postmodern epoch which cannot be explained by rational scientific systems, and draw attention to weaknesses inherent within political, economic and social structures, thus challenging these systems. Critical postmodern art is also an ethical art practice that values the role of the viewer. Leonard Koscianski, a critical postmodern writer and artist, states in his 2003 essay *The Emergence of Critical Postmodern Art*, that “The critical postmodern artist is ethically engaged in the act of creation rather than ironically detached” (2003, p. 5). The ethical, social and ontological engagement of critical postmodern art is its praxis (Koscianski, 2003); this is also the praxis of cyborg art (Gray, 2002). I do not suggest that cyborg art can provide answers to growing societal concerns, but what it can do is to generate questions, which is its resounding strength, function and gift.

Koscianski contends that “critical postmodern art is often more highly crafted than postmodern works, and often more accessible and communicative” (2003, p. 4). This is because this form of artistic expression takes seriously – even through humour – facets of our transforming epoch. Conceptual art is a specific critical postmodern art practice that focuses on presenting ideas to the viewer in unfinished and interactive formats, as opposed to a focus on modernist elements of object, texture and colour. Conceptual art is frequently performance-based and rejects the elevated artistic position, instead allowing the audience to participate in, direct, and/or complete the performance (Lash, 2002). This study includes works by conceptual artists Guillermo Gómez-Peña, Stelarc, Stahl Stenslie, Marcel.lí Antúnez Roca, and Eduardo Kac.

Furthermore, critical postmodern art dismisses the importance of beauty in representation (Koscianski, 2003). This is also Gray’s perspective; as he contends, “I think art should do more than be beautiful. It should act on us” (2002, p. 184). Many of the artworks included in this study are therefore not considered aesthetically appealing as this is not the work’s primary function. Today, the notion of the aesthetic is also linked more to the sublime, which is “something that disrupts the system of representation, rather than the beautiful” (Choi, 2004, p. 12).

Lastly, I note that Haraway was one of the first theorists to draw attention to modernism's remaining influence and importance. For instance, in her *Manifesto*, she appears caught between the praxis of modernism – the desire to implement change for the betterment of society – and the sentiments of postmodernism – the promotion and acceptance of multiple perspectives, contradictory standpoints and the concept of, and preference for, play over purpose. As Graham states, Haraway deploys “postmodern irony and anti-foundationalism while retaining a modernist's sensibility that fragments of emancipatory reason can still be retrieved” (2002, p. 206).

The ideas Haraway explores in her *Cyborg Manifesto* have also helped to form the perspective of cyberfeminism (Bell, 2000; Volkart, 2004), which is closely allied with critical or strategic postmodernism. Since the *Manifesto*'s publication in 1985, cyberfeminism has developed into a well-supported theoretical perspective focusing on debates concerned with power, identity and representation, with a corporeal focus, as many new technologies relate to, and affect women's bodies directly (Hawthorne, 1999; Schueller, 2005). Cyberfeminism is derived from cultural and technology studies, philosophy, science and art (Cutler, 2001). Rosi Braidotti (1996) adds that science fiction and cyberpunk imagery – both central to popular forms of cyborg art – are an integral aspect of this perspective, as these genres seek non-nostalgic solutions to current social quandaries. Haraway (1991a), Volkart (2004) and others believe that women can find pleasure in both the idea and the actuality of the cyborg body, by experimenting with cyborgian technologies, and cyborg-inspired metaphors.

As discussed, Haraway (1991a) appropriates Clynes' and Kline's male cyborg to create an empowering female cyborg which has the potential to act as a symbol and icon for propelling women forward in the technological age. However, a number of feminist writers such as Balsamo (2000), Springer (1998), Squires (2000), and Wajcman (2004) question Haraway's claim that the cyborg can serve as an empowering icon for women and girls. This is due to the way female cyborgs have in the past been represented in print or image, and the incongruity which exists between a mythical cyborg and the concrete lives of women. These theorists argue that

contemporary images of female cyborgs, or women who are shown as interfaced with technology in some way, are already ‘contaminated’ as they have historically been fashioned in our cultural imagination as sexualised, passive and subjugated, or as lethal, seductive killers. I address the validity of these concerns in Chapter Six.

Additionally, Squires (2000) suggests that the cyborg has become a philosophically entrenched symbol and an overused discussion concept rather than an icon for tangible societal change. She emphasises that “whilst there *may* be potential for an alliance between cyborg imagery and a materialist-feminism, this potential has been largely submerged beneath a sea of technophobic cyberdroll” (Squires, 2000, p. 360; emphasis in original). Furthermore, Cook (2004) claims that Haraway’s utopian fantasy merely duplicates historical ideas of feminist liberation, as her girl cyborg is promoted as a saviour-figure that saves women and indeed all humanity from the brink of destruction. She states that the cyborg is “an undervaluation of the influential power of the materially embodied experience, which is shaped by deeply embedded socio-cultural notions of gender” (Cook, 2004, p. 9). However, I suggest that cyborg art can illuminate new concepts pertaining to women’s actual experiences today, in addition to addressing shifting ideologies of the female body. I utilise participants’ responses to, and interpretations of, a selection of cyborg artworks to present an argument on why I believe the cyborg concept remains important for feminism today.

In the following section I discuss hermeneutics, as I adopt this perspective in order to engage with the research participants’ responses sourced in this study. Janice Rushing and Thomas Frenzt (1995) identify that a bridge exists between hermeneutics and postmodernism. They suggest that “postmodern thought tends toward hermeneutics rather than science, for it questions the stability of truth and acknowledges the impact of the subject on the objects it contemplates” (Rushing & Frenzt, 1995, p. 20). Richard Shusterman goes so far as to claim that “Our age is even more hermeneutic than it is postmodern...” (1991, p. 102). Haraway (1991a) contends that postmodern theory and ontological inquiry may appear to be ironic allies but in fact work together to bring about awareness, understanding, and change within the era of technoscience.

Hermeneutics

Hermeneutics began as an investigation into the original meanings of historical religious texts. The term has its origins in the Greek word *hermēneutikós*, which means explaining or clarifying (Bauman, 1978). The interpretive or hermeneutic turn became evident in the latter half of the twentieth century as theorists increasingly realised and addressed the importance and the nature of all acts of interpretation (Hoy, 1993). Hermeneutic science in contemporary society involves the art of reading a person, text, image, object or event, in order for the intentions and meanings behind the appearances to be understood in more depth, and to understand how people and ‘things’ are interwoven and embedded within societies (Bleicher, 1980; Caputo, 1987; Moustakas, 1994). The overall premise of this study is that interpretation seeks to understand and appreciate a phenomenon (in this case the artistic depiction of body and technology interface), to examine its meanings, and to improve on the current level of understanding (Guignon, 2002). Best and Kellner affirm that “Theory and interpretation are necessary to the extent that the world is not completely and immediately transparent to consciousness” (2001, p. 13).

One of the most fundamental concerns relating to hermeneutics is the problem of what makes one interpretation more valid than another (Guignon, 2002; Hoy, 1993). Zygmunt Bauman (1978) claims that even if a multitude of factors have been taken into account there can never be an exact interpretation of an artwork; interpretation involves possibilities, not facts. Hence, stating that an interpretation is either right or wrong is not considered appropriate terminology (Freeland, 2001). I also reject the premise that an interpretation can be considered correct or incorrect. For this reason, emphasis is placed on grouping participants’ responses to the cyborg artworks in order to show which interpretations were most often shared. Responses which were idiosyncratic and thus not shared by other interview participants are also mentioned, where deemed pertinent, as these are considered to add to the level of understanding which can be gained. Moreover, I do not evaluate or judge the sourced responses;

rather I use the research participants' ideas to generate greater comprehension of cyborg art, and its related meanings. It was beyond the scope of this study to analyse the responses obtained in the interviews in relation to the participants' age, gender, or ethnicity, or the strategies the interviewees employed in order to answer the questions presented to them. However, I make suggestions in the Future Visions section of the Conclusion that further research could be conducted focusing on these elements.

Despite the recently declared interpretive turn and interest in hermeneutic inquiry, the perspective and application of interpretation does have its detractors. Susan Sontag (in particular), Justin Paton and Robert Stecker have all critiqued interpretation for its 'meaninglessness'. Sontag claims that "Interpretation is the revenge of the intellect upon art" (1964, p. 4). She believes interpretation is merely translation, which is largely reactionary and stifling. Sontag supports a phenomenological approach to art, where a "really accurate, sharp, loving description of the appearance of a work of art" is the most important component of the art viewing experience (1964, p. 7). Sontag feels interpretation depletes the world of sensuousness and experience by setting up a shadow world of 'meanings'. Stecker agrees, believing there is no such thing as "the meaning of a work", or what he calls "work meaning" (2003, p. 38).

I disagree with Sontag's and Stecker's sentiments, and argue that meanings are how we make sense of the world and how we are embedded within our worlds. Meanings are temporal, fleeting and conflicting, but they are a beginning to understanding (Heidegger, 1962). However, I do agree with Sontag that a phenomenological approach is important in understanding and exploring art. I therefore often asked my interview participants what they felt an artwork may be identifying, and also how they would describe its key features. The interview guide and key interviewing strategies are outlined in the next chapter. Pertaining to the general discussion of several artworks, I also describe an artwork's key features, whilst also interpreting and analysing its potential messages. Maurice Natanson, who centres his interests on phenomenological interpretation, affirms that "attending to the phenomena in both descriptive and analytic terms is the proper task of the investigator" (1973, p. 25).

Sontag (1964) also surmises that by reducing a work of art to its content and not form, and then interpreting that content, the artwork is being tamed. Paton (2005) agrees, suggesting that art should not be subjected to a trial-by-interpretation, as this depletes an artwork of mystery and scope. Sontag (1964) goes on to argue that for art to avoid interpretation today, it must become a parody, abstract, decorative, or non-art entirely. She suggests that many artists deliberately present their ideas in ways which reduce the chance of their work being interpreted. However, I do not believe this is the case; rather I support a critical postmodern view that many artists today use postmodern techniques such as parody and bricolage to enhance critical insight and interpretation; to push for greater viewer attention and questioning. Koscianski (2003) affirms that critical postmodern artists present the dark side of postmodernism in various critical, ironic, rebellious and comical ways, in order to communicate disempowering societal dimensions in a non-elitist manner and to encourage viewers to delve deeper into an artwork, and this is the overall perspective of this study.

The following concluding section of this chapter provides a discussion on how ‘art’ and ‘technology’ are viewed by the public, in order to offer background understanding before the study’s methodology and artworks are introduced. This section discusses surveys carried out on art and technology as separate constructs. As noted, to my knowledge there have been no surveys conducted which focus on body-technology integration, or on responses to imagery which depicts this phenomenon.

Public Responses to Art and Technology

One of the main findings to emerge from surveys conducted on art is that art is overall deemed culturally and socially important. Creative New Zealand’s Art Survey conducted by Colmar Brunton in 2005 demonstrates strong support for the importance of art, and for the contribution the arts make towards New Zealand’s national identity, society and economy. A sample of 1,375 adults (aged 15 years and over) were interviewed either by telephone or in a face-to-face setting by Colmar

Brunton's researchers. Just over 87 percent of those interviewed stated that they were involved with the arts as attendees and/or participants, and 73 percent agreed that their communities would be culturally poorer without the arts. Forty-one percent of the New Zealanders interviewed also stated that they could not 'live without the arts' (Creative New Zealand, 2006), which is a poignant finding.

A North American public opinion survey carried out in Portland Oregon in 2005 on art and culture supports Creative New Zealand's findings. A total of 405 questionnaires were completed via telephone research. The survey findings included that nine out of ten people (89 percent) felt that 'the arts' and 'culture' were important to the growth and development of their communities. The survey also showed that nearly all of the participants (95 percent) agreed that art and culture were essential components of a child's education (Riley Research Associates, 2005). However, missing from both these surveys were questions such as: *Has viewing an artwork ever impacted on your life?* or *Has an artwork ever changed your perspectives?* This type of research is important in order to explore hermeneutically the impact of art, and would therefore provide more conclusive evidence on the power of art, which Arnold Foster and Judith Blau (1989) rightly suggest has not been adequately established, and is ultimately difficult to ascertain in general. As such, I include this type of questioning within this study and discuss the findings in Chapter Five.

Overall, there are limited numbers of surveys carried out on corporeal technologies, excluding those specifically addressing biotechnology. Topics such as genetic engineering have captured the imagination and interest of the public, and researchers are responding to a public demand to know more about developments and decisions made in this area. In 2002, Network Communications was commissioned by ERMA (Environmental Risk Management Authority) New Zealand to undertake research to find out how many past surveys have been conducted on New Zealander's (and Australian's) attitudes towards and/or awareness of GMOs (Genetically Modified Organisms). The researchers found that 17 significant research studies had been conducted from 1990 to 2002. The findings revealed that in general there was a

“nervousness” regarding the unknown aspect of GM, and respondents were overall more likely to feel more favourably towards GM medicines and medical research, than they were towards GM in foods (Network Communications, 2002).

In 2000, a report was conducted by Sally Mackay, Rosemary Nicolson and Sandy Brinsdon for the Independent Biotechnology Advisory Council of New Zealand, in order to examine key concerns relating to biotechnologies. The researchers found that many people felt there was a role for specific applications of biotechnology, but that developments within this sector were moving too fast. Respondents felt that corporations were driving much of the research, and they also felt that philosophical and ethical issues needed to be addressed through wider public debate (Network Communications, 2002). I discuss these concerns in Chapters Five and Seven, alongside empirical data sourced on these issues. In addition, findings from Melissa Harsant’s and Emanuel Kalafatelis’ survey, conducted for the New Zealand Ministry for the Environment in November 2001, show that 43 percent of their respondents admitted to being uninformed about Genetic Modification (GM), and 80 percent wanted more information on this topic (Network Communications, 2002). The issue of “being adequately informed” is also addressed in this study. An Australian study conducted by Millward Brown for Biotechnology Australia in 2001 found similar results. One thousand and one people participated in a telephone survey and many felt that biotechnology was at times “out of control” because of its fast pace of development. Other major findings included that gene technology was perceived as risky for society but morally acceptable, and there was a lack of general understanding related to biotechnology overall (Network Communications, 2002).

The New Zealand Ministry of Research, Science and Technology (MoRST) conducted the timely study *Involving the Public in Science and Technology Decision-making: A Review of National and International Initiatives* in 2003, in order to address concerns relating to biotechnology. A key objective was ensuring Māori – who are the indigenous peoples of New Zealand – participated more widely in public debate. The study was concurrent to an international focus on “science-society

dialogue” that calls for more “participatory democratic participation” (Cross Case Study Learning Group, 2003, p. 3). This is derivative of a global resurgence of ethnic rights issues for indigenous peoples. The initiatives included the implementation of focus groups, public meetings and Hui (Māori community gatherings) in regions dispersed throughout New Zealand, and the availability of online participation mechanisms. These initiatives are endorsed by The New Zealand Bioethics Council, which supports the view that decisions cannot be left to governments, businesses, and science or technology researchers. They rightly acknowledge that technology impacts on all of us – therefore, we should all have a say regarding decisions and resolutions made (Cross Case Study Learning Group, 2003, p. 9).

The extensive and collaborative New Zealand-based research project *Constructive Conversations/Korero Whakaaetanga: Biotechnologies, Dialogue, and Informed Decision-making* (2003-2008), is one of the most recent surveys conducted on obtaining people’s views on biotechnologies. The project’s Māori name, “Korero Whakaaetanga”, can be translated to mean “discussion which brings agreement” (Scott & Du Plessis, 2008, p. 106). As the inclusion of Māori terminology suggests, this study surveyed Māori participants – nine of the 25 focus groups were conducted with Māori participants – in order to find out how they felt about genetic testing and biobanking. The aim of the project was to engage people in debating cultural, ethical, spiritual and social aspects of genetic testing, in order to explore avenues which can facilitate and enhance public participation in decision-making, ultimately improving the way risk assessment decisions are carried out (Scott & Du Plessis, 2008).

Key findings to emerge from the 25 focus groups include that biotechnologies such as genetic testing are viewed as acceptable, if they can help the health and well-being of family members (or whānau, which is the Māori name for extended family members), and that the positive outcomes of knowing about a genetic disorder or concern were carefully balanced against the negative consequences of genetic testing. In addition, most people felt that a person’s genetic makeup should not be used against them in any way, and that ownership of genes was seen as unacceptable. The participants also

stated that they wanted to be more involved with decision-making processes and consulted more directly regarding medical procedures. Many also felt that a person had the right to choose whether they wanted to be tested, and that testing should be affordable for everyone (Constructive Conversations, 2005). The findings from the surveys discussed in this section indicate that members of the public want to find out more about current biotechnologies, be able to discuss related issues in more depth, and to be able to contribute to decisions made. My participants were equally willing to share their views on biotechnology, prosthetics and communications technologies, and the impacts these have on our lives today and potentially in the future.

This chapter has provided an overview of the perspectives and approaches I draw on as foundations and infrastructure for this research project. The *Changing Paradigms Table* (Figure 4, p. 48) was included at the beginning of this chapter in order to identify how technoscience, visual culture, postmodernism and hermeneutics are all considered mid to late-twentieth century paradigmatic turns. I have shown how these perspectives link together, forming a cohesive framework for my investigation. A resurgence of interest in ontological inquiry; a refocusing on the body and embodiment; and a growing awareness of the emerging cyborg body, are issues and perspectives which have also gained momentum in the past few decades, as shown in Figure 4. John Tambornino affirms that “The corporeal turn is also a *return of corporeality*, of aspects of embodiment that have been submerged in much of contemporary political theory” (2002, p. 135; emphasis in original). Lastly, I presented a discussion of recent surveys conducted on the topics of art and biotechnology in this chapter, thereby providing an indication of the way people in general feel about these issues before my own findings are introduced and discussed.

Chapter Three

Methodology and Data Analysis

Multimethod research was adopted as the methodology in this study, as I used both qualitative and quantitative research methods in order to source the empirical data. Three different methods were employed: semi-structured interviews, artists' email questionnaires, and questionnaires distributed by hand. The sample used in each of the three methods constitutes a non-probability sample, as the research participants were not selected at random; they were, for the most part, approached face-to-face or contacted via email and asked whether they would like to participate in the study. The methodology employed for locating the artworks, was simply – over a 12-month period – to methodically and systematically trawl through hard-copy books and articles at the University of Waikato library or in book stores, and to sift through newspapers, internet search engines, and art-based websites. I also searched for, or found whilst researching, several additional artworks during the last two and a half years of this study. I note that there have been, to date, few articles written on cyborg art; therefore time was the key factor in sourcing the artworks. I began with 12 art images in my initial application for PhD funding; this grew to 50 in my thesis proposal, and finally 72 were selected to be part of the final collection.

Multimethod Research

Multimethod research is also referred to as mixed-strategy or mixed-method research, and enables phenomena to be examined from various angles, making it possible for diverse data to be obtained (Hammersley, 1995; Tashakkori & Teddlie, 1998). Research can therefore be enhanced as the findings obtained from one method can be compared and cross-checked against findings from another, potentially overcoming each method's weaknesses and limitations. Using differing methods together in a

study such as this is referred to as *between-method triangulation* (Denzin, 1978). Triangulation describes the way each method can provide a different perspective or lens to the research phenomenon (Bryman, 1995; Greene, 2007). Bruce Berg refers to this as accessing “multiple lines of sight” (1995, p. 5). As such, multimethod research can provide a broader understanding of a social question or problem, and can guard against, and correct for, methodological biases (Bryman, 1995; Greene, 2007).

This study uses a *dominant-less dominant design* (Tashakkori & Teddlie, 1998) as the research methods employed are positioned as hierarchical. The qualitative interview is the principal method, the qualitative artists’ email questionnaire constitutes a subset of this method, and the quantitative questionnaire counts as the secondary auxiliary method. The supplementary hand-distributed questionnaire was implemented in order to provide support for the qualitative findings (Brannen, 1995); to help fill any gaps that the findings may produce; and to facilitate understanding and explanation of any curious data (de Vaus, 2002; Robson, 1993). The findings from each method used in this study converge to form common themes for data analysis, which assists in the development of a grounded theory of cyborg art. Converging findings from each method can therefore be seen as “mutually reinforcing” (Bryman, 2001, p. 447). Combining interviews and questionnaires together in an investigation enables the accessing of data not possible using one technique alone (Forcese & Richer, 1973).

This study is founded on inductive research, and hence theory construction, due to the strength and dominance of the qualitative research design. However, using both qualitative and quantitative research methods in one investigation suggests that both inductive (theory building) and deductive (theory testing) research strategies are adopted, which can be considered discordant. I resolve this dilemma by using only a method associated with deductive investigation, the quantitative questionnaire, and do not draw on the underpinning principle relating to this form of numerical-based research method – positivism. Further conflict arising from the incorporation of both qualitative and quantitative methods into one study is that qualitative research focuses on how things happen, and is therefore explorative, whereas quantitative research

focuses on why things happen and is therefore explanative (de Vaus, 2002). However, sociology ultimately seeks to obtain more than a collection of descriptive and interpreted facts; therefore most qualitative studies provide some type of explanatory analysis in order to account for the described phenomena (Forcese & Richer, 1973). Cynthia Freeland (2001) agrees in relation to the investigation of an artwork specifically, that to interpret is to attempt to explore and explain its meaning.

Additional concerns regarding multimethod research include that it can be considered unconstructive if not approached with diligence; investigative and analytical time can be increased due to the implementation of two or more methods; and tensions may be added to the study as findings from differing methods may yield conflicting results, which can place the validity of the findings from each method in doubt. Using diverse methods can also make problems appear more complex, leading to analytical uncertainties (Brewer & Hunter, 1989). However, in general, multimethod research is becoming more common as researchers increasingly view mixing various methods as complementary rather than antagonistic. They feel, as I do, that combining qualitative and quantitative research can yield more diverse findings. Convergent findings may also be accepted with greater confidence than findings from single method studies due to the ability to compare data (Thomas, 2003).

Semi-structured In-depth Interview Design

Thirty-six in-depth interviews were conducted, either in library study rooms or in my office, during the months of March and April 2007, at the University of Waikato, Hamilton, New Zealand. Thirty-four interviews, with 20 male participants and 14 female participants, were eventually transcribed. One interview was not transcribed as the dialogue was largely inaudible due to language and enunciation problems (the interview was conducted with a foreign student who had recently arrived in New Zealand). A second interview could not be transcribed as both the primary tape recording and the backup tape recording failed. The 34 participants' names, ages and

self-defined ethnicity are presented in Appendix A (p. 419). The only reference made to the participants' ethnicity in the thesis relates to specific responses offered by Māori interviewees, in order to note their views on certain topics discussed.

The interviews were divided equally into two streams with 18 participants in each. The first stream viewed at the most 22 art images, and the interviewees were asked approximately 80 predetermined questions, as shown in Appendix B (p. 421). The second stream viewed at the most 29 art images, and the interviewees were asked around 84 questions, as shown in Appendix C (p. 431). Thirty questions were the same in each interview stream. The objective for the interviews was to obtain responses to, and interpretations of, a selection of cyborg images, in addition to gaining interviewees' thoughts on the concept of the cyborg, general questions relating to the themes the artworks presented, and questions relating to social concerns and changing human existence in relation to technology.

Prospective participants for the interviews were sourced via advertising and by face-to-face requests. A4 colour advertisements were placed on 15 noticeboards and windows around the University of Waikato Hamilton campus. An advertisement was also placed in the University of Waikato student magazine *Nexus*; Issue 3, March 12, 2007. I approached students at various times during March 2007, asking if they would consider taking part in the study. Pamphlets containing information on the study were handed out to all those who showed an interest in the topic. A contact number was also requested from interested students for communication purposes.

The interview participants constitute a non-homogeneous convenience sample as they included students studying at the University of Waikato, and members of the public who heard about the study from prospective participants, or from individuals who had already been interviewed, which is referred to as snowball sampling. A specific requirement of interview participation was that participants be aged 18 years or over. This is due to the graphic nature of some of the artworks, where death, sexual organs and transgenic elements are explicitly depicted. The graphic nature of the imagery

was clearly stated on the advertisements, pamphlets and on the consent form to minimise any potential offence experienced by the participants.

Just prior to the commencement of each interview, a consent form was presented to the participant and time was allocated for the interviewee to raise any questions or concerns relating to the study. The consent form provided general information relating to the study and outlined ethical issues regarding participation, my obligations as the researcher, and my contact details. I mentioned in the form that the interview would be recorded, and that participation would be anonymous, therefore the choice of using a pseudonym was available. Furthermore, an option was provided on the form whereby participants could request to see the interview transcript and have copies of the thesis sections where their contributions feature sent to them on completion. An interview guide was prepared, and food and liquid refreshments were also provided. The interviews were tape-recorded using two devices in order to provide a backup recording if the primary recording failed. The intended duration of the interviews was approximately 90 minutes. Two interviews were also piloted, and a brief evaluation of these pilot interviews is outlined in Chapter Eight.

Presentation of Artworks During Interviews

Each artwork was shown to the interview participants separately in colour hard copy A4 photo paper, apart from one instance per interview stream where three images were presented together. In all cases the artist's name accompanied an artwork, and where known and applicable, the title, the date the artwork was created, materials used, the size of the artwork, its location, and photo credits, were also mentioned, as these are considered important elements of the presentation of a reproduced art image, and are also deemed important regarding the overall viewing and interpretive process (Duncum, 2001; Schirato & Webb, 2004; Wittkower, 1977).

The decision was made to present the artworks in print form as opposed to electronically as this enabled the interview participants to control their own viewing

process. They could tangibly touch the paper, view the images side by side, view them closer to note any details more directly, or discard any images rapidly if they deemed them to be offensive. The presentation of the artworks in print form was a successful strategy as the interviewees did indeed carry out many of the viewing approaches I had anticipated, such as handling the printed copies themselves.

Due to the design of this study, no artworks were viewed first-hand; instead, they were viewed either second-hand, where an electronic artwork has been printed in hard copy; third-hand, where an electronic artwork has been photographed and printed in hard copy; fourth-hand, where a physical artwork has been photographed, then presented on the internet electronically and printed in hard copy, or finally fifth-hand, where an artwork has been photographed, presented in hard copy in a book or journal article, electronically scanned, and then printed in hard copy for viewing. For this reason, and because most of the artworks were sourced online, I use the term Image instead of Plate or Figure adjacent to each artwork's title and corresponding details. The term image also corresponds more favourably with contemporary digital and media-based artworks such as many of the artworks included in this study.

I acknowledge that there are limitations to how the artworks are presented. Electronic processes not only alter the size and resolution of the original artwork, but also the artwork's hues and tones, and overall essence (Murphie & Potts, 2003). This was Walter Benjamin's chief concern, discussed in his prominent 1936 essay *The Work of Art in the Age of Mechanical Reproduction*. Benjamin (1936), a renowned literary critic and philosopher, argued that artworks which are reproduced electronically lose their aura: scale, colour, texture and impact, as they are 'shattered' through the process of mechanical reproduction. Tony Schirato and Jen Webb (2004) agree that viewing a copy cannot compare to 'authentically' viewing an artwork first-hand. John Walker and Sarah Chaplin (1997) further argue that electronic processes used to create reproduced copies simply turn artworks into mere reproductions and thus commodities which can no longer have critical potential or function.

Although the arguments against reproduced artworks are valid to a degree, I do not feel that the impacts of reproduced works are dramatically reduced to the extent that Benjamin and others believe. Within contemporary digitalised society, artworks and images are predominantly encountered initially *as* reproductions such as on the internet or television, and in films, books and magazines (Sturken & Cartwright, 2001; Walker & Chaplin, 1997). Therefore, most individuals living in this epoch are familiar with this form of initial representation. Digital dialogue and visual communication are now fundamental aspects of postmodern culture, enabling more people otherwise constrained by financial, geographical or cultural barriers to view artworks. Furthermore, digital technology is advancing exponentially, enabling increasingly clearer viewing of electronic images, both static and motion-based. Benjamin wrote his essay in 1936 when media technology was in its infancy.

I also present six conceptual art performances in print image format in this study: two staged photographs of performance artists – Isa Gordon and Guillermo Gómez-Peña; one of a model presenting Stahl Stenslie’s interactive artwork *CyberSM*, and three photographs taken of artists during actual performances – Stelarc, Eduardo Kac, and Marcel.lí Antúnez Roca. I also include an image of a transgenic character from Matthew Barney’s art film *Cremaster 3*: Aimee Mullins as the Cheetah Lady. This print form viewing is considerably inferior to first-hand viewing, as these performances were created to be observed in action. A photographic representation of art-in-motion also alters the impact of the performance, and can change its meaning. I presented most of the performance photographs to the interviewees with a concise accompanying spoken sentence which detailed each artist’s intent, thereby providing the participants with a pre-understanding of the work. This was to compensate, in a small way, for the static nature of the viewing process. Nonetheless, I was cautious to keep the information to a minimum so as not to affect the responses and interpretations potentially offered by the interviewees. I accept that there are significant inadequacies relating to the presentation of artworks in reproduced form; however, a hermeneutic inquiry such as this is not possible without using reproduced artworks, and I believe that the benefits of this study outweigh the noted drawbacks.

Interview Guide

The interview guide, Appendix B (p. 421) and Appendix C (p. 431), was designed to be semi-structured, in order to allow for unproblematic deviation from the set questions, which is in keeping with a hermeneutic investigation (Lister & Wells, 2001; Schwandt, 1998). The question sequence was developed using Colin Robson's (1993, p. 234) five Sequence of Questions principles, which are: introduction, warm-up, main body of interview, cool-off and closure. The interview questions related to six main areas of interest, the first being general research questions relating to the study, such as, *In general, how do you view technology?* The second area of interest related to the artwork specifically, for example, *How does this artwork impact on you?* The third related to concepts examined by the artist, for example, *Why do you think the artist has used an image of a baby in this artwork?* The fourth area of interest addressed ontological concerns relating to the study's focus, such as, *In a few words, what do you think it means to be human today in relation to technology?* The fifth focused on sociological inquiry relating to the interface, for example, *In general, what do you think about our possible increasing dependency on technology?* Finally, the sixth area of interest related to personal, contextual information, such as *What is your age?* Five personal questions were used to draw the interview to a close.

A variety of question types were presented to the participants in order to access diverse information. Therefore, if one question type was not successfully received or understood, another question type could be asked. For instance, interview participants were often asked how they felt about an artwork, which is a more personal and intangible approach, and they were also asked to describe key features of the same artwork, which is more impersonal and tangible. Moreover, questions pertaining to selected artworks were presented with accompanying information that was thought to be important for the discussion of the artwork, such as Gunther von Hagens' whole specimen plastinate *Soccer Player* (Image 36, p. 206), which is a real cadaver used as anatomical art, and could be mistaken for a computer-generated image. However,

background information was only provided where it was deemed necessary, such as where confusion could arise, or relating to the performance art as mentioned.

Contributory Interview Strategies and Considerations

Specific strategies were implemented during the interview process to facilitate the sourcing of rich information and the accurate comprehension of this information. Asking open questions, being attuned to novel ideas, remaining open to all possible responses, and not judging responses were therefore key approaches (Bryman, 2001). I also conducted the interviews with an open, receptive and what is termed a 'naïve' manner. Clark Moustakas (1994) argues that this approach creates an environment where more imaginative responses and ideas can flourish. Participants can feel more comfortable about sharing their ideas with someone who is essentially a stranger. Furthermore, each interview was approached as a "conversation with a purpose" where both interviewer and interviewee are viewed as equally important elements in the interviewing process (Robson, 1993, p. 228). Sotirios Sarantakos (1998) believes that in-depth interviews should be viewed as shared interaction as it is the shared contributions that create a deeper understanding of the phenomenon under investigation, which ultimately leads to sophisticated interpretive inquiry.

Before the interviews began I made my own stance known regarding the topic under discussion, clearly stating that I have a dynamic interest in cyborg art and aesthetics. John Creswell (1998) refers to this as the concept of positionality, which describes the way researchers present their own perspective on a research topic before the collection of data begins. Steven Taylor and Robert Bogdan (1998) feel that it is often better to own up to your perspective rather than to act as though you have no point of view, and then to examine your findings in relation to your view. As Creswell states, "We (re)present our data based on participants' perspectives and partly based on our own interpretation, never clearly escaping our own personal stamp on a study" (1998, p. 20). Taylor and Bogdan (1998) add that findings do not exist independently from the consciousness of the researcher; rather they are filtered through the researcher's

own world view. Ultimately, showing that I was enthusiastic about cyborg art was a constructive approach, as it allowed the interview participants to be part of the interview experience with ease, as they did not have to guess at, wonder about, or question what my position and perspective on the topic was.

I also remained attuned to an interview participant's mood and body language during the entire interview process, and to any changes in emotion (Bryman, 2001). This was particularly important as many of the cyborg artworks had the potential to cause discomfort or offence because of the imagery presented. Due to the explicit nature of several of the artworks, I was constantly aware of the need to be vigilant regarding their possible impact and negative effect. The artworks representing ectogenesis and death were of particular concern, as there was a possibility that the viewing of these images may conjure up memories of tragic personal experiences such as miscarriage or the death of a loved one. Several strategies were therefore implemented in order to deal with any negative responses if and when they arose. These were included in the Application for Ethical Approval presented to the Faculty of Arts and Social Sciences Human Research Ethics Committee in 2006.

No interview participants appeared emotionally distressed as a result of viewing the artworks, although it is to be noted that one artwork in particular, *Birth Machine Baby* (Image 33, p. 197), had a profound affect on two female participants. One asked to "pass" on discussing this artwork due to her feelings of discomfort, and another interviewee stated that the image was disturbing to her at the time of the interview due to one of her friends having recently had a stillbirth. Regarding the first participant, I attempted to alleviate any distress which may have occurred by promptly turning the artwork over, asking the interviewee if she would like to discuss her reaction, and then continuing to discuss another artwork. Regarding the second participant, I offered to remove the image from sight, however she did not request this; instead, we briefly discussed the tragic experience, the artwork, and how art and images can tangibly affect a person when they are directly related to his or her life. This is one of the main conditions of viewers actually being able to fully 'connect'

with artworks – when they represent imagery that is directly and explicitly related to their personal lives (Barry, 1997; Freeland, 2001; Stecker, 2003).

Interview Transcripts

Each of the 34 transcript files were headed with the name of the participant, their age, ethnicity (which is self-identified as mentioned; see p. 419), interview stream and the final word count of the interview. On the left margin, my questions and contributions were headed with Interviewer and the interviewee was referred to by his or her name. I developed a *Two-part Transcription Key* (Appendix D, p. 443) while transcribing the pilot interviews, and this was added to whilst transcribing the remainder of the 32 interviews. Section A shows what methods were used during the transcribing process and key components of the transcripts, and Section B shows key components of the participant verbatim quotations selected for inclusion in the thesis. The perspective that guides this transcription key parallels that of the study in general, which is a focus on content, conversation information, over form, conversation analysis. For this reason, emphasised syllables, pauses, overlapping discussion, interruptions, over-used speech fillers (such as ‘you know’, ‘like’, ‘um’, ‘and stuff’), and the speed of spoken dialogue are not noted in the transcripts. The perspective of this study is that speech or conversation fillers are used as mechanisms for thought-processing and/or indications of general nervousness during conversation, as much as they may be used as avoidance or deception strategies (Vrij & Mann, 2005). In addition, when incorrect words, terminologies or malapropisms (which are words used erroneously in sentence structures) were used, these were omitted from the verbatim quotations included in the thesis although they remained within the transcripts. Lastly, one of the key strategies implemented whilst working with the transcribed data was to utilise a data analysis tracking system, whereby different colours (Wisker, 2001) and/or fonts were allocated to each participant’s transcript. This allowed me to work with and analyse the data freely, while always being aware of the data’s origins.

Questionnaires: Qualitative (Email) and Quantitative (Distributed)

The artists' structured email questionnaire (Appendix F, p. 447) was sent, during March 2007, to 30 artists whose works were selected for this study. Eleven artists completed and returned their questionnaires: Stelarc, Justin Fox, Christos Magganas, Viktor Koen, Rua Pick, Philip Hitchcock, Joachim Luetke, Daniel Van Winkle, Brice Vandemoortele, Daniel Lee, and Lynn Randolph. The questionnaire was sent as an attachment accompanying an introductory email, and included an introduction to the proposed research topic, a request for the artist's contribution, brief comments detailing my interest in the artist's work, ten structured open-ended questions, ethical issues regarding participation, my obligations as the researcher, and my contact details. The blank lines included in the questionnaire were filled in with the title of the artwork where known, and where the artwork selected was untitled, an image of the artwork was included, enabling the artist confirmation of which work was being discussed. I responded within 48 hours where possible to all artists who replied, thanking them for their contributions. The objective for this questionnaire was to gain insight into each artist's thoughts, feelings and ideas when they created the selected work and how they believed their work might relate to the concept of the cyborg.

The hand-distributed postal-return questionnaire (Appendix H, p. 453) included 20 predominantly closed-ended questions relating to technology, human and technology interconnections, cyborg art and cyborgs. One hundred and ten questionnaires were delivered face-to-face, by approaching students on the University of Waikato Hamilton campus grounds, and by door-to-door canvassing in the Northern subdivisions of Hamilton city. The return rate was eventually 50 percent; 55 questionnaires. Ten questionnaires were piloted before the 110 questionnaires were handed out. These were successfully completed and therefore included in the final count (the piloted questionnaires are briefly discussed and evaluated in Chapter Eight). Subsequently, 65 questionnaires, completed by 31 male and 34 female respondents, were analysed. Their age brackets are noted in Appendix A (p. 420).

The questionnaire's introductory page outlined general information on the study, ethical issues regarding participation, my obligations as the researcher and my contact details. Emphasis was placed on the criteria for participation, the anonymity of the study, and how and when the questionnaire was to be returned. Most of the questions included in the questionnaire were Multiple Choice Questions and Likert Scale Questions, which were used to obtain respondents' attitudes and beliefs relating to technology. The design of the questionnaire was created to look distinctly different to an official document, so that at first glance it would appear less ominous. 'Tick boxes' and placing questions in tables were therefore not used in the design layout.

On the final page of the questionnaire, the respondents were asked to return it via the self-addressed envelope, which was included in the main envelope. I also included a brief overview of the study on the delivery envelope in order to provide accessible information for prospective respondents. The questionnaires were posted back to the Department of Societies and Cultures to ensure privacy concerning my residential address. Finally, a restriction of participation to those aged 18 years and over, was imposed on the questionnaire respondents. This decision was made in order to retain continuity regarding subsequent analysis. As specified, participants for the in-depth interviews were to be 18 years or older, due to the graphic nature of the artworks.

Analysis

The analysis procedures regarding the interviews and the qualitative and quantitative questionnaires focused on the way the data formed key themes or main groupings using a *component design* format. As such, the information sourced from each method is analysed independently, and used specifically for data comparison and contrast within the study, which is referred to as *cross-over track analysis* (Green, Kreider, & Mayer, 2005). Key findings from each research method are presented in Chapters Five, Six and Seven, and consolidated in Chapter Eight. The findings from all three methods are predominantly included in the chapters in a paragraph format.

As mentioned in the previous chapter, it was beyond the scope of this study to analyse and thus compare the interview participants' contextual details, which could be considered a limitation of the research design. An awareness of the background of an interviewee, such as their occupation, gender, age, ethnicity, and spiritual beliefs, may provide additional insights into their responses – such as why they discussed selected topics, or why they answered questions in certain ways and expressed particular viewpoints. However, the analysis approach I take in this study centres on which ideas were most often shared by the research participants, as opposed to analysing why they may have responded to questions as they did. I place emphasis on the interviewees' comments, which are presented in the thesis largely descriptively. As such, the commonalities and differences noted between the research participants' ideas form the core of the concluding analysis. This approach also provides continuity regarding the way the artworks and the findings are discussed, as they are both presented in a broad yet topic-focused manner. My reasons for this design focus are threefold: (1) my overall research objective is to draw on the participants' shared ideas and the key themes formed to facilitate a theoretical premise of cyborg art; (2) I use this inaugural study to explore and introduce how the public view the cyborg and body and technology integration, and the way these concepts are represented in art; and lastly, (3) discussions of the artworks takes precedence in this study, while the sourced empirical interview and questionnaire data takes a supportive albeit vital role, as shown in Figure 1 (p. 8).

Interviews

The findings gathered from the 34 interviews were analysed using data reduction techniques, whereby data from the transcripts were reduced to manageable clustered groupings or 'sets of themes' (Creswell, 1998). This is achieved in order for patterns (similarities and dissimilarities), shared unique viewpoints, and single responses to be identified. Analysis via data reduction techniques is the most common method used in transforming raw data into datasets. These groupings can then be examined in the

search for relationships among the themes located. Discoveries can then be made from these patterns, which ultimately builds theory (Berg, 1995; Creswell, 1998).

I created a detailed *Transcript Collation and Analysis Chart*, included as Appendix E (p. 445), to facilitate analysis of the interview participants' responses. As a brief overview, a file was created which contained the 34 completed transcripts. From these, separate files were created that each contained female and male interviewees' transcripts. This decision was made in order to note any significant differences in responses and to retain manageable size files for working with the data. Main topic headings were developed derived from the questions asked, and interview dialogue sections relating to each topic were transferred to these new files. A *Grouping of Themes Index* was developed with three tiers: Feelings, Descriptions and Ideas, and interviewees' key responses were summarised where necessary and grouped accordingly under these tiers. A new file was created which collated all responses pertaining to each topic within this index. The number of interview participants who responded to each question was also noted alongside the heading.

The created datasets enabled analysis to begin. Single responses which did not fall into a main grouping were placed, where deemed pertinent, following the main themes to emerge. I note that idiosyncratic viewpoints are considered an important component of this inquiry as they are deemed to contribute to an overall enhanced understanding of the kinds of atypical responses and interpretations which can transpire whilst viewing artworks. In addition, as this study adopts an ontological hermeneutic approach, the findings and the participants' interpretations were not decoded, evaluated, or judged as to which might be considered correct, referred to as *monism*, or considered more appropriate, which is referred to as *multiplism* (Hoy, 1993; Krausz, 2002). Rather, emphasis was placed on presenting the key themes to emerge from the analysis with examples of participants' verbatim quotations alongside. This enables readers to clearly perceive directly how the interview participants felt about the artwork or topic under discussion.

Four main responses were omitted from the data analysis procedures. These were answers offered to questions which could be deemed leading; responses to double-barrelled questions (where confusion could arise); and responses to questions that included arbitrary prompts, where an idea was suggested for consideration by the interviewer. The responses sourced from these questions are deemed unsuitable, as they were provided in reply to flawed questions. Furthermore, when interviewees used terminology in their responses first used by the interviewer, thus ‘parroting’ the interviewer, this data was also not included in the final analysis. However, it is to be noted that the data which I selected to omit was overall minimal, and did not affect the final analysis. Lastly, whilst transcribing, I located ten main *response-types* used by the participants while they were responding to questions relating to the artworks. As this study centres on what was said (content), and not how participants respond (form), these response-types are not analysed in this study. However, they are briefly outlined in the Future Visions section of the Conclusion (p. 404), as I suggest that research centring on the strategies participants may use in order to respond to imagery which depicts human and technology integration, may foster further understanding of how people react to, and feel about this increasingly relevant issue.

Questionnaires

I use the same base analysis procedures applied to the interview data in order to analyse the artists’ responses. Yet, as the artists’ questionnaires were completed in electronic format, the data could immediately begin to be examined once all the questionnaires had been returned via email. I created an *Artists’ Response Analysis Chart* (Appendix G, p. 451), to show how I analysed their responses to the ten questions presented. As an overview, I copied the returned questionnaires onto a new file and a summarisation of the responses was carried out where necessary. A new file was then created, and the artists’ summarised responses were examined individually, and concerning specific questions, collated as a group. Key themed-groupings were developed in order to explore which ideas were or were not shared by the artists.

Analysis of the 20 predominantly closed-ended questions included in the hand-distributed questionnaire was relatively straightforward. The raw data was entered into both Microsoft Office Excel as a complete data table, and Microsoft Office Word as individual question data tables. A section of the Excel data table (Questions Five to 11), and an example of a question data table created in Word (Question Two), are included in Appendix I (p. 459). Each of the 20 questions and corresponding results were converted from the raw format in the Word tables ready for possible inclusion in the thesis. Entering the results into individual data tables in Word also enabled the qualitative answers to the open-ended questions to be clearly documented and displayed. Using two differing formats (Word and Excel) to work with the data also enabled greater scope for cross-checking for data-entry errors. Two questions were eventually selected to be presented in data tables in the body of the thesis. Question Two is included in Chapter Five as Figure 5 (p. 130). I provided 10 options with this question, and I felt that a table format provided a clearer account of which of these options was selected more often by the respondents. Question 15 is included in Chapter Seven as Figure 6 (p. 251). I presented several accompanying examples pertaining to each option offered in this question; as such, I determined that it was more appropriate to show these options in a table format. The only form of coding used throughout the conversion of raw data, was in the complete 20-question Excel data table, where missing data was entered as 0 and particular options selected by the respondents were abbreviated for visual clarity.

Composite Analysis

Chapters Five, Six and Seven focus on discussions of the cyborg artworks and the analysed interview and questionnaire findings, while Chapter Eight presents a final consolidated analysis of the artworks' main themes and the research participants' key responses, interwoven with theoretical premises pertaining to the cyborg, technology, art, cyborg art, and cyborgisation. This concluding analysis is presented under six key headings in the main section of Chapter Eight, as shown in Figure 7, *Theorising*

Cyborg Art (pp. 332-334). This meta-analysis introduces 20 key symbolic functions, which I deem to be inherent within cyborg art, and 20 associated strengths of cyborg art; dimensions espousing cyborg art's critical potential. I also address the main limitations or weaknesses associated with viewing cyborg art as a critical sphere of inquiry in this section, in order to provide a conclusive overview of both the potency of cyborg art and its possible drawbacks. Analysis of the symbolic functions, critical potential, and main limitations of cyborg art contributes to the formation of an overall theory (and genre) of cyborg art.

Presentation of Artworks and Empirical Data Within Chapters

This final section outlines the approach I use regarding the presentation of the cyborg art images in the following chapters. There are five key elements which contribute to the examination and discussion of the artworks included in Chapters Five, Six and Seven. These are (1) background information on the artists; (2) contributory researchers' ideas and views on the artists and/or their works; (3) my own interpretations of the artworks; (4) theory relating to the artworks; and (5) empirical data obtained from the interviews and questionnaires. These contributions are used in varying degrees and combinations with selected artworks under discussion. Chapter Four presents a historical introduction to cyborg art, and does not include grouped and analysed interview or questionnaire data.

In order to minimise any confusion arising from the confluence of these five key cyborg art discussion elements, they are, for the most part, presented within the chapters in a recurring manner. Background information on artists and their premises, cultural theory relating to each artwork, and my own interpretations are for the most part presented as a precursory introduction to the artwork. This is followed by the interview data and findings from the hand-distributed questionnaire, and the artists' email questionnaire. Furthermore, the empirical data sourced from the interviews and questionnaires is presented in a sequential format, whereby the main themes to

emerge from the analysis are presented first, followed by ideas that generated fewer responses. Moreover, in many instances, the number of interview participants who provided contributions to a question-topic under discussion is noted before the empirical data is presented. At times, I also state the number of interviewees whose responses were most often shared (and thus forming key groupings) regarding the question asked. In many cases, interviewees' verbatim quotations are presented alongside the main themes discussed, in order for their 'voices' to be directly represented. Finally, it is to be noted that because different artworks were discussed in each interview stream, the number of interview participants who responded to each artwork was at the most 17; yet as the general questions were the same in each interview stream, at the most 34 interviewees responded to these question types.

To avoid confusion potentially arising from the manner in which I use more than one form of research method in this study, specific terminology is employed when discussing each 'type' of research participant and their contributions. I use the terms interview participants, interviewees or participants when referring to the individuals who agreed to be interviewed for this study; I refer to the artists who completed the email questionnaire simply as artists; and I refer to the individuals who completed the hand-distributed postal-return questionnaire as questionnaire respondents or respondents. Finally, when discussing each of the three types of research participants as a group, I use the generic term research participants.

Most, although not all, of the artworks selected for inclusion in this thesis were presented to the interviewees for discussion. This is primarily due to concerns over the graphic and explicit nature of certain artworks and that the sourcing of artworks occurred after all the interviews had been completed. Additionally, I felt that a portion of the artworks did not require extensive discussion, although they remain an integral aspect of this study in terms of reflecting elements of cyborg theory. The design of this study is based on a broad hermeneutic investigation into the phenomenon of cyborg art, as opposed to a deep and narrow inquiry into specific artworks. This is due to the number of artworks discussed and the use of three

differing methods in order to obtain both qualitative and quantitative data. Seventy-two artworks were collated as a group to introduce the concept of cyborg art and to argue for the potential of cyborg art to be considered a postmodern art genre.

The artworks were selected according to eight main criteria, in addition to an overall aesthetic focus which centres on human contours, and a melding of flesh and metal or organic and inorganic realms. These are: (1) a focus on a single human-first entity/cyborg (as opposed to a machine-first entity); (2) fitting a specific time period: 1900 to present day; (3) representing ontological and sociological ideas/concepts associated with human and technology merger; (4) suitability as part of a collection (contributing to a cohesive format and structure within the thesis); (5) suitability for viewing (minimising the chance of causing offence); (6) limited or no inclusion of text within image (to retain a focus on the entity shown); (7) accessibility (able to be sourced and copied into Word), and (8) presentability (adequate resolution and size).

The artworks primarily show the upper body or entire body of the cyborg; however, a focus on the head and/or brain is also common. This type of imagery serves as a synecdoche of the entire cyborg body. A synecdoche is a portion or element of an entity or object which is presented as representing the entity or object as a whole (Bell, 1999; Schirato & Webb, 2004). Relating to this study, the human brain continues to be considered the base and source of human identity today (Short, 2005), despite a noted reclaimed emphasis on the body under postmodernism (Williams & Bendelow, 1998). Cyborg art therefore often focuses on the head or brain region of a human being, as a way to symbolise changing humanity at its core.

Lastly, the allocation of artworks into specific chapters and topic areas was carried out with caution as a substantial number of artworks represent overlapping themes, whereby they could reside in several locations within this study. I made decisions concerning allocation according to which depicted themes were noted as stronger, and which elements of the artist-artwork relationship were considered more important in terms of the study's overall trajectory. The number of artworks which presented

certain themes also contributed to the final decision. For example, the photograph of Cornel Winiata, with his artificial limb (Image 50, p. 246), focuses on indigenous culture and prosthetics; therefore the photograph could either have been placed in Chapter Six within the section on Ethnicity, or Chapter Seven within the section on Prosthetics. I elected to place this image in the Ethnicity section as the Māori design on the prosthesis was deemed more significant than the artificial limb itself, which consists of a somewhat rudimentary claw-grip mechanism. There are also a limited number of non-Caucasian and non-Asian artworks created which centre on body and technology convergence. Therefore, Cornel Winiata's koru design limb is noticeably unique. Another example is H. R. Giger's 1970s airbrush artwork *Death Machine I* (Image 7, p. 105). This artwork could have been placed in three differing sections within two chapters due to the way Giger explores themes of birth and death (topics addressed in Chapter Six) within a science fiction genre. I chose to include this work in the science fiction section of the following historical chapter due to Giger's focus on science fiction-inspired biomechanical art, and because there were fewer artists creating cyborg or interface artworks in the 1970s, comparative to today.

In this chapter, I have provided an overview of the methodology and methods used in this inquiry, and the design of the interviews and questionnaires. The methodological discussion included a detailed account of how the art images were incorporated into the interview design, and how they were presented to the participants during the interview process. Included in this discussion was the manner in which I transcribed the interview data and how I analysed the empirical data obtained from each of the three research methods. This chapter also provided an outline of how the artworks are incorporated into the following chapters, and the theoretical and interpretive contributions which form the artworks' accompanying discussions. The aim of this chapter was to provide a final background account of the methodology, trajectory and focus of this study before the cyborg artworks are introduced.

Chapter Four

The History of Corporeal Human-Technology Interface Art/Cyborg Art

This chapter is divided into two sections and introduces cyborg art by charting its history and global emergence, particularly within Western society. The first section briefly introduces historical representations of human body and technology interface, with artworks dating back to the early 1900s. During this time, the Futurists and Dadaists used the symbol of the machine in montage and assemblage metaphors to identify the increasing usage and impacts of technology (Garoian & Gaudelius, 2001). The terms and concepts pertaining to cybernetics and the cyborg were developed in the 1940s and 1960s respectively, presenting a fundamentally new stage of human evolution brought about by World Wars I and II, postindustrialisation, and the advent of information technologies (Benesch, 2002; Gray, Mentor, & Figueroa-Sarriera, 1995; Haraway, 1991a). Ideas relating to the cyborg were rapidly adopted and appropriated in science fiction literature, film and art from this time on.

The second section of this chapter focuses on the cyborg represented in art from 1961 to the present day, and embedded within three conceptual realms: science fiction, feminism and posthumanism. Science fiction is the most well-known due to the abundance of literature, television shows, films and comic books dealing with human and technology merger themes. Yet, there are also several artists who centre their attention on the science fiction genre, such as H. R. Giger, the renowned Swiss artist, and Hajime Sorayama, the acclaimed Japanese artist. The cyborg was predominantly explored within comic book art in the mid-twentieth century and continues to be a popular character used in comics or graphic novels today. Feminist artists also began visually exploring ways in which women's bodies and technology were increasingly integrated, and the consequences of this interface (Balsamo, 2000). The impact of Haraway's *Cyborg Manifesto* played a part in igniting interest in these themes. Faith

Wilding is the most recognised cyberfeminist artist working with interface ideas; as such, her provocative collage *Recombinant 1* (1993) heads this discussion.

Posthumanism is the third key realm where the cyborg has emerged. Ann Weinstone contends that “The cyborg is perhaps the exemplary figure of posthumanism” (2004, p. 5). This is because the cyborg, as a symbol, addresses the changes humanity is experiencing tangibly and visually. Cyborgs are therefore often deemed to constitute a “posthuman identity” within the present epoch (Garoian & Gaudelius, 2001, p. 2). The technologically altered human being or cyborg is a ‘post’ human being; superseding the natural organic human being, and is therefore considered a new “evolutionary unit” in contemporary society (Longo, 2003, p. 23). Posthumanism is increasingly discussed today, yet few theorists acknowledge the concept of ‘posthuman art’. Robert Pepperell (2005) uses this phrasing and suggests that posthuman art’s overriding potency is the way it can present discontinuities existent within society. Pepperell argues that only vigorous and robust societies can accept this form of representation as these societies are aware of the need to explore all avenues of changing human ontology, identifying both the perils and promises of advanced technologies, which are key themes discussed throughout this thesis.

1900 to 1960: The Emergence of Interface Art, Cybernetics and the Cyborg

Umberto Boccioni, an Italian sculptor, was one of the first artists in the twentieth century to create artworks with human and technology interface and integration themes, both in terms of metaphoric visual representation and underlying ideas. Boccioni created the revered bronze sculpture *Unique Forms of Continuity in Space* (Image 1) in 1913. This sculpture, presented on the next page, shows a human figure which embodies speed and the quest for progress (Tate online, 2004). The figure is poised moving forward, with leg wings to enhance advancement. The shapes

Boccioni has formed are a fusion of soft organic forms and hard machinery; a unique form of continuity between the organic and artificial realms. The sculpture dramatically demonstrates the differences between, and union of, animate and inanimate – structures which are both hot (with its flame-like shapes) and cold (with its angular lines). Boccioni’s sculpture evokes a type of Nietzschean superman; a new age heroic flesh and metal man (Poggi, 1997). Christine Poggi rightly contends that this sculpture “might retrospectively be called a Futurist cyborg” (1997, p. 37). Boccioni was enamoured with machinery, electricity and automobiles. He became the leading theorist and artist of the early twentieth century movement known as Futurism, which glorified ideas of mechanisation (McMullen, 2006).



Image 1. *Unique Forms of Continuity in Space* (1913).
Bronze Sculpture.
Artist: Umberto Boccioni.
Tate Museum online.



Image 2. Torso in metal from the *Rock Drill* (1913-1914).
Bronze Sculpture.
Artist: Sir Jacob Epstein.
Tate Museum online.

In the same year, Jacob Epstein, a British-based artist, began his celebrated bronze sculpture the *Rock Drill*. Part of this sculpture is shown here as Image 2. Epstein

initially created a complete human-machine figure and placed it on top of an actual pneumatic rock drill to indicate, like Boccioni, his esteem for the machine. However, Epstein was deeply affected by the destruction and massacre of the First World War, and vented his anger and confusion on the eminent figure he had created only a few years earlier (Meecham & Sheldon, 2000; Tate online, 2007). He mutilated the figure by cutting it down to mid-torso, altering its arms, and removing the drill completely, as shown in Image 2. The figure is therefore transformed from representing power and strength, to showing post-war vulnerability and solitude. Epstein's sculpture is now an amputee, a casualty of war, echoing his fears over the carnage that technology and machinery can create. The *Rock Drill* therefore allegorically displays a warning for the encroaching modern world (Meecham & Sheldon, 2000; Tate online, 2007).

The *Rock Drill* also symbolically depicts its growing progeny within its torso, representing ideas of post or dual-genderism, which is discussed in Chapter Six. The former drill component and shoulders of the sculpture signify its virility and male qualities, while the embedded foetus shape in the torso symbolises its fertility and female qualities. The *Rock Drill* was influenced by Epstein's interest in Vorticism, which was an English art movement similar to Futurism. Artists of this movement focused on angular shapes and abstract styles reflecting industrialisation and continuous technological advancements (Wees, 1972). The *Rock Drill* epitomised the fusion of human and machine in the early twentieth century, and thus became a symbol for the fast-approaching mechanised age (Tate online, 2007).

Raoul Hausmann, an Austrian Dadaist, created his ironic assemblage sculpture *Mechanical Head* or *The Spirit of Our Time* (Image 3), presented on the following page, a few years later, in 1919. Hausmann was scathing of the war in the manner of Epstein, and created artworks which reflected his views. He also demonstrated, via the phrasing of his title and his selected representation, that he understood and foresaw how technology would increasingly take central place within our lives; both ideologically (in the way we think and what we think) and corporeally (Biro, 2007). The central focus of *The Spirit of Our Time* is thus the mechanised human. This

artwork shows a wooden head of a mannequin or tailor's dummy, with a leather pocketbook or wallet on one side of the head, and a ruler with camera parts on the other side. A collapsible aluminium cup has been placed on top of the head, and a section of a tailor's measuring tape is placed on the forehead. Brass and cardboard labels, pieces of a telescope and pipe, a watch, a printing roller and a typewriter cylinder also adorn the mannequin (Delahunt, 2007; González, 1995). Hausmann symbolically shows that the new mechanised human may not be a free man, instead dictated to by machinery; a tragic figure losing the notion of autonomy and self.



Image 3. *Mechanical Head or The Spirit of Our Time* (1919).
Assemblage Sculpture.
32.5 x 21 x 20 cm.
Artist: Raoul Hausmann.
Centre Georges Pompidou, Paris.

A year after completing *The Spirit of Our Time*, Hausmann created *Tatlin at Home* (1920), his second symbolic portrayal of an altered or 'mechanised man'. *Tatlin at*

Home, shown below, makes a reference to early twentieth century Russian Constructivist artist and architect Vladimir Tatlin. In this artwork ‘Tatlin’ is shown with an assortment of machinery parts and research devices superimposed onto his cranial region, indicating metaphorical corporeal synthesis, and a metaphysical mechanical outlook; one of rationality and logic, which Heidegger (1977) later came to distrust. *Tatlin at Home* was created using a collage of pasted papers and gouache, where watercolours are mixed with gum, and the technique of photomontage. This is a fitting art medium for the cyborg concept, as montage and assemblage metaphors mirror the assembled and reassembled machinery of post-World War I and industrialisation (González, 1995). Montage also presents a mix of contradiction and confusion purposely created to signal a rebellion against conventional forms of art and traditional ideologies, and an eagerness to find new ways of expressing the societal conditions of the emerging postmodern epoch (Garoian & Gaudelius, 2001).

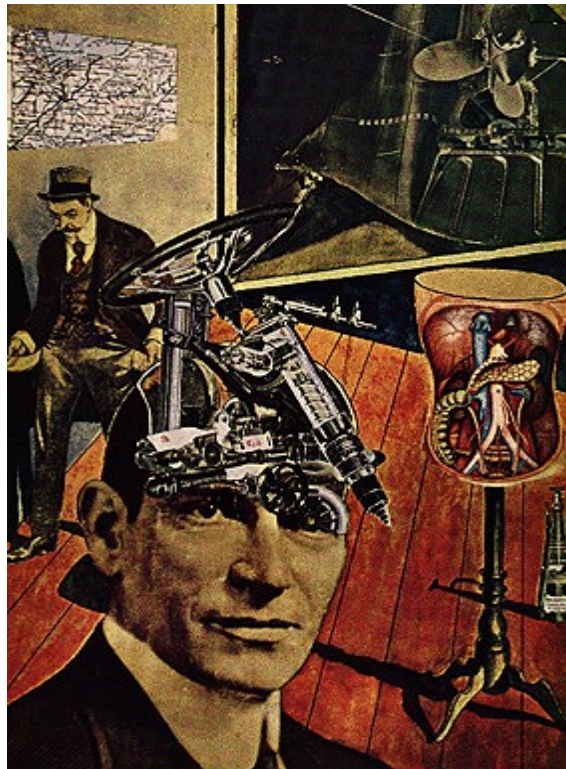


Image 4. *Tatlin at Home* (1920).
Photomontage.
Artist: Raoul Hausmann.
National Museum, Stockholm.

Twenty-eight years later, in 1948, Norbert Wiener, an English mathematician, developed his controversial concept of cybernetics, and discussed his theory in his celebrated book *Cybernetics: Or Control and Communication in the Animal and the Machine* (1961). Wiener (1961) theorised that all organic, machinic and social systems had inherently the same cybernetic principles, where order is maintained by inbuilt feedback loops. He surmised that positive feedback increases errors, while negative feedback corrects for them (Brate, 2002). Cybernetics is taken from the Greek word *kybernētēs*, meaning steersman. Wiener selected this term as a system of steady feedback loops are formed between the steersman or helmsman, his ship and the wind, enabling the ship to sail to its destination. The feedback loops allow for continuous adjustments to be made to changing conditions (Murphie & Potts, 2003).

World War II inspired Wiener to see all ‘things’ and systems *as* information, which centred on interactive positive and negative input-output loops of communication flow and control, which enables adaptation (Brate, 2002). Cybernetics therefore connotes order, stability and functionality pertaining to physical, chemical, electronic, and informational systems. A tangible example of this is how a thermostat maintains a constant room temperature in response to temperature fluctuations such as cold air (the opening of doors or windows), or warm air (machinery use or body heat) (Best & Kellner, 1997). The human body has its own homeostasis systems which are designed to preserve optimum health under normal conditions or circumstances. These can theoretically be merged with self-regulating technological systems. Wiener therefore suggested that input-output feedback loops not only occurred within biological (human and animal) and machine systems, but also *between* them (Brate, 2002).

Ten years after Wiener’s radical assertion, American medical doctor Major Jack E. Steele coined the term ‘bionics’ (1958) to refer to the field of research which explores the use of biological principles in order to address engineering challenges. Bionics is a combination of the words “biology” and “technics”, and became increasingly associated with the creation of artificial human body parts, including limbs, heart pacemakers and cochlear implants, and the concepts of cybernetics and robotics

(Steadman, 2008). That same year, Zdzislaw Beksiński, a renowned Polish artist, created his untitled Sepia drawing, shown here, which alludes to themes of organic and non-organic fusion. For much of his life Beksiński centred his artistic focus on death and the elaborate creatures which inhabit this realm. However, Image 5, created at the beginning of his career, represents a human subject in a simplified manner, with a focus on shapes and contours, like much of the Cubist and Futurist artworks (McMullen, 2006). Beksiński's use of the brown tone of sepia in various gradations draws attention to the curved human contours meshed with severe angular mechanised shapes. The skin and background are also created using a sketch pattern application, whereas the geometric shapes and sharp-angled lines are shown as exact and meticulously crafted, perhaps metaphorically representing the contrast between the fallible and emotional human, and the rational and logical machine.

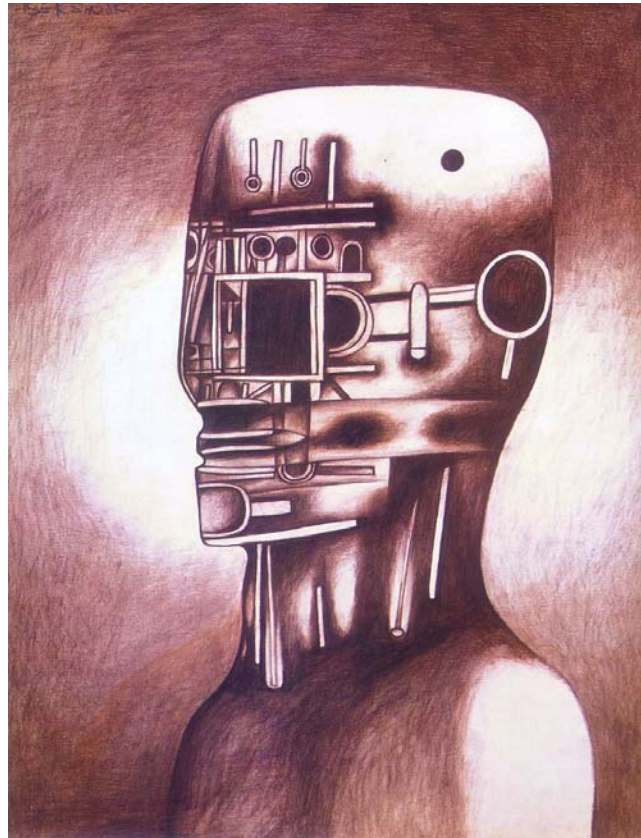


Image 5. *Untitled* (1958).
Sepia Drawing.
Artist: Zdzislaw Beksiński.
Mupinc Surrealism online.

Two years after Beksiński created his symbolic and visionary drawing, Manfred Clynes and Nathan Kline coined the term cyborg in their 1960 article *Cyborgs and Space*. In this article they describe the cybernetic organism as a self-regulating human-machine system. This emerging entity was designed to survive in, and adapt to, harsh environments such as outer space, where extremes of temperature, a lack of atmosphere, weightlessness, and electromagnetic radiation are all barriers to exploration (Halacy, 1965). This hybrid system/body was to be developed through human corporeal and neurological integration with technology, and was required to function under its own independent homeostatic controls. The new space-travelling cyborg was designed to exist without the need for monitoring and surveillance, leaving the human element in the union “free to explore, to create, to think, and to feel” (Clynes & Kline, 1995, p. 31). The cyborg was therefore theorised as a new superior entity; cognitively and physically improved.

1961 and Beyond: Cyborg and Posthuman Art

Clynes’ and Kline’s cyborg concept continued to be developed into a well-supported theoretical construct within scholarly analysis after its formation (Cutler, 2001), and was popularised – along with Steele’s concept of bionics – in Martin Caidin’s 1972 literary work *Cyborg: A Novel*. This book subsequently inspired the successful 1970s television series *The Six Million Dollar Man* (Steadman, 2008). The emergence of the cyborg concept within science fiction art, including comic book art, began in the 1960s (Oehlert, 1995). However, film and television cyborgs eventually became more recognised due to the way these mediums could reach a wider audience.

Science Fiction

H. R. Giger is renowned as the creator of the iconic alien entity in Ridley Scott’s 1979 film *Alien*. However, as an artist, he has always had a fascination with human-

machine fusions, creating his biomechanoids prolifically in the past 30 to 40 years. One of the central themes to appear in Giger's artworks is the process of birth, and babies linked with machines. *Birth Machine*, presented below, shows production-line muscle-bound cyborg babies or foetuses in a cross-sectioned gun, being individually released like bullets. *Birth Machine*, created in 1967, metaphorically evokes artificial birthing processes; the gun symbolising external mechanised gestation, which is discussed in depth in Chapter Six. The Birth section within Chapter Six centres on ectogenesis and includes Giger's 1998 sculpture *Birth Machine Baby* (Image 33, p. 197), which depicts one of the gestating and birthing cyborg babies shown here.

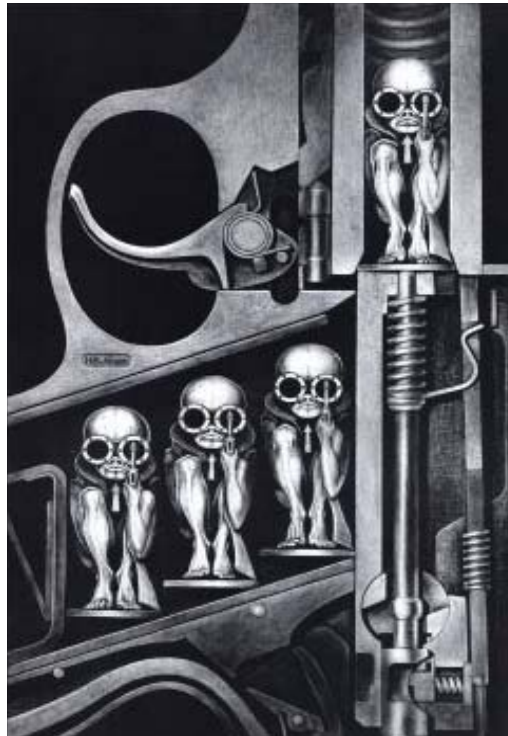


Image 6. *Birth Machine* (1967).
Pen and Ink Artwork.
Artist: H. R. Giger.

The cyborgs or biomechanical babies in *Birth Machine* are also shown wearing protective goggles and carrying guns of their own, ensuring that their birth cycle is not interrupted (Gelber, 2002; Glaser, 1985). Eric Gelber (2002, p. 10) suggests that

Giger's artworks are a "poetic symbol" of humanity's increasing coexistence with technology, self-destructive nature, and incessant desire to procreate, leading to overpopulation and environmental chaos. The realism of *Birth Machine's* aesthetics and the way Giger has used black and grey tones, adds to its ominous symbolism.



Image 7. *Death Machine I* (1970s).
Airbrush Artwork.
Artist: H. R. Giger.

Death Machine I (also known as *Death Bearing Machine I*), shown here, is also created by Giger and shows the machine torturously controlling the birthing process. The birthing woman is lying on her back with her legs spread. A long funnel creates

an extension of the birth canal, and machine clamps positioned by the baby's head act as giant gynaecological forceps. The woman's wrists and ankles are clamped down restricting her movement, while her breast milk is perhaps being pumped out of her body via machine suction clamps. The woman is shown controlled, assaulted, exposed and defenceless, which are overriding fears regarding increasing body and technology integration and machine usage (Beck, 1997; Feenberg, 1995; Zimmerman, 1990). The title 'Death Machine' may also have a dual connotation; referring to the death of the baby upon being given life, and the death of the woman's former natural birthing process. *Death Machine I* is Giger's homage to the synthesis of life and death with machine acting as mediator.

Cyborg representations in science fiction film and art often show dystopian elements of machine control and abuse towards humanity. They can also present technology as both a source of potential destruction *and* our salvation. Cyborgs can be seen as both allies and enemies, ricocheting between the binary states of good and evil (Murphie & Potts, 2003; Oehlert, 1995; Short, 2005). Science fiction constitutes the leading cultural forum for exploring ideas concerning the role and impact of technology in an unrestricted way, due to its ability to present novel, frightening and often unconsidered consequences of our links to technology. Film cyborgs embody our speculations over escalating technoscience and the techno-body (Tomas, 1995b). The ambivalent status of the cyborg as being both different and familiar also guarantees enduring viewer allure (Graham, 2001; Short, 2005). Moreover, cyborg-themed films and books often depict human beings surviving the might of technology. This helps us to become well-versed – albeit in an unscientific manner – concerning our potential future. In particular, regarding the power of multibillion dollar corporations, governments and the military to dictate what is being created, and who is making all the decisions (Murphie & Potts, 2003). These socio-political concerns are discussed in Chapters Five and Seven with related sourced empirical data.

Science fiction cyborgs are created in a variety of styles and configurations, yet one of the most persistent is the representation of conventional gender ideals, which I

draw attention to within the Gender section of the following chapter, and throughout the subsequent chapters. For the most part, male cyborgs are presented as hyper-masculine, whereas female cyborgs are predominantly shown as hyper-sexualised (Devoss, 2000; Fuchs, 1995; Graham, 2002). Well-known male cyborgian comic book characters that are depicted as ultra-masculine, with massive shoulders, bulky body-mass and stern or aggressive facial features, include *Deathlok* (Image 43, p. 226), Mike McKone's *Cyborg* (Image 47, p. 236), and *Wolverine*, shown here. These characters were originally developed in the 1970s and 1980s, inspired by the numerous advances transpiring in the science and technology spheres (Oehlert, 1995).

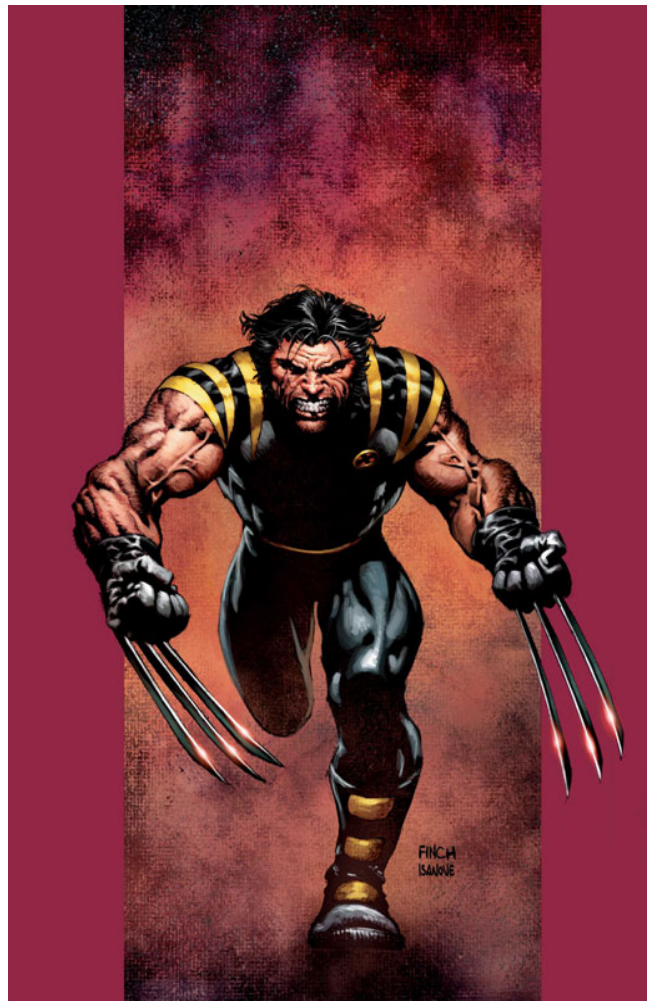


Image 8. *Wolverine* (n.d.).
Art Illustration. *Ultimate X-Men* #41.
Artist: David Finch (Colourist: Richard Isanove).

The *Wolverine* character in Image 8 is created by Canadian-born artist David Finch. *Wolverine* is a mutant who has the instincts and strength of a wolf, human perception and insight, and metallic claw-like extensions grafted into his hands, which can be extended at will (Oehlert, 1995). *Wolverine* constitutes a fantastical symbol of the strongest aspects of all three elements of human, animal and technology. He is no longer a hybrid, but a *tribrid*, composed of all three components. The final section of Chapter Seven discusses triadic convergence and tribrid entities by examining an array of contemporary artworks created by well-known artists.

David Finch and colourist Richard Isanove have presented *Wolverine* as a mighty cyborg warrior; with enormous shoulders, arms and thighs. He is depicted in action; running forward, which contrasts to the many female cyborgs shown in art and imagery which are depicted as passive. *Wolverine's* face is contorted into a grimace and his fists are clinched for battle, causing his muscles and veins to become pronounced. His metallic claws are also extended ready for combat. The black and yellow stripes shown on *Wolverine's* suit are created to make him appear even more threatening, as this colour combination is associated with some of the most dangerous predators in the world and their effects; such as the toxic bite of a coral snake, the potentially fatal attack of a tiger, or even the painful (and for some, deadly) sting of a bee (Eiseman, 2000). Australian actor Hugh Jackman has played *Wolverine* on film for several years, and is currently starring in Gavin Hood's *X Men Origins: Wolverine* (2009). Mark Oehlert (1995) discusses a number of well-known 'hyper-males' within his examination of the many cyborg-type characters created by comic book writers and artists, including *Captain America*, *Iron Man*, *Cyber*, *Sentinels*, and *Wolverine*. He examines how these characters explore many relevant themes facing society today, both on a micro and macro level. Oehlert rightly contends that "In addition to movies, comic books represent the most prevalent medium in which many children and adults are forming their impressions of cyber culture" (1995, p. 219).

Nonetheless, not all male science fiction cyborgs are created as menacing. Martin McKenna's art illustration (and poster) *Cyborg* (Image 9), shown on the next page,

and Seongjin Kim's painting *Tears* (Image 10, p. 110), point to another side of the iconic aggressive male macho-cyborg prevalent in science fiction imagery. *Cyborg* and *Tears* both epitomise typical broad-shouldered, masculine cyborgs, yet they are also represented as emotional amalgams; identifying that cyborgs draped in masculinity and metal can feel. These images signify that the ability to feel pain and sorrow has not been overridden or stripped away by the body-machine conjoining. Losing the ability to feel – particularly to feel compassion – is a prevailing fear regarding the encroaching interface (Kurzweil, 1999).



Image 9. *Cyborg* (2002).
Pen and Ink Artwork.
Artist: Martin McKenna.

Leopoldina Fortunati, James Katz, and Raimonda Riccini (2003) suggest that machines will never be equivalent to people with regards to emotions felt or expressed, nor will they ever be able to fully comprehend the concepts of justice or

rights, no matter how corporeally incorporated they become with us, or how sophisticated their programming might be. Yet, people fear machines, because they fear becoming part of the cold, metallic, hard, and soulless state (Kurzweil, 1999), functioning without empathy and kindness. This was Heidegger's (1977) concern; that humanity would eventually begin to think in a cold and operational manner. Machines are ultimately deemed to be composed of parts (Volkart, 2004-2005b), thereby "lacking organic integrity" (Wilson, 1995, p. 246). As Hayles states, "Human beings are conceived, gestated, and born; they grow up, grow old, and die. Machines are designed, manufactured, and assembled; normally they do not grow, and although they wear out, they are always capable of being disassembled..." (1995, p. 322).



Image 10. *Tears* (n.d.).
Digital Oil Painting.
Artist: Seongjin Kim (Facezero).

Even so, *Cyborg* and *Tears* show emotion; McKenna's cyborg holds his head in his hands and is downcast. He is a hairless "blue-skinned cyborg" (McKenna, 2005, para. 2), covered with technology and a mass of wires. Kim's cyborg also appears contemplative and gentle; imagery which contrasts with his powerful frame. He is shown holding his hand to the centre of his chest which looks to be hollow. Kim provides text with his artwork: *If I had a little bird in my heart: Cry my tears*. Perhaps he is alluding to the cyborg's lack of an organic heart, and the tears which are unable to flow with ease from such a machinic body. Both these cyborgs are also shown with human contours, which Kuni (2004-2005a) contends makes them more accessible; helping us to embrace their interface ideology. To date, I have only found one illustration of a female cyborg who is shown as dispirited, dejected or contemplative; *Battle Angel Alita* (Image 57, p. 273). Most female cyborgs are shown with neutral or coy expressions, and slightly opened mouths, which adds to their sexual allure.

Hajime Sorayama, an acclaimed Japanese artist, is most well-known for creating science fiction female robot and gynoid illustrations. Sorayama's celebrated book *The Gynoids* (1993) is packed full with sensual visions of women engulfed by futuristic, silver, gleaming machinery and apparatus. Image 11, shown on the next page, is the cover art selected for this book. The term gynoid was coined by British science fiction writer Gwyneth Jones in her 1984 novel *Divine Endurance*, and represents the female equivalent to the android, or humanoid robot (Sorayama, 2008). Yet Sorayama's gynoids appear as human bodies interfaced with technologies, thus blurring the divisions between humanoid robot and technologised human.

Gynoid (Image 11) explores an evocative mix of youthful female flesh and gleaming futuristic chromed technologies. The gynoid is almost completely encased by the coiled pipes and leads which extend from her ears, chin and head. Many smaller cords and metallic tubes are also shown extending from her head covering. These rods also enter her nose, resembling a type of high-tech breathing device. In addition, the gynoid's chin is covered by a device which has sharp needle-like probes extending from it. The imagery overall suggests that she is connected to, and perhaps

dependent on, some kind of machine, which is a familiar cyborg aesthetic shown by artists such as Masamune Shirow, Sanjay Kothari, Jan Doležálek, and Andrew Kincaid, whose works are examined in the following chapters.

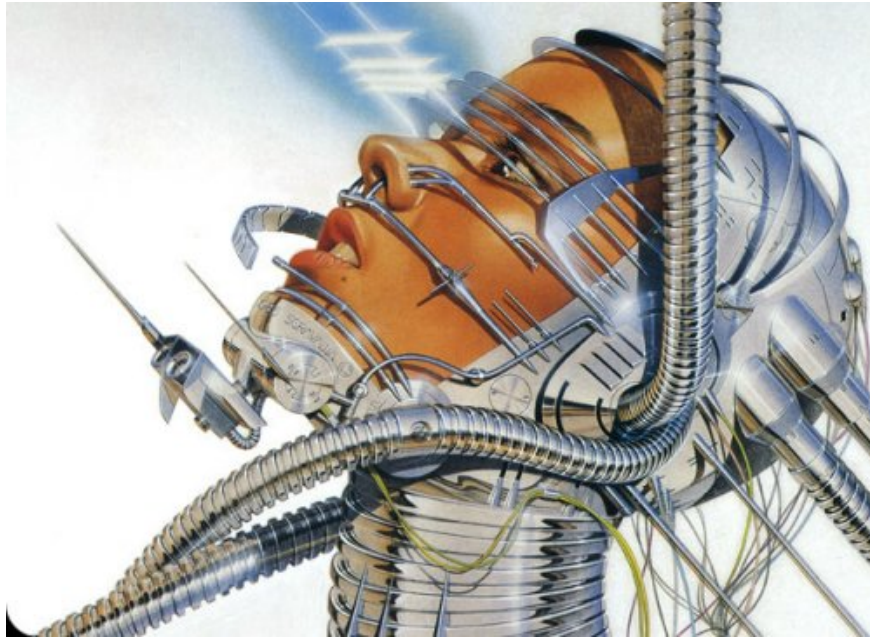


Image 11. *Gynoid* (1990s).
Painting and Airbrush Art.
Artist: Hajime Sorayama.

Sorayama uses a tiny brush, with a small amount of finishing airbrush application to create his erotic imagery. He has exhibited and published his work widely and recently began working on a science fiction movie project in America (Sorayama, 2008). Sorayama's "sexy robots" became a cult sensation following the publication of his 1983 book *Sexy Robot*. The famed American rock group Aerosmith selected one of Sorayama's sexy robots as the cover art for their 2001 album *Just Push Play*. The sexuality and mechanised fetishism evoked and displayed in many of Sorayama's cyborgs and robots is often uncompromising, existing on the extreme cusp of eroticism and "soft-core pornography" (Foster, 2005, p. 101). Yet these artworks show us how the female body can look interconnected with advanced futuristic technologies and the machine, with sex appeal as the common denominator.

The artworks discussed in the Feminism section are also created with a measure of eroticism and sexuality, as the female breasts depicted in the artworks are exposed and/or highlighted. Yet the artists who have created these works explore key themes surrounding women's role, expectations, self-image, and representation within contemporary society. Cyberfeminist art often aims to break down barriers and oppositional ideologies aligned with a variety of technologies, their general usage, implementation, distribution, and the way they are promoted in society (Wilding & Critical Art Ensemble, n.d.). This is achieved through the visual exploration of feminist theory; by exposing the possible outcomes of technological integration; and by drawing attention to the gender politics of mounting human-technology merger, such as its male-centeredness, and the general commercialisation of technoscience.

Feminism

Feminist artists frequently use the female subject and body to explore, critique, question and challenge increasing technological usage and interface (Cutler, 2001). Cyberfeminism in particular articulates a cyborgian consciousness and a cyborg politics which is a specific attitude or positioning towards emerging technologies and their impacts on women (Kennedy, 2000). As a perspective, it is committed to the postfeminist ideal of political praxis and self-empowerment in relation to technology. Cyberfeminism is simultaneously cautious, critical and celebratory concerning advanced technologies (Wilding & Critical Art Ensemble, n.d.). However, overall, cyberfeminism promotes the idea of becoming cyborgian and the pleasures which accompany this transformation (Volkart, 2004). As such, the cyborg constitutes an emblematic outline for this new and evocative politics of identity.

Cyberfeminists such as Rosi Braidotti (1996) draw on the links between postmodern and feminist art practices, examining collaborative feminist art groups such as the Guerrilla Girls, formed in 1985, which sustains a substantial presence on the internet. This group refer to themselves as “feminist masked avengers”, and focus on exposing

the racism and sexism which exists in most popular culture artefacts such as art, film, and advertising (Guerrillagirls, 2008, para. 1). The Guerrilla Girls (2008) use humour and direct action in order to accomplish their goals. VNS Matrix, active in the 1990s, is another familiar collaborative cyberfeminist art collective, consisting of a group of four Australian artists. These cyberfeminist artists became well-known after creating their controversial digitalised billboard *A Cyberfeminist Manifesto for the 21st Century* in 1991. This artwork was created as a way to draw attention to male domination in the field of technology creation and within cyberspace (Plant, 2000).

Faith Wilding (2002) is a Paraguay-born multi-disciplinary cyberfeminist artist and lecturer who focuses on the socio-politics of the female body, in particular, ideas relating to biotechnology. Wilding uses a variety of materials and mediums in her art, including printmaking, painting, drawing and electronic media, in order to explore the ‘psychic state’ of the contemporary female body. She views her work as a type of applied theoretical practice which is derived from research relating to cultural, philosophical and psychological ideas and phenomena. Wilding’s perspective of art is that it can be used as a political strategy, supporting the premise of this study that art can have social value. Wilding writes, “I’m interested in the transformational and pedagogical possibilities of a radical art – an art which uses beauty as a terrorist tactic, rather than an end in itself” (2002, para. 3).

Wilding’s artwork *Recombinant 1* (Image 12), included on the following page, shows a radical triadic configuration of animal, human and machine components. Her collage represents a tribrid; a “monstrous depository of melancholic historical fragments expressed as animal, human, organic, and machine parts” (Wilding, 2002, para. 1). Female breasts and neck are the only indications of human flesh, amidst armoured arms and hands and a metallic corset which is pulled tight around the mutant female’s mid-torso. The lower half of the figure depicts the hind body and legs of a possible deer, and the figure’s armoured head resembles that of a medieval horse. Moreover, a long-haired female doll dressed in early twentieth century corsetry and suspenders is inserted into the under body of the figure, possibly symbolising an

erect penis. The mutant female takes the form of an animal prepared for battle, while the smaller female takes the form of an erect male preparing for copulation. The female body in Wilding's collage thus becomes a 'monstrous subjectivity' (Kuni, 2004-2005b; Volkart, 2004-2005a), taking the form of others defined as stronger than she. Amelia Jones contends that Wilding deploys the "visual aggression of collage to construct monstrous fragmented animal/human/machine bodies that extend her engagement and interrogation of the flesh machine" (1999, para. 15).

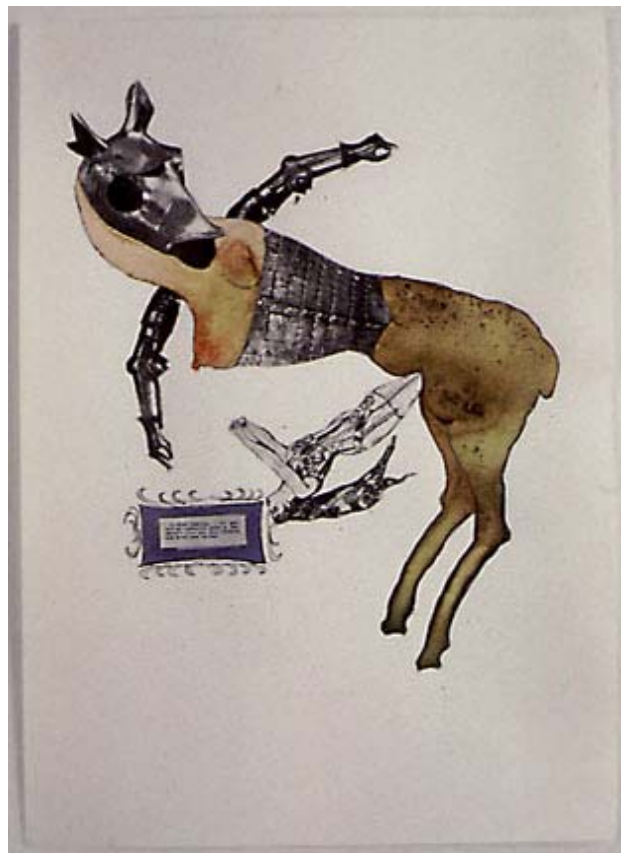


Image 12. *Recombinant I* (1993).
Xerox Collage: Pen and ink, and watercolour.
12 in. x 9 in.
Artist: Faith Wilding.

Lee Bul, a renowned Korean artist, has created *Cyborg W1-W4*, which also displays mutilated female cyborgs. Bul explores female bodies within the medium of

sculpture, and draws on feminist ideas and concerns in order to help form her artistic visions. Two currents feature strongly in Bul's cyborg sculptures; the interconnection and segregation between high and low art/culture, and the way women are often represented within these images (Bul, 2003; Obrist, n.d.). Bul blends popular imagery with fine art, exploring novel ways to bring to light the assumptions associated with depictions of women, particularly concerning what is considered beautiful and feminine. Bul states, "My critical strategy in creating the cyborgs, with reference to images of women in high culture, low culture, art history and popular media, is an intervention against a recursion of the kinds of ideologies that are operative in such representations" (as cited in Obrist, n.d., para. 6). *Cyborg W1-W4* (Image 13), presented on the following page, shows four headless silicon cyborgs, each resembling a mix of superhero, mannequin and robot (Grenville, 2001).

Bul is particularly inspired by the many Japanese and Korean anime and manga cyborg images which depict female cyborgs as girlish, feminine, powerful, and with super-human powers (as cited in Obrist, n.d., para. 1). I discuss two of the most popular Japanese female anime (animation) and manga (comic) cyborg characters within this study, who each display these characteristics: *Battle Angel Alita* (Image 57, p. 273) and *Major Motoko Kusanagi* (Image 58, p. 274). The combination of vulnerability, femininity and strength which *Alita* and *Kusanagi* exude is a captivating mix, and Bul draws on this imagery to create her silicon sculptures. She also finds artistic inspiration from historical archetypal imagery of femininity. Bul positions her cyborgs in the "timeless, iconic, feminine poses" (as cited in Obrist, n.d., para. 1), exemplified by artworks such as Sandro Botticelli's *Birth of Venus* (1482-1486) and Édouard Manet's *Olympia* (1863). Orlan also uses these types of iconic images as inspiration for her artwork *The Reincarnation of Saint Orlan* (1990-present). Features of her face such as her chin and forehead have already been recreated to resemble the features of iconic women represented in art (Brand, 2000).

Bul's hanging cyborgs resemble classical Greek and Roman statues as they are created all in white. They display a sexualised/idealised Western hourglass figure, yet

their aerodynamically designed body armour alludes to purpose, strength and protection (Lubowsky Talbott, 2001). Bul also evokes and symbolises both male and female human-technology interface fantasies. As Randy Lee Cutler suggests, Bul's cyborgs present "strange schizo-couplings of male fantasies and feminist empowerment residing on both sides of the image-stream" (2001, p. 197). Many of her cyborgs are also incomplete; Bul presents them as bodies with missing limbs or organs. She is therefore also questioning "the myth of technological perfection" (Bul as cited in Obrist, n.d., para. 1). Bul shows her cyborgs as vital yet constrained, assembled yet fragmented, beautiful yet deformed, thus visually exploring both the trepidation and yearning we have regarding corporeal technologies. I suggest that Bul's cyborgs therefore constitute udopian imagery; which is a term I use to denote the dystopian fears and utopian longings we often have/feel towards technology simultaneously. I introduce and discuss this new term and concept in the next chapter.



Image 13. *Cyborg W1-W4* (1998).
Sculpture: Cast silicone, polyurethane filling, and paint pigment.
Photo Credit: Yoon Hyung-moon.
Artist: Lee Bul.
Artes Mundi.

Lastly, Bul uses her mythical figures to draw attention to the way women are often deemed uninterested in or unable to engage with technological design. As discussed, this is a key concern Haraway addressed in her *Cyborg Manifesto*. Bul emphasises:

Much of the so-called scientific technology, computer technology, advanced engineering, and so on, has always been seen as the domain of male privilege, and in fact this attitude is found in the popular notion that women don't know how to use computers or women don't build things that are highly technical. (as cited in Obrist, n.d., para. 4)

Lynn Randolph shares Bul's artistic underpinnings. She states in relation to her painting *The Annunciation of the Second Coming* (Image 24, p. 156), that she was:

Deeply engaged in an attempt to create new mythic figures that represent life from a feminist perspective, one that seeks to have a strong voice in the construction of new realities accruing from the hyper emergence of new technoscience. (Randolph, email questionnaire, 2007, q. 1)

Randolph's artistic motivations regarding her provocative oil painting are discussed in the following chapter, along with interview participants' responses to this artwork.

Orlan and Mariko Mori (who is a leading Japanese multimedia artist), are two other well-known techno-feminist artists. Orlan, introduced in Chapter One, was the first artist to use cosmetic surgery out of its original context, and appropriate it for her own means (Gray, 2002). She reveals what lies before and after cosmetic surgery; images that are usually hidden behind the scenes. Orlan refers to her performances as Carnal Art as she uses her flesh as canvas. She argues that historically men have controlled the representation of women with paint and brush, and now they do this with scalpels (Brand, 2000). Mori, a former fashion model and designer, focuses on digital media, fashion and film, in order to create her cyborgian visions. In particular, Mori's CosPlay (costume play) centres on caricatures of various cultural and ideological classifications of female 'types' in society (Cutler, 2001; Lubowsky Talbott, 2001). Mori uses media technology and fashion to shift with celebrated ease between techno-school-girl and mystical-female-alien, epitomising the shape-shifting polymorphous fluid identity of cyborg and posthuman beings living in the postmodern era. Volkart suggests that Mori situates her work at the "crucial interface

between art, fashion, new technologies, and future body issues...” (1999, p. 7). Volkart (1999) uses phrases such as the “posthuman state of mind” (p. 1); “posthuman life” (p. 4), or a “posthuman state of being” (p. 7) within her essay on artists such as Mori, and the concepts of art, posthumanism and infobiobodies. She claims that artists who centre their artistic objectives on the cyborg or posthuman body often evoke the fear of living in the posthuman age, yet they do so with critical engagement, esoteric strategies, and ironic displays of resistance.

Posthumanism

In contemporary society, few artists use the term posthuman to refer to their artworks and artistic visions, which tangibly explore ideas of human technological or ontological transformation. However, Slovenian artist Domen Lombergar (2006) used the term posthuman to refer to his recent 2007 photographic art exhibition which focused on eerie cyberpunk-inspired images showing the human body interfaced with technology in evocative, erotic and transgressive ways. Joachim Luetke, the notable German artist, also uses the term posthuman to refer to his provocative and metaphorical cross-media sculptures and artworks. He presents a collection of his earlier works in his expansive 2000 art volume *Posthuman: The Art of Joachim Luetke*. Three of Luetke’s artworks are included in this study in Chapters Six and Seven. Natasha Vita-More’s artwork *Primo Posthuman* (2000), briefly discussed in Chapter One, is one of the most well-known images of the posthuman body. Vita-More shows the body as conceivably upgradable, including a new metabrain and smart skin. Extropians such as Vita-More see humanity today in a “transitional stage between our animal heritage and our posthuman future” (More, 2003, para. 12).

In her 2007 book *Cyborgs and Barbie Dolls: Feminism, Popular Culture and the Posthuman Body*, Kim Toffoletti opts for a focused inquiry into six posthuman illustrations, including three artworks created by Patricia Piccinini, whom I also draw on in this study. Toffoletti suggests that cyborg and posthuman images inspire

purposeful “thinking about the subject in an age of biotechnologies, information networks and digital worlds” (2007, p. 1). Yet, overall, I suggest that it is difficult to determine exactly what a posthuman being is due to the broad way the term is used within literature and theorising, and because there is a lack of posthuman beings shown in mainstream films, television shows, and books. There is also limited usage of the term posthuman within these realms. Best and Kellner rightly acknowledge that posthumanism is a “vague term used in various ways” (2001, p. 195).

Best and Kellner (2001) use the phrase ‘the posthuman turn’ to address changing human attitudes and experiences in the new millennium, particularly regarding biotechnologies such as stem cell research, genetic engineering, neuropharmacology, xenotransplantation and cloning. Francis Fukuyama (2002) shares this focus, adding that biotechnology will have a profound impact on ‘human nature’ in the future because of its ability to alter humanity at a fundamental level. Posthumanism became an increasingly debated concept within theory in the 1990s due to fears over the ‘end of the body’ via technological integration (Volkart, 2004-2005a). This is because posthumanism draws attention to the way humanity is increasingly attempting to eclipse natural evolutionary pathways and reproductive boundaries (Graham, 2002; Rossini, 2003). As Mann claims, “We are entering the post-human age” (2001, p. 2).

There are three main ways the cyborg and the posthuman have been discussed as interlinking concepts within scholarly theorising in the past few decades. The first perspective views the cyborg and the posthuman as interchangeable, relating to increasing human and technological merger broadly, such as telematic integration, mind/brain and technology interface, and artificial intelligence (Hayles, 1999). The second perspective views the posthuman as the cyborg’s successor with a focus on biotechnology and post-corporeality, which is linked to discussions on virtual bodies and immortality (Kurzweil, 2005). I discuss this focus towards the end of this section. Lastly, the posthuman is viewed as a new critical postmodern entity, far removed from the flawed liberal white male European humanist subject (Hayles, 1999). The posthuman is thus also viewed as a sibling to Haraway’s cyborg, whose identity is

fluid, multiple and non-hierarchical. Judith Halberstam and Ira Livingston (1995) argue that the human judges and hierarchically categorises race, gender, class, age and sexual preference, while the posthuman does not reduce difference to opposition.

Viktor Koen, who is an award-winning American-based artist, created *Medical Breakthroughs* (Image 14), shown on the next page, to metaphorically represent a cognitively enhanced being. Koen's digital illustration superimposes computer imagery over the exposed and vulnerable human brain, denoting brain/mind augmentation. Actual brain-technology interface medical breakthroughs in existence today include the tremour-reducing 'brain-pacemaker' implanted just under the skin in the neck and shoulder region of Parkinson's disease sufferers. Deep-brain stimulators (DBSs), which are long electrodes, send electrical stimulation to the thalamus, helping to reduce or stop the tremours (Naam, 2005).

Hayles (1999) argues that human beings will increasingly synthesise cognitively (and ideologically) with technology and intelligent machines. She states that we will "continue to ponder our kinships with and differences from the intelligent machines with which our destinies are increasingly entwined" (Hayles, 1999, p. 282). However, William Haney (2006) warns that there are dangers of modifying consciousness within the bounds of embodiment. He argues that if the "neurophysiological basis of human nature is radically modified through bionic technology, we may lose the ability to sustain an experience of self-awareness..." (Haney, 2006, p. 177).

Koen's cyborg is shown devoid of an expression denoting awareness, yet he is also shown untouched by conventional expressions of gender. He is a blank slate with no cultural or ideological 'baggage' accompanying him into the new technological era. The contoured lines on Koen's interfaced being's face, ears and neck symbolise electronic fibres as internal corporeal network flows, while the faded numbers positioned above his head symbolise a new posthuman technological aura or halo. The white beams emanating from the brain are suggestive of external wireless links,

while the deep blue-black sky signifies the stratosphere, metaphorically pointing to the infinite scope of humanity in the dawning of the posthuman age.

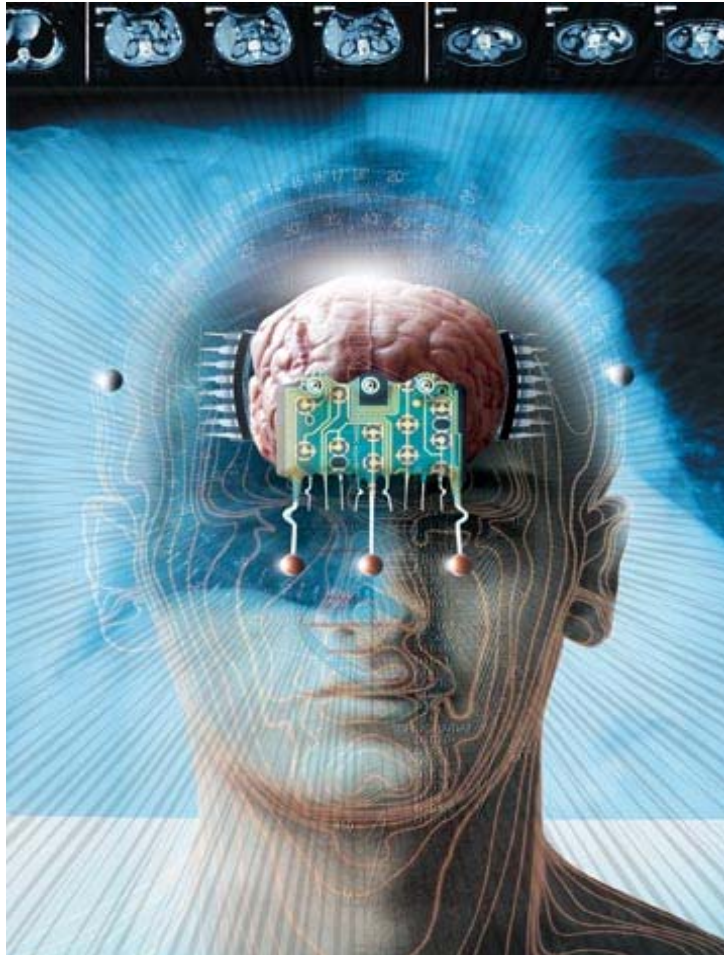


Image 14. *Medical Breakthroughs* (2006).
Digital Art Illustration.
Artist: Viktor Koen.

Posthumanism as a concept also often centres on the idea that in the future machinery will deal with the mundane tasks of human existence and humans can live their (immortal) lives as purely spiritual creatures of perfection (Mazlish, 1993). Short emphasises that “Posthumanism is a dream that is as old as humanity” (2005, p. 163). Hans Moravec (1988) was one of the first theorists to discuss ideas of techno-immortality/post-corporeality, believing that human consciousness could potentially

be downloaded into computers and transformed into software within the twenty-first century. He believes that the human body is merely the machinery which supports the process of thinking; therefore if the process is preserved, the person is preserved (Moravec, 1988). Ray Kurzweil (2005) suggests that future cycles of life and death will cease to exist, and human life will be irretrievably altered via technology.

Moravec (1988) agrees with Clynes and Kline (1995) that genetic engineering is not a viable option or solution to human aging and corporeal or cognitive limitations, as protein is not an ideal material, stable only in certain temperatures, pressure ranges, and sensitive to radiation. Moravec refers to the body as mere 'jelly'. Cyberpunk writers often echo his sentiments, referring to the body as 'meat', where the "dead flesh" surrounding the active human mind simply restricts human evolution (Lupton, 1995, p. 100). The material body, as opposed to a virtual body, requires certain repetitive and often dull and time-consuming behaviours, such as washing, sleeping, eating, defecating and urinating (Lupton, 1995). The body also requires exercise, rest, and care when ill or tired. As such, the body can be viewed with disdain and distrust (Maldonado, 2003). Conversely, "disembodied cyborgs" (Muri, 2003, p. 74), or virtual bodies, do not require any of these activities. Therefore a prevalent human dream is to leave the meat behind and "become distilled in a clean, pure, uncontaminated relationship with computer technology" (Lupton, 1995, p. 100).

Anders Sandberg has created *Posthuman Meeting* (Image 15), included on the following page, which represents themes of post-corporeality and immortality. In Sandberg's artwork, the human body has been dispensed with in favour of a disembodied virtual existence. Sandberg evokes an entity that exists only as energy waves and as a body 'without fluids' (Kunst, 2000). *Posthuman Meeting* shows the face outline of a former corporeal human being floating in a triangular passageway pieced together with metallic segments. The posthuman silhouette is created in white, signifying newness and purity, while the passageway is created in blues signifying calmness, as blue is viewed as a "constant in our lives"; the sky never falling and the ocean never drying (Eiseman, 2000, p. 39). *Posthuman Meeting* also displays a bright

light at the end of the passageway, perhaps symbolising the attainment of the spiritual purity of death, without actually dying, but by becoming pure energy or software.

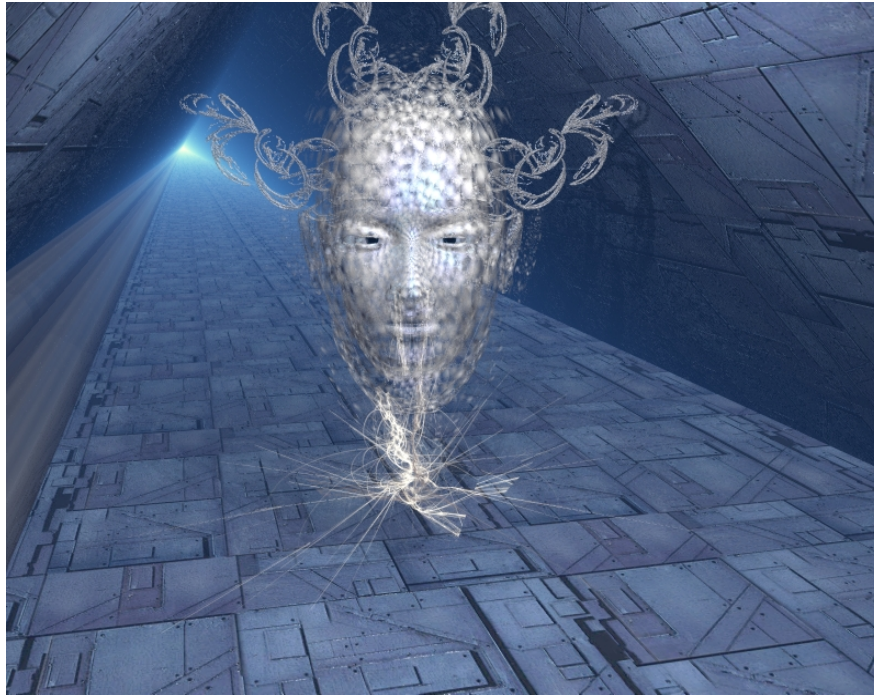


Image 15. *Posthuman Meeting* (2002).
Digital Art.
Artist: Anders Sandberg.

Despite the enthusiasm for disembodiment and immortality, theorists such as Hayles (1999), Best and Kellner (2001), and Foster (2005) reject the idea of the post-corporeal posthuman being, arguing that embodiment remains a core component of human existence. They feel that it is a naïve illusion to believe that transcendence of the body is possible, and that it will bring about a utopian immortality. Hayles argues that “Embodiment has been systematically downplayed or erased in the cybernetic construction of the posthuman...” (1999, p. 4). She suggests that Moravec’s vision is flawed, as thought constitutes much more than a cognitive activity; it is a process that requires the entire body. Hayles asks, “How could anyone think that consciousness in an entirely different medium would remain unchanged, as if it had no connection with embodiment?” (1999, p. 1). Rodney Brooks (2002) supports Hayles’ sentiments,

arguing that humanity will not download themselves into machines, but rather transform into corporeal-based machines. Stelarc (1998a) has a similar view, arguing that the body is no longer viable. He suggests that replacing human organs and skin with technology, machinery and synthetic substances is a more realistic option than post-corporeality and disembodiment. I discuss Stelarc's views in Chapter Seven.

The fervour surrounding issues of virtuality and extending human life span is far-reaching. However, today, the cyborg as a corporeal being is still one of the most important critical tools for examining current digitalised society. As Gray, Mentor, and Figueroa-Sarriera aptly surmise, "The ontology of cyborgology is embodiment" (1995, p. 12). The concept of the cyborg *is* corporeal-technological fusion. Ultimately, the cyborg as a bodily interfaced being is an entity intricately intertwined with technological artefacts and cultural ideologies. The cyborg exists as a series of real connections between bodies and machines, but also as a series of metaphors and new ways of telling stories about humanity and technology in order to explore and negotiate culture (González, 1995; Murphie & Potts, 2003). This study uses cyborg art as an explorative tool in order to visually examine and articulate stories about our changing physical ontology and therefore our changing "being-in-the-world" (Heidegger, 1962, p. 78). We are still born and we still die, yet our lives are shifting and turning dramatically, interlinking with technology in numerous ways.

I have demonstrated in this historical chapter how early twentieth century artists were evoking cyborgian themes before the concepts of 'cybernetics', 'bionics' and 'cyborg' were created; their visionary works often inspired by military technology and industrialisation. I have also examined how science fiction and feminist artists, and artists seeking expression of the posthuman concept, began using the cyborg and the posthuman body in order to explore bodily changes and adaptations brought on by increasing human interactions with technology. This chapter has thus provided a foundation for the following three chapters, which incorporate the interview and questionnaire data, with a selection of cyborg artworks and corresponding theoretical perspectives, in order to illuminate the key themes which each artwork symbolises.

Chapter Five

The Cyborg, Technology, Art and Cyborg Art, and Corresponding Research Participants' Reflections

The focus of this chapter centres on the sourced interview and questionnaire data. Key themes discussed are the various ways the cyborg is presented in art, including dystopian, utopian and udopian representations; ideas relating to the symbolism and iconism of the cyborg body; issues relating to increasing human dependency on ubiquitous technologies; perspectives on art and the characteristics of art; and lastly, whether cyborg art is deemed to have the power to impact on people's lives tangibly. The closing discussion of cyborg art centres on examining attitudes towards this emerging and as yet relatively unknown artistic focus; how people relate to the terminology of cyborg art; and whether cyborg art is considered to have social value and potency. The empirical data obtained enables an overview and an understanding of the way these concepts are perceived by the research participants, before the following two more subject-focused chapters are presented.

The Cyborg and Technology

The cyborg is above all a boundary concept, formed from both organic and artificial components; hence, the cyborg's status as being both human and non-human challenges conventional social norms and mores. This is one of the most compelling aspects of the cyborg; the way it disrupts traditional Western ideological binaries and borders. Balsamo claims that "This merger relies on a reconceptualization of the human body as a 'techno-body', a boundary figure belonging simultaneously to at least two previously incompatible systems of meaning – 'the organic/natural' and 'the technological/cultural'" (1996, p. 5). The cyborg is also considered a symbol and an icon of contemporary society (Graham, 2002), as it visually depicts the way we are

interminably transforming, in addition to serving as a metaphor for human and technological conjoining (Figueroa-Sarriera, 1995; Walker & Chaplin, 1997). The cyborg thus provides an emblematic function for society, as it exists as an intermediary between the organic and inorganic realms, helping us to understand our own responses towards technology with more profundity (Benesch, 2002).

The Cyborg as an Organic and Inorganic Construct

Cyborgs can be human-first or machine-based entities, depending on the focus of the artist, illustrator, director, game designer or author. Familiar film characters such as *Major Motoko Kusanagi* (Image 58, p. 274) and *Robocop* (1987) are ‘true cyborgs’ as they were initially human beings transformed by technology, albeit having only a kernel of their human brains remaining (Ueno, 2001). Conversely, cult film hero *The Terminator* (1984) is a machine-based cyborg, created to look and act like a human being. Due to the existence of these two main opposing cyborg types within popular culture, I asked the interview participants what they deemed a cyborg to be. Thirty-four interviewees responded to this question with varied viewpoints; their comments overall centring on four main themes relating to the perceived configuration of the cyborg. These are introduced below, with an example of participants’ verbatim quotations pertaining to each of the themes to emerge from the discussions.

Many participants felt that a cyborg was a human and machine hybrid and/or a cybernetic organism, which is how the cyborg is most often regarded within general and scholarly literature. Comments included: “A cyborg is an amalgam of human and machine technology” (Nick), and “It means cybernetic organism doesn’t it?” (David). A number of interviewees also stated that a cyborg was a robot or an android. Maddy responded, “A robot I think”, while Nadz answered, “I think it’s an android that looks like a human. Just that we make them more appealing to humans because they tend to threaten so there’s a human element in there”. In addition, several interview participants believed that a cyborg was a human being with technological adaptations.

Cherie replied, “A cyborg to me is, if I had to think about it in parts, I would say a human with technology implanted in them or on them such as a cyborg arm, eye that kind of thing, but organic first and foremost”. Phil commented:

...any biological creature which has had artificial technologies or I should say more specifically grafted technologies, grafted into it to function as part of it; the difference between wearing something and actually having it physically jabbed into your system as it were.

Lastly, some interview participants also felt that a cyborg could be both a human-first organic entity and a robot; a mechanical entity. As Emmanuel stated:

I think the term cyborg actually covers the full range. So typically I think we probably see cyborgs as being more starting from an organic component and then adding technology to them...and there is some work being done on growing genetic computers or organic microchips at the moment; that certainly starts with a technological base and then adds an organic component to them.

Further responses which were not shared by other participants included that the cyborg is a representation of a better or more perfect human being, a ground-breaking or bizarre entity, or a fantasy creature or creation. A few interviewees also commented that they were not entirely sure what a cyborg was; that they only had a vague idea of its definition. As Nico replied, “I don’t know what a cyborg is even”.

These responses indicate that there are diverse ways in which the cyborg is viewed. This can be attributed to how the cyborg has been portrayed in popular culture in the past few decades, and the way it is often discussed as a literal and metaphorical entity within literature (Delany, 1996). Theorists believe that the uncertainty felt towards the cyborg concept can limit its potential as an ideological concept and symbolic emblem (Balsamo, 2000; Gray, Mentor, & Figueroa-Sarriera, 1995; Springer, 1996). I agree with this premise. As the cyborg is often deemed a robot, which is something human beings make rather than something humans beings become, it can be dismissed as theoretically and ontologically irrelevant. This dilemma is addressed in more depth in Chapter Eight. However, as the above findings show, many participants were aware that a ‘true’ cyborg is a human being who is modified by technology in some way. As mentioned in the previous chapter, the cyborg concept

was originally created by Clynes and Kline (1995) to refer to a human being adapted by technology in order to be able to exist in harsh environments such as outer space.

I asked the same question *What do you think a cyborg is?* in the hand-distributed questionnaire (Question 2, Appendix H, p. 454), offering the respondents ten options, and asking them to select as many options as they wished, as shown below in Figure 5. Sixty-five respondents answered this question and the two most popular options were *A person with technological adaptations*, with 30 responses, and *A human and machine hybrid* with 25 responses. These findings identify that many of the respondents were aware that the (theoretical) cyborg is in fact a human-first entity. The options *A science fiction character* and *Not sure* were both selected by 16 respondents. This latter finding shows that 25 percent of the respondents were also not sure what a cyborg actually was. This supports the view that the cyborg concept can be looked upon with uncertainty, due in part to the variety of ways it is represented today (Delany, 1996). The option *A robot* was selected by 13 respondents, while the least selected option was *A clone*, with only three responses.

What do you think a cyborg is?	Number of times the options were selected by 65 respondents
1. A science fiction character	16
2. A robot	13
3. A clone	3
4. A person with technological adaptations	30
5. A person who is consistently connected to communication technologies	7
6. A human and machine hybrid	25
7. An organism fused with technology in some way	14
8. An organism altered by technology in some way	9
9. Not sure	16
10. Other	0

Figure 5. *Questionnaire Results: Question Two*; showing the options most often selected by respondents when asked what they deemed a cyborg to be.

Science fiction television and film cyborgs are plentiful, and have had an enormous impact on popular culture as they are able to tangibly and metaphorically identify the pressures and transitions of living in our digital and biotechnological age, helping us to navigate the concept of body-technology interface with more insight (Murphie & Potts, 2003; Oehlert, 1995). Film cyborgs also have a “semantic open-ness”, denying single interpretations (Short, 2005, p. 9). I asked the interview participants if science fiction cyborgs (depicted in television shows, films, books and comics) had increased their understanding of the links between humanity and technology. Thirty-three participants responded to this question; their responses focusing on two main themes. Just over half the interviewees answered ‘yes’ or ‘possibly’ to this question. Blair replied, “Yes, ’cause that’s basically all I really know from literature and movies”, while Steven commented, “If you watch *Six Million Dollar Man* now you’d laugh ’cause of the technology back then, how fast it’s improved”. Marion responded that “[The cyborg] portrays the argument.../...It personifies the argument. Brings it into view...” These responses centred on the way science fiction can visually present ideas relating to technology for consideration and debate.

Some interview participants also answered ‘no’ or ‘not really’ to this question. Paul replied, “Not really, I think science fiction is...not really representative of how things are necessarily going to play out, it’s a fantasy”. Demelza similarly responded with the comment, “...that’s all fiction and it’s all just ideas that somebody’s come up with that might be possible in the future...” These interviewees felt that science fiction was just fantasy, and thus unable to be insightful in any way regarding the realities of technoscience. However, the responses overall reveal that nearly twice as many participants felt that science fiction cyborgs had increased their understanding of human and technology links, than those who answered no or not really. The responses therefore indicate support for this study, as I deem cyborg imagery as able to foster understanding in any sphere – particularly relating to the art realm.

Lastly, due to the variety of figural cyborgs which exist in popular culture and the number of actual cyborgs in existence today, I sought to discover which cyborgs were

most well-known to the questionnaire respondents. All 65 respondents answered a question asking which cyborgs they were most familiar with overall (Question 3, Appendix H, p. 454). I provided ten options with this question, and stated that any number of options could be selected. The most popular were *The Terminator*, with 44 responses; *The Six Million Dollar Man*, with 37 responses; *Robocop*, with 36 responses; and *Darth Vader*, with 34 responses. The least selected options were Steve Mann, with one response, and Kevin Warwick with no responses. These findings clearly indicate that cyborgs relating to popular culture and science fiction are more well-known than ‘actual’ or academic and research-based cyborgs.

The Cyborg as a Symbol and Cultural Icon

The cyborg is often deemed an emblem of postmodern society as it symbolises our shifting ideologies and constitution (Brasher, 1996; Graham, 2002). The cyborg also serves as a symbol of unity, helping us to gauge our desires for technology in more depth (Benesch, 2002; Kull, 2001; Short, 2005). As Hara affirms, whether the cyborg “is a symbolic image, discourse system, or future human form, ‘cyborg-ness’ already appears within us as a symptom” (2001, p. 247). I asked the interview participants whether they thought the cyborg can be viewed as a symbol of contemporary Western society; 27 responded to this question, their comments addressing two main themes. Several participants felt that cyborgs are overall representations of, or for, the future. As Nicholas replied, “A future society I think it would be; there’s very few people who actively move towards that at the moment”. Nico commented, “...a symbol of the near future rather than contemporary.../...if I was going to pick a symbol for today I would pick the computer”. A number of interviewees also felt that the cyborg may increasingly become a symbol of progress. As Malcolm stated, “I think that’s something that people are starting to see more of in their minds, but it’s more just a continuation of what has been happening probably for the last hundred years or more”. Phil replied, “I think it’s a symbol of an intent, of a plan, rather than this society itself...But it is certainly an icon of an ideology...”

These responses show that the cyborg is considered more a symbol of a future society rather than contemporary society, which does not support theorists' views that the cyborg is a key symbol of our technological synthesis and transition today. Furthermore, the diverse responses offered to this question indicate that there is uncertainty over the cyborg as a potential symbol of human and technology merger. This uncertainty may once again stem from confusion over the definition of the cyborg. Responses which were not shared by other interviewees included that the cyborg is a historical 1970s/1980s phenomenon; that it symbolises our relationship with technology in general; and that it is a symbol of the East and of virtual reality.

Sixty-five questionnaire respondents also provided feedback on the statement: *The cyborg is a symbol of contemporary society* (Question 10, Appendix H, p. 456). Twenty-seven respondents agreed with the statement; 14 selected the option *Agree*, eight selected the option *Somewhat agree*, and five selected *Strongly agree*. However, 21 of the 65 respondents selected the option *Don't know*, which again identifies that there exists hesitation over the concept of the cyborg as a potential symbol of contemporary society. Seventeen respondents also disagreed with the above statement: nine selected the option *Disagree*; five selected *Somewhat disagree*, and three selected *Strongly disagree*. Therefore, 38 respondents were unsure or disagreed with the statement, outnumbering the 27 respondents who agreed with the statement. This shows a measure of support for the interview findings, which did not show strong support for the cyborg existing as a symbol of contemporary society.

A symbol is a sign that has, through usage over time, acquired a secondary and often explicit additional meaning (Walker & Chaplin, 1997). Symbols require a shared understanding of what they allude to, and they must also be stronger than what they resemble, as symbols communicate abstract ideas relating to actual concepts or constructs (Bell, 1999; Sperber, 1975). Alfred Whitehead identifies that "The object of symbolism is the enhancement of the importance of what is symbolised" (1959, p. 63). The cyborg is thus perceived by theorists to symbolise the corporeal conjoining of humanity and technology in our current epoch as much as it is a prefigurative

construct. Yet the interview and questionnaire data indicates that this merger may still be situated too far from most people's worlds to be significant. As Chris stated:

...most people still think it's irrelevant; it hasn't come up with everyday life yet. You don't see, you see news stories every now and again about some guy with a robotic arm or with a chip in their eye, but no one – I don't think people really take it seriously...[or have] formed an attitude or an opinion on it.

Theorists suggest that the cyborg can also symbolise the body as a malleable construction, which can be manipulated and transformed by prevailing cyborgian fantasies of transgression and technological adaptation (Kunzru, 1997; Williams & Bendelow, 1998). This is because “cyborg imagery modifies the horizons of what a body can be...” (Featherstone, 2000, p. 2). Isa Gordon, a techno-body artist working in the conceptual terrain of cybernetics, is an example of this as she focuses her attention on “the collision of bodies and machines” today (Gordon, 2001-2002, para. 1). Gordon, in collaboration with Jesse Jarrell, Eric Gradman, and DEvan Brown, developed *The Psymbiote Project*, which combines the Psymbiote titanium glove, shown below, with an interactive performance suit. Cybernetic unit sensors fitted into the suit capture and display body noise such as heart rate and voice, transforming the wearer into “a human/machine chimera” (Gordon, 2001-2002, para. 1).

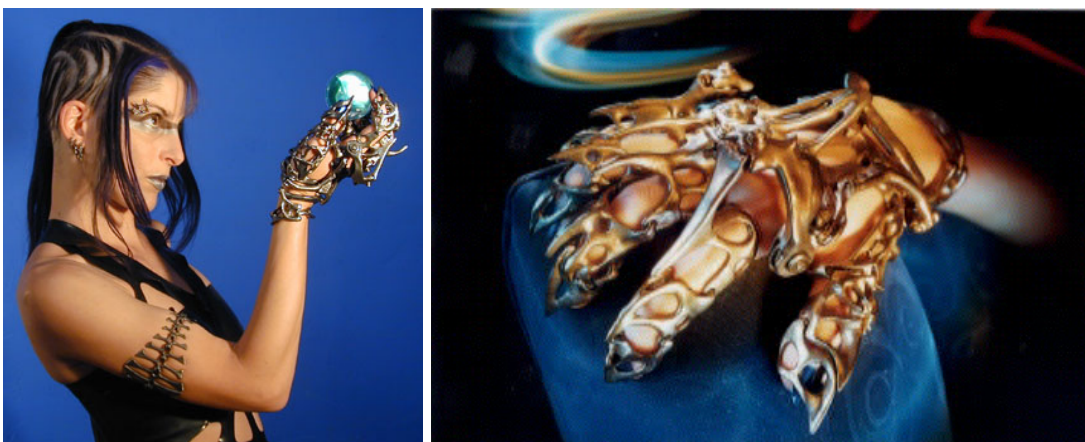


Image 16 (Left) & 16a (Right). *The Psymbiote* (2001-2002).
Titanium Glove Fashion Accessory.

Image 16 Photo Credit: DEvan Brown. Image 16a Photo Credit: Lukas Zpira.

Artist/Designer: Isa Gordon (model), with Jesse Jarrell, Eric Gradman, and DEvan Brown.

Gordon forms a new “cyborgian subjectivity” as *The Psymbiote* (Pitts, 2003, p. 176), attending conferences, speaking at universities, and hosting cyberfashion shows. Gordon and Jarrell state that “The Psymbiote is an attempt to bring the issues raised by the ongoing redefinition of the human body and its boundaries into a public forum, highlighting some of the contemporary critical discourse surrounding cybernetics, cyborgs and other human technological hybrids” (2001-2002, p. 2). The appeal of such a cyborg glove or hand is evident today, as shown by the public interest towards American singer and songwriter Beyoncé Knowles’ incorporation of a cyborg hand in her 2008 hit music video *Single Ladies (Put a Ring on It)* (Daily Mail, 2008).

Body modifiers such as ‘Sothis’ delve even further into actual body transgression, demonstrating tangibly their techno-lust or “cyborg envy” (Dumit, 1995, p. 347). Sothis’ back is covered with a biomechanical cyborg-inspired tattoo, showing the skin ripped open, with the new and improved inorganic spine bursting through to be proudly displayed. The caption which accompanies the photograph of Sothis’ cyborg tattoo reads: *I want to be a cyborg...* (Plastik Army, n.d.). This quote patently shows Sothis’ adulation for the concept of body transformation. Biomechanical tattoos and Gordon’s augmentation body-art dramatically and visually symbolise the fervour people can feel towards the interface and the cyborg aesthetic. However, when I asked the questionnaire respondents whether they considered themselves to be a cyborg (Question 5, Appendix H, p. 455), not one person answered *Yes* to this question. Fifty-nine of the 65 who responded answered *No*, while six respondents answered *Not sure*. These findings clearly indicate that the ‘self as cyborg’ concept was not acknowledged by the respondents. This suggests that the cyborg idea may exist more on a conceptual terrain; active as an abstract concept rather than a tangible construct, and as a form of expression (or as a necessity) for only a few individuals.

Furthermore, I asked the questionnaire respondents if they had ever been technologically altered in any way (Question 6, Appendix H, p. 455). Forty-six of the 64 respondents who answered this question selected the option *No*; 11 answered *Not sure*; and seven answered *Yes*, with various responses ranging from having undergone

cosmetic surgery and hip replacement, to wearing glasses. These responses related to the enhancement or repair of the body, rather than technology being used to alter an already fully functioning body. A female respondent also mentioned that she felt she was technologically altered due to her frequent use of computers, appliances and a car. The findings overall show that only a small number of respondents equated technological tool use with technological modification; most stated that they had not been technologically altered in any way. These findings support Hayles' (1995, p. 322) contention (regarding the 1990s) that actual interfaces are not overly common; where only ten percent of Americans could be 'technically' thought of as cyborgs.

Dystopian and Utopian Cyborgs

Artists and image creators often symbolise our collective fears towards, and desire for, body-technology synthesis (Pitts, 2003; Short, 2005); presenting cyborgs as either "utopian or dystopian prophesies" (González, 1995, p. 267). Gray (2002) agrees that most futuristic art is utopian or dystopian, but he adds that these artworks can never fully encapsulate future worlds, because the artworks have been created without an actual prefigurative experience of that world. I note that Gray uses the term prefigurative to refer to an artwork which has been created via an experience of the interface which is being explored. He also claims that Utopia is a 'nowhere' place as "we'll never have perfect politics", as such, Dystopia may refer to an 'everywhere' place; therefore already in existence (Gray, 2002, p. 183).

However, two-dimensional artworks which depict utopian and dystopian fantasies can still be powerful, particularly when contrasted with one another. As such, I have juxtaposed Jan Doležálek's dystopian photomontage *Happiness in Slavery* (Image 17) with Viktor Koen's utopian artwork *Nutritionman* (Image 18), on the next page. These images have been created in similar neutral tones, and both show an interfaced man; the first, with a focus on the head, and the second with a focus on the body. Yet one is disempowered by the merger, while the other is thoroughly empowered.



Image 17. (Top) *Happiness in Slavery* (n.d.).
Photomontage.
Artist: Jan Doležálek.

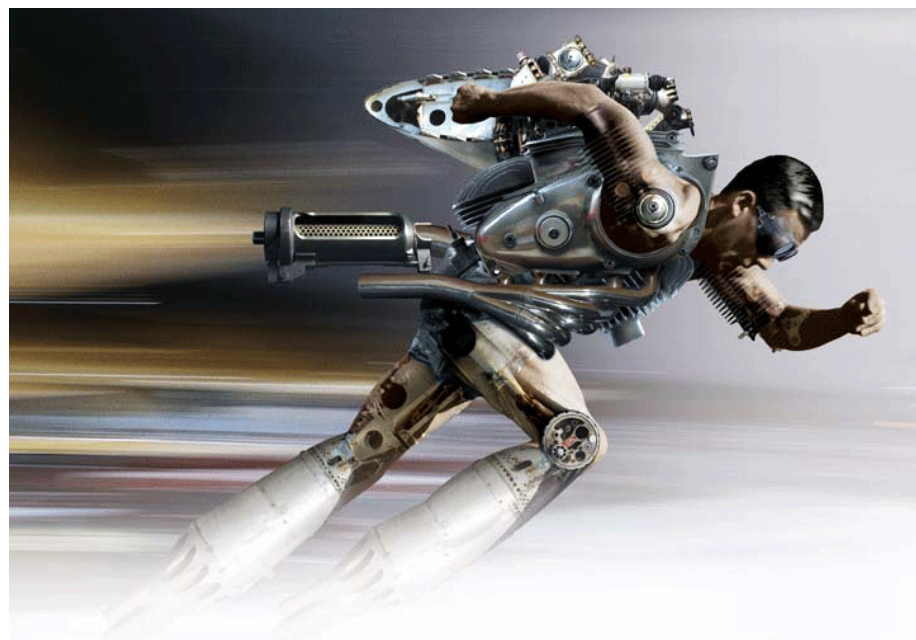


Image 18. (Bottom) *Nutritionman* (2005).
Digital Art Illustration.
Men's Journal.
Artist: Viktor Koen.

Doležálek's ironically titled artwork *Happiness in Slavery* indicates that the slave cyborg is smiling through his interface, and in the face of his loss of human agency. Doležálek's cyborg has become dehumanised, a slave to the machine and resigned to his fate; living both in a live and dead state. He is depicted as hairless (and lip-less) and fused with industrial-type technologies and apparatus. Conversely, Koen's cyborg is represented as slick and cool, with hair gelled back, wearing cyberpunk goggle-type glasses, and fused with advanced, albeit bulky, silver and shiny devices and equipment. Koen's cyborg focuses on technological enhancement of the body via external prosthetics and represents action, speed and control. This futuristic cyborg is shown in motion, complete with propulsion units and machinic technologies grafted into nearly every inch of his corporeality. He is powered by technology, which is propelling him into the posthuman age. While *Nutritionman* shows advancement and pace, *Happiness in Slavery* depicts static dependence, mind-machine intermingling and possibly mind control, in a human being who has lost his autonomous will.

The representation of cyborgs as either dystopian or utopian constructs is a recurring theme in cyborg art. I asked the interview participants whether they felt there were more dystopian or negative images of cyborgs created than utopian or positive portrayals, in order to discover which version they felt was more common overall. Twenty-one participants responded to this question and their comments centred on two key ideas. Several felt that there were more dystopian than utopian cyborgs created in general. As Luke stated, "Everything I've seen where the people have had enhancements or whatever is negative. I've never seen a positive". Nicholas replied, "Yes, by far.../...cyborgs tend to be the ones running amok, in well, movies at least, killing people. Because it's unknown, people have a fear of the unknown". A few interviewees also felt that both dystopian and utopian cyborgs were created in popular culture, depending on what the accompanying narrative in the film, book or game presents. As Paul stated:

A bit of both but more towards the negative...I was trying to think of actual positive ones that – the only one I could think of was that Robin Williams one where he was the robotic sort of boy.../...Yeah, most of the other ones are sort of more towards the negative side, almost fearful.

The responses reveal that just over half the interview participants felt that dystopian or negative representations of cyborgs were more prevalent overall. I have also located more dystopian cyborg visions, with themes of mutation, dependence, abuse, and hyper-aggression, than positive portrayals, with themes of contentment, advancement, strength, and vitality. This study includes approximately 29 artworks which evoke dystopian themes; 11 that could be deemed utopian; and 32 which evoke utopian aesthetics. Ron Burnett (2004) suggests that negative portrayals serve as warnings for society; alluding to dystopic outcomes to human evolution. This is due to the fears we have regarding the power of technology. Volkart (1999) adds that dystopian cyborgs often imagine and evoke a world transformed by pancapitalist themes of domination, where the masses are controlled by those in power, or by the machines themselves. Cyborg art ultimately enables the visual and theoretical transmission of metaphorical and prefigurative ideas; stories which formulate vistas for comprehending the underlying processes of increasing cyborgisation (Gray, 1998, 2001). A metaphor exists as a merger of two differing or binary elements (Figueroa-Sarriera, 1995; Walker & Chaplin, 1997), which enables an implicit comparison to be made between two distinct spheres (Friday, 2002). Therefore, metaphors (such as the cyborg) enhance our understanding of a concept as they represent ideas in a fundamentally different way to explicit communication (Schirato & Webb, 2004).

The Utopian Cyborg

The utopian cyborg aesthetic focuses on cyborg imagery which presents both negative and positive elements simultaneously (or no definable stance). I have found, and thus suggest, that not all artists envision the future as either dystopian or utopian; some create imagery which is a combination of both positive and negative cyborgian elements and infusions, in order to specifically point to the duality and ironic nature of the cyborg concept. Short agrees that cyborgs are often shown positioned “between the acceptable and the abject” (2005, p. 110), or between the omnipotent and the ominous. I refer to this in-between position as a utopian representation or state.

I created the term ‘*udopian*’ by using the first letters of the words *utopian* and *dystopian* together. In recent years the term *udopian* (or *udopia*) has been informally used in a few different ways; for the most part with mocking humour to refer to an individual who believes in hope and change and the attainment of a liberal near-perfect society (Cafepress, 2009). Nevertheless, I suggest that the *udopian cyborg* metaphorically signifies a new mid-way zone, alluding to the paradoxical nature of technology and the cyborg concept. Bruce Grenville surmises that it was in the “untenable gap between a utopian and dystopian vision of the machine, that the cyborg was born” (2001, p. 27). I deploy the term *udopian* in a purposeful and playful manner in order to address Haraway’s (2000) sentiment that a binary ‘for and against’ argument will not work regarding the current and projected reach of technoscience.

Joseph Dumit and Robbie Davis-Floyd (1998) reveal that theorists such as Monica Casper employ the cyborg metaphor in a way which expresses the positive and negative aspects of technoscience. Casper explores the concept of ‘foetal cyborgs’, which I address in Chapter Six. Dumit and Davis-Floyd view this dual metaphor as a “postmodern signifier” (1998, p. 12), which is my contention. They suggest that:

Rather than neutrally employing the metaphor and refusing both utopia and dystopia, employing the cyborg as signifier of the times accepts both premises – that there are wonders of technoscience *and* that there are horrible dangers and abuses caused by it. (Dumit & Davis-Floyd, 1998, p. 12; emphasis in original)

Graham (2002) therefore contends that rather than having a technophobic or technophilic approach towards ever-increasing technologies, a new reflexive model is needed in order to deal with the complexities of technoscience.

Jan Doležálek provides an example of *udopian cyborg* aesthetics in his untitled 2003 graphic artwork (Image 19), presented on the following page. His cyborg figure resembles a technologised temple-guarding Sphinx, or a type of ancient stone statue symbolising a revered cultural figure or religious deity. Doležálek’s cyborg is shown with a human head and neck, and machinery fused into the ear, temple region and the back of the head, where the technology is extended into a massive collection of mechanical moving parts. Doležálek has used pre-digital technologies, consisting of

machinery resembling an automotive engine. The use of industrial-era technologies is a common form of interface representation as these types of bulky apparatus more evocatively symbolise the mechanical aspect of technology – its operational mode – which creates a striking contrast to the organic functioning mode of human beings.

Doležálek's cyborg is set against a backdrop of vast lands and night-lit sky, where a faint outline of darkened mountain ridges can be seen in the distance. The cyborg-inspired statue, with its neutral expression, represents a blend (or denial of) both sinister and promising themes. Doležálek has used neutral colours such as silver, gray and black to portray this aesthetic. He therefore leaves it up to us to decide whether this is an argument *for* technological interface – with the machinery metaphorically alluding to brain-technology enhancement and progress – or a rejection *of* the interface, as the machinery is manual and industrial technology, and is presented as overtaking the human element. Doležálek shows us that body augmentation is not always depicted as inspirational or condemnable. Cyborgs are often deemed to be contradictory, partial and rebellious entities (Haraway, 1991a), where their melding of flesh and metal is viewed as both thrilling and awful (Fuchs, 1995).

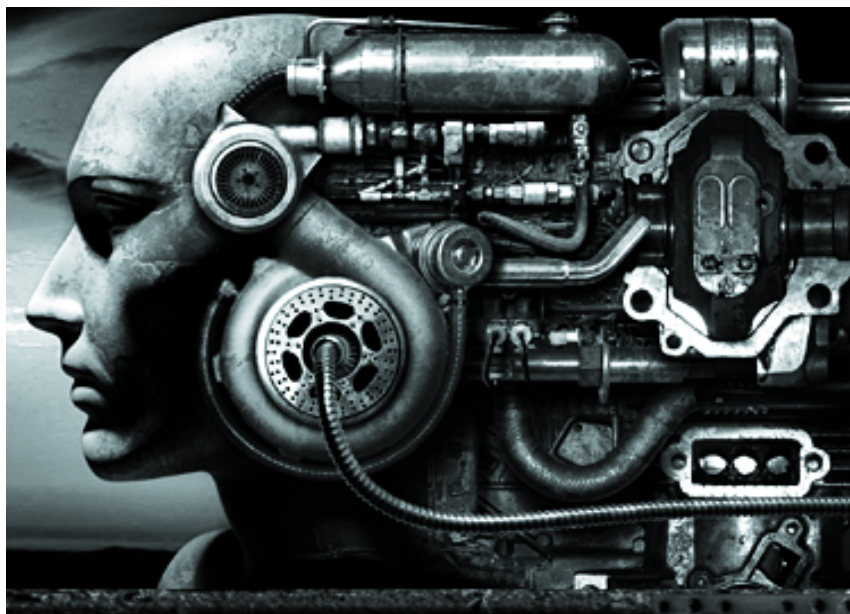


Image 19. *Untitled* (2003).
Graphic Art.
Artist: Jan Doležálek.

I asked the interview participants whether they deemed Doležálek's artwork to be either a positive or a negative portrayal of human-technology interface. Several participants who responded to this question felt that his artwork presented both or neither positive or negative imagery. Morten commented, "I see it as both actually...because it can contain a lot of maybe intelligence, a lot of possibilities, but also a lot of burdens and a lot of problems". Chris stated, "I don't think it's necessarily either", while Gregg answered, "Neither really, I don't really judge it I suppose". As mentioned, I have found a number of cyborg artworks which allude to both the advancements and possibilities of technoscience and the interface, whilst also signifying associated problems and burdens. The way cyborg artworks also present neutral aesthetics, and therefore a rejection of a particular political positioning, is analysed in Chapter Eight as a constraint of cyborg art's critical potential, but also as a strategy which is not necessarily 'apolitical' (Gray, 2002).

Humanity's attraction-repulsion stance towards technology dates back as far as the early 1900s, when art and art movements, particularly the Dadaists, addressed mounting human-technology integration in both a triumphant and admonitory manner (Gardiner, 2000). Utopian cyborg art enables us to visually experience this paradox, presenting an "anthropomorphised symbol of our own divided response to technology" (Short, 2005, p. 203). Technology can enhance a human body, but in doing so it changes its constitution, and this is the core of the ideological conflict. I sought responses from both the interview participants and the hand-distributed questionnaire respondents on how they felt about technology in general, due to the way individuals and society are affected by escalating developments. Their comments support the combinatorial aspect of the utopian concept, as most felt that technology had both inherently positive and negative aspects.

Twenty-three interview participants, out of a total of 34, felt that technology had both positive and negative features; ten felt that technology had mainly positive aspects; while only one interviewee felt that technology had primarily negative features. A key theme to emerge from the discussions was that technology was overall deemed a

useful resource. Examples include: “As a tool really, just something to be used” (David), and “In general I view it as an aid to getting things done, it’s used to make things easier for humans in general” (Maree). A number of participants also felt that technology provided potential for, and was an aspect of, the future. Morten stated:

It’s a good thing and I think it opens a lot of doors to the future, and I think that if you look back and what was considered fiction, forty or fifty years ago, now it’s reality, so it shows that technology has got great potential.

In addition, several interview participants felt that technology creates overreliance, dependency, laziness and incompetence. Examples include:

...the dependency that I have on technology is a means to an end, whereas I think young people are often addicted to it and reliant on it and I think it’s become a barrier to social progress; the balance of social skills and relationships. That’s an assumption, but I don’t know, but I see young people more often using their phones to text their mates than perhaps communicating directly with each other. (Lesley)

...we’re already I think stepping outside of the realms of being practical and doing things for ourselves and are relying on technology more and more to do things, so if technology should go down, and man will probably be the thing that destroys it, then what are we going to have left. (Margaret)

Concerns over our increasing reliance on technology were discussed by many of the participants throughout the interviewing process, and this issue is addressed shortly.

Some interviewees also felt that technology was daunting, intimidating and frustrating. As Marion commented, “Just out of reach.../...You’ve got to be able to conceptualise it before you can move into it, before you can engage with it”. Technology was deemed to be demanding as technological expertise and knowledge is needed to operate most devices, whether in the public or private sphere. In addition, a few participants commented that technology can dominate people’s lives. Phil stated, “Tend to think that a lot of people let it get out of control, and then let it become their master rather than they use it”. Lastly, a few interviewees also felt that technology was dangerous when irresponsibly or unethically used. Nick simply commented, “There are dangers to technology. It can get out of hand”. I examine the dangers of biotechnology specifically in the Genetics section of Chapter Seven.

Demelza and Marion were the only interview participants who stated that they did not really like technology. Marion responded, “I’m a technophobic. I don’t like it”.

Several characteristics of technology were also noted by the participants. A key theme to emerge from the discussions was that technology was ultimately essential. Misty commented, “How I view it? That we need it.../...And I don’t think we can go back to not having it”. A number of interviewees also felt that technology is constantly developing, and at an accelerated pace. Emmanuel responded:

Look at this; I carry around a little hand-held computer that’s got more processing power than my desktop did ten years ago. Its ridiculous, the amount of power and the functionality, I just carry it around on this bit, on my belt, almost all the time. It’s not attached to me, but it might as well be.

These participants’ responses focused on the speed that technology changes and develops, which is a key concern of this epoch (Murphie & Potts, 2003). Significant financial resources are needed in order to create and keep up with these changes, which I address presently. A few interviewees also mentioned that technology was an aspect of human evolution. As Chris stated, “It’s the result of human evolution I guess. It’s just a way of life, that’s how I see technology”. This is a perspective shared by Clark (2003) and Stelarc (1998a), and is discussed in Chapter Seven.

I also asked the questionnaire respondents how they viewed technology in general, and they were given five options of which they could select one (Question 1, Appendix H, p. 454). Fifty-three of the 65 respondents selected *Having both positive and negative aspects*; 11 selected *Positive aspects*; and only one respondent selected *Negative aspects*, thus supporting the interview findings. No respondents selected the options *Having neither positive nor negative aspects*, and *Not sure*, indicating that they were clear on how they felt about technology. These findings once again reveal that most respondents felt that technology had both good and bad features. I note that this is a recurring theme within cyborg theory and art; how technology can enhance human life but also threaten aspects of human existence. Fukuyama contends that biotechnology specifically, “in contrast to many other scientific advances, mixes obvious benefits with subtle harms in one seamless package” (2002, p. 7).

The Dependent Cyborg

One of the more common forms of imagery which cyborg art depicts is the dependent cyborg; the human being who has lost his or her self-determination, as this is one of the greatest fears humanity has regarding technology's impacts (Gray, 2005). Murphie and Potts suggest that "The cyborg operates as an ambiguous metaphor for our increasing dependence on technology" (2003, p. 110). Australian digital artist Murray McKeich, and New York-based digital and photographic artist Sanjay Kothari, have each created artworks (Images 20 & 21, included on the following two pages), which poignantly symbolise human anxieties and fears of future dependency on technology. McKeich and Kothari use jewellery in their evocative artworks, as a cultural symbol, in order to depict the last bastion of humanity. McKeich has placed a delicate loop earring on his female mutant cyborg, and Kothari adorns his male biomechanical cyborg with a bold gold ring. The earring and ring suggest that these cyborgs are clinging to intimate elements of a diminishing human culture.

McKeich symbolises and encapsulates the fears of encroaching technology, not only regarding the effects on the body and the relinquishment of 'humanness', but also on the manner in which we think, which was Heidegger's (1977) chief concern. McKeich's masked cyborg's misshapen cranium is displayed brimming with devices and inventions, ranging from household appliances and accessories such as scissors, to the tail end of an aeroplane. This imagery implies that the plethora of technologies available today infiltrate both our bodies and our thoughts. McKeich has exposed the brain area, which is familiar cyborg iconography; the skin no longer serving as a boundary to viscera (Maldonado, 2003; Stelarc, 1998a). The brain is available for the permeative gaze of technoscience, which I introduce in the next chapter (see pp. 188-189). This gaze voyeuristically seeks the inner corporeal realm. McKeich's work explores mediation on the junction of human bodies and technology in the cybernetic and digital age. His work comprises of extreme topographies and intricate circuitry, where the grafting and convergence of flesh and machine evokes a shocking vision "of human life transfigured by technology" (Tofts, 2005, p. 25).



Image 20. *Untitled* (n.d.).
Digital Art.
Artist: Murray McKeich.

Kothari represents his male cyborg (Image 21) attached to cables, tubes and machinery, which is keeping him alive, and perhaps pumping information or nourishment into his disempowered body. The cyborg is shown leaning down towards a mirrored surface, holding his body still while the machine and its corporeal connections complete their cycle. His greying, chalk-like and mottled flesh looks bruised, consisting of open holes where tubes have entered his body; identifying that his skin is no longer a ‘protective wrapper’ against the external world (Kunzru, 1997; Maldonado, 2003). Poster emphasises that today “Our skins no longer demarcate a line between inner and outer except in the limited sense of the body’s endurance” (2002, p. 28). Stelarc, interviewed by Paolo Atzori and Kirk Woolford (1995), agrees that once technology has pierced the skin, the skin as a barrier is erased. Kothari’s cyborg is no longer autonomous, but an ‘impure’ (Zylinska, 2001) symbiotic entity, dependent on his machine interface. Hayles (1995) reflects that corporeal human-

technological interface can either be deemed as an invasion, or as a symbiotic union. In this case the technology is shown to be abusive and invasive. The cyborg's corporeal integrity has vanished; he has become a dehumanised subject.



Image 21. *Untitled* (n.d.).
Photo Illustration.
Artist: Sanjay Kothari.

I asked the interview participants how they viewed Kothari's image and they responded with an array of interpretations, with all responses addressing negative ideas on the interface depicted. In total, 17 participants' comments centred on four key themes. Many felt that the image showed abuse towards the man depicted. Kayla's comment provides a good example. She stated, "It looks like pain. He looks like he's hurt, he looks like he's been poked and prodded and studied". Several interviewees also felt that Kothari's image showed elements of control and dependency or the 'Matrix idea' (which is in reference to the Wachowski brother's 1999 cult science fiction film *The Matrix*). As Paul commented:

Actually my first thought when I looked at that was *The Matrix*, just 'cause the holes...It could be a view towards the future as humans as almost drones. Just that

idea that came through in *The Matrix* maybe, we wouldn't really be in control of our actions anymore. We're basically just a product of our environment. I think to a certain extent people are almost trapped in their environments right now.

I asked the interview participants directly about their views on the links between control and technology; the key themes to emerge are discussed on the next page.

Some participants also felt that Kothari's cyborg evoked ideas of death or dying. Marion commented that he "...looks dead. See how it's bruising? That's the colour of dead people". The concept of corporeal death and technological integration is examined in the second section of the following chapter. Overall, the responses reveal that the most salient feature of Kothari's image was the way the man depicted seemed to be harmed, hurt, or exploited by technology. Lastly, a few interviewees mentioned that the ring placed on the man's finger was one of the only human elements or artefacts represented in the image. Margaret stated:

The only thing that really – to me – gives any sense of real humanity is probably the hands; the ring on the finger, probably even the expression on the face. Other than that it's a very sort of artificial image of a human really at this stage of technology anyway.

Although the ring blends into the imagery, sharing the same colouring, it is salient because it is a human cultural artefact; as such it clashes with the futuristic imagery. Responses which were not shared included ideas of human beings plugged into a machine, ideas on replacement technology, and that the image illustrates the research and development stage of advanced cybernetics. The responses to, and interpretations of, Kothari's image identify the dystopian sentiments the image projects. As such, some interviewees felt aversion to the image. Darri's comment provides an example; she stated that she was "a bit grossed out and disturbed" by the imagery.

The human imagination can readily articulate fears of machines taking over humanity and concern over the loss of a unique human essence (Best & Kellner, 2001; Mizrach, n.d.). González surmises that cyborg bodies can also stimulate "fears about loss of human control – if there ever was such a thing – over the products of human creation" (1995, p. 274). I asked the interview participants in what ways they felt control was

an issue for people in relation to technology. Twenty-eight responded to this question, their comments centring on two key themes. Fourteen participants discussed the use of technology to control others; its influence, and power, and the way technology can be used in the service of surveillance. As Demelza stated:

Control, well you're looking at power, you're looking at the trading of power and the trading of ideas, that's also power. I guess in terms of control...even if somebody were anti-technology and they wanted to get out to the middle of nowhere, they couldn't ever escape it, 'cause they'd have to come back to town. We have ties to society regardless of where we go.

Several interviewees also discussed the way many people want control *over* technology; that human beings dislike not being in control. Chris commented:

No one's going to be very happy if they don't feel like they're in control. That's the biggest fear isn't it? Look at all the Sci Fi movies with robots taking over and microwaves taking over, and all that kind of thing. It's the control that people are worried about the most I think.

The responses revealed that the interview participants were more concerned about the way technology can be used to control others, than individuals having or wanting control over technology. Jeremy Rifkin (1999) agrees that using technology as a means of power is a crucial concern. He argues that in the near future monitoring and testing of human bodies will create 'genetocracy', which is the replacement of meritocracy with biological caste systems. This in turn contributes to 'gene discrimination', which is the discrimination of individuals based on their genetic constitution (Gray, 2002; Stock, 2002). Maree and Steven also commented that they felt technology itself was controlling people's lives; above all cell phones and computers. Conversely, Nadz felt that people still have full control over technology today because it remains largely mechanical, requiring programming from humans.

Ben Cooper, an American artist, photographer and musician, and Rua Pick, an award-winning New Zealand artist, are the creators of *Television Head* (Image 22, shown on the next page) and *Media and Child* (Image 23, p. 152), respectively. These artists also explore issues of human dependency on technology and being controlled by

technology; however, they do so in relation to a more tangible and ubiquitous device: the television. Both artists use bold primary colours to heighten the intensity of the metaphorical and satirical characters presented in their paintings.



Image 22. *Television Head* (n.d.).
Painting.
Artist: Ben Cooper (Radical Face).

Television Head presents the television as encroaching on the human body, psyche and the person's lived reality to such an extent that it has actually become a part of the person. *Television Head* shows a cyborg in the form of a male teenager who has a

television for a head. He ambles along unaware that the television has transformed him, becoming a part of his corporeality; the television rays beaming out empty signals from a young mind which has become dormant as a result of the television viewing process. Similarly, *Media and Child* (Image 23, p. 152) shows a mother who is not simply watching the screen; but rather becomes the screen, and she passes this new configuration onto her child. A satellite is also shown in the background of this painting, symbolising network communication links looking in on the mother and child in their formerly private home. Scissors, half hidden behind a curtain, are depicted ready to cut the television cable, setting the mother and child free from their dependency. Pick writes that he is “committed to discussing the world with others through his art” (2009, para. 5), often deploying symbolism and mysticism in a surrealist styling in order to present his visual narratives of humanity today.

Media and Child addresses the “media indoctrination” inherent within television viewing and the negative effects this has on the viewer (Pick, email questionnaire, 2007, q. 2). This artwork is also part of the ‘Flight of the Buzzy Bee Series’ (1995-1997), which uses the Buzzy Bee, a New Zealand children’s toy and New Zealand icon, as “the questioning consciousness on a journey through a Western Dream”, which appears in this series of paintings (Pick, email questionnaire, 2007, q. 1). The narrative which accompanies *Media and Child* is:

To the sitting room does the young bee go:-

It’s satellite TV live with Media & Child, tune in now no time for contemplation. Watch how this infant fed on a steady diet of constant mind numbing visual banter with commercial bias direction, is miraculously transformed into a short attention spanned, non-imaginative, desensitized, logo wearing, non-individual sitcom character. (Pick, email questionnaire, 2007, q. 3)

The Buzzy Bee represents innocence, creativity and eternal youth, and sets the child free by cutting the “numbilical cord” to the television; “opening up a world of possibilities” for the mother and child (Pick, email questionnaire, 2007, q. 3). Pick’s use of the term ‘numbilical’ is a contraction of the words ‘numb’ and ‘umbilical’ and alludes to the extent people are psychologically connected with their televisions, and how television viewing can numb a person into living a life of passivity and banality.



Image 23. *Media and Child* (1995).
Oil Painting.
1690 mm. x 1230 mm.
Artist: Rua Pick.

Seventeen interview participants offered their views on *Media and Child*. Their extensive and for the most part comparable comments centred on three key ideas; the first two addressing Pick's inherent themes. Several participants felt that *Media and Child* evoked the negative impacts of media and technology, and the way the baby is seen to be raised by the television. Javin commented, "The growth of children with the use of technology and no human emotion from parents...TV's probably a greater influence on some children than their parents". Phil similarly responded:

You're feeding the child what's coming out of the box, not what's coming out of you, and we were never really designed to function that way. We are relational beings; we're designed to have relations with another human being, not with a media stream.

Some participants focused their discussion on the way ‘the cutting of the cord’ is seen as symbolic, while others mentioned the surveillance aspect of technology, alluding to the satellite represented in the artwork. Many interviewees also stated that they found *Media and Child* compelling. The responses offered indicate that Pick’s artistic intent resonated with many of the participants. Marion provided a forthright comment to Pick’s artwork. She stated, “But that whole unconscious thing, I’ve been there, often. Just turn the TV on and just be unconscious”. Marion’s response relates directly to Pick’s “mind numbing visual banter” comment included in the narrative which accompanies *Media and Child* (email questionnaire, 2007, q. 3).

I also asked the interview participants whether the screen (television, cinema, computer, or play station) was a dominant feature in their lives. Thirty-four answered this question, and their comments centred on two response groupings. Twenty commented that the screen was a dominant feature in their lives; screens in general, the computer screen, and the television screen. David replied, “Yeah definitely, I use it for entertainment; I use it to do work on. Spend a sizable portion of the day in front of it; computer screen, or television screen in one form or another”. Fourteen interviewees also stated that the screen was not or ‘not particularly’ a dominant feature in their lives. Demelza stated, “Stereo, that’s about it, I really only listen to music”. These responses indicate that overall more participants felt that the screen was a prevailing aspect of their lives, than those who did not. Derrick de Kerckhove (1997) affirms that television is hypnotic and magnetic, where any movement draws our attention to the screen as involuntarily as a human touch. Sandy Stone provides a candid comment on the time many of us spend with our computers. She admits that “I, for one, spend more time interacting with Saint-John Perse, my affectionate name for my Macintosh computer, than I do with my friends” (Stone, 2001, p. 185).

Additionally, I asked the interview participants how they felt about our possible increasing dependency on technology. I note that this was a frequent issue discussed during the interviews. Thirty-four responded to this question, with 24 believing that humanity was becoming more dependent on technology overall. Examples include:

Sometimes when I go out without my cell phone I feel like I've lost something, and I'm often wondering what have I lost, and I realise it's my cell phone and I think "Oh my God", I just have this awful thought, the awful thought when you've lost something really precious to you. (Kayla)

[If] somebody switched the power off in New Zealand we'd be screwed...we take all this for granted...switch the electricity off and people might be a little bit stunned, and a little bit shocked and not know what to do or how to live... (Demelza)

I also asked the questionnaire respondents to select which option they felt best represented their responses to a similar statement regarding our possible reliance on technology: *Human beings are becoming increasingly more dependent on technology* (Question 12, Appendix H, p. 456). Sixty-two of the 65 respondents who answered agreed with this statement. Thirty-five selected the option *Strongly agree*; 16 selected *Agree*; and 11 respondents selected *Somewhat agree*. Only two selected the option *Disagree*, and only one respondent answered *Somewhat disagree*. These findings are significant, and support the interview findings. Both the interview and questionnaire findings reveal that the issue of technological reliance was a key concern relating to our current epoch. Springer rightly contends that "In the late twentieth century the distinction between human beings and machines has become even more blurred. Human dependence on technology has started to efface the line between the two" (1996, p. 18). The issue of increasing human dependence on technology is addressed throughout the following chapters, linked to several artworks.

(Cyborg) Icons of Woman and Man

Theorists not only deem the cyborg a symbol of Western society, but also a "cultural icon" (Hayles, 1999, p. 291), and a feminist icon (Adam, 2002; Balsamo, 2000). An icon is an image that refers to something outside of its individual sphere, something which has immense symbolic meaning for people. Icons are often perceived to represent universal concepts, emotions and meanings (Barnard, 2001; Sturken & Cartwright, 2001). In this section the icons discussed include the archetypal woman's body, with a focus on a new technologised silhouette, and three of the most important

Western male cultural icons in existence: A deity or God, Jesus, and Leonardo da Vinci's Vitruvian Man – all transformed into cyborgian entities. The artworks discussed in this section are presented in groups of three due to their similar representations, not only in terms of corresponding aesthetics, but also the relationship between the themes depicted. I suggest that presenting artworks in pairs or groups enables imagery to be compared and contrasted, and enhances recognition of the way artists use similar forms of expression to explore the cyborg concept.

The group of female cyborg icons, included on the next page, represent the female body as the increasingly common computer graphic grid formation or wireframe silhouette. The first painting, *The Annunciation of the Second Coming* (Image 24), is created by Lynn Randolph; the second artwork *Future Body* (Image 25), is created by media artist Tina LaPorta; and the third artwork, *Wireframe Torso* (Image 26), is created by digital artist and photographer Daniel Van Winkle. The women depicted in these artworks are no longer flesh and blood, and are no longer associated with manual technologies or bodily prosthetics; rather, they are represented as computer/communication networked entities, which is often considered the quintessential cyborg's state (Haraway, 1991a; Hayles, 1999).

Seventeen interview participants responded to a question asking which of these three artworks they wished to discuss, with just over half the interviewees (nine out of 17) selecting *The Annunciation of the Second Coming*. Their interpretations are included following these introductory paragraphs. The fact that arguably the most complex artwork within this group was selected more often is perhaps indicative of the types of artworks people find stimulating. The selection of Randolph's painting also shows support for my premise that art which visibly explores and presents deep-level messages and artistic complexity are both enjoyed and valued by viewers. However, I do not suggest that artworks which are more complex in their composition are necessarily more interesting in every aspect, nor do they inevitably "engender longer looking times" (Winner, 1982, p. 64). Artworks which are constructed from basic lines and colours, such as Piet Mondrian's well-known works, can also enthrall

viewers for long periods (Winner, 1982). In addition, complex and dense artworks such as Heidi Taillefer's *Venus Envy* (Image 72, p. 322), with its symbolic density and intricacy, can cause confusion for viewers, as discussed in Chapter Seven.

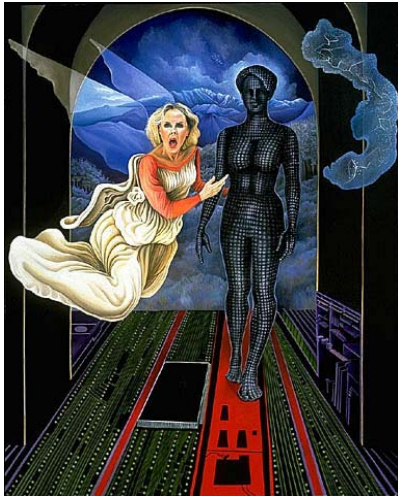


Image 24. (Top left) *The Annunciation of the Second Coming* (1995).
Painting: Oil on Canvas.
58 in. x 46 in.
Artist: Lynn Randolph.

Image 25. (Top right) *Future Body* (1999).
Digital Media Art.
Artist: Tina LaPorta.

Image 26. (Bottom) *Wireframe Torso* (1999).
Computer/Graphic Art.
Artist: Daniel Van Winkle.

Randolph's painting *The Annunciation of the Second Coming* is the cover art selected for Haraway's 1997 book *Modest_Witness*, and focuses on two women; one is an angel dressed in white with translucent wings, while the other is presented in the form of a grid-structure body, through the use of blue-black wireframe graphics imaging. The technological woman is therefore depicted as a type of cyborg or cyborgian network entity. She is smiling and walking on a computer circuit board, while the angel is shown holding onto her, perhaps trying to stop her from advancing. The look of fear, horror and derision on the angel's face is evident. The background of the artwork is a mix of clouds and sky, and the archway is suggestive of religious themes, paralleling the title with its religious connotation. Randolph contends:

The painting is an annunciation, an announcement, not of the coming of Christ, but a warning that the world as we know it is changing. It is a warning that we must all participate in determining the various uses to which techno-science should be applied, and that women should play a significant part in the decision making. (email questionnaire, 2007, q. 3)

Randolph argues that we must all be responsible for the usage and application of the many and often life-changing technologies of technoscience, which is Haraway's (1991a) overriding argument, and is discussed further shortly.

The interview participants' interpretations of *The Annunciation of the Second Coming* were predominantly complex and dense, with most of the interviewees focusing on the way the artwork pointed to religious and/or Christian connotations, and the way technology is seen as the second coming (or Genesis). Many of the responses thus showed support for Randolph's artistic intent. Examples include:

Because here I see you've got this angel which is both meant to announce the second coming in Christian mythology, but you've also got this technological figure and to a certain degree it almost looks like the angel of spirituality is holding back the technology. So it almost looks like one of those sort of dualist things, with these – it's like religion versus science. (Emmanuel)

The *Annunciation's* quite interesting.../...Because she looks like she's worried and the one in the black looks like she's not...she looks happy being a cyborg and she's like accusing her saying "why are you so happy?".../...To me she looks like she's

presenting a warning to this culture...to people who are as advanced in technology.

But she's got the look on her face, there's nothing you can do about it. (Donovan)

Donovan's interpretation is fitting, as Randolph does indeed present her painting as a warning for the future. She affirms that "The figure of the digitalised goddess striding over a circuit board is Pygmalian com[ing] down from her pedestal and walking into the future. These are metaphors that offer hope and a warning to think about our future" (Randolph, email questionnaire, 2007, q. 6). Randolph states that she hopes viewers will be inspired to acknowledge and address the increasing integration between humanity and technology in their own unique ways; to be "startled and ask questions of themselves about their own decisions and interpretations of this major cultural change" (email questionnaire, 2007, q. 4).

Tina LaPorta's artwork, *Future Body* (Image 25), shows imagery of post-corporeality and virtuality, where the computer grid or wireframe aesthetic is used to identify the DNA structure of the female human body as an outline rather than as a material construct. In this image, LaPorta "Explores the relationship between technology, the body, and female subjectivity within a net-worked environment" (2004-2005, para. 1). She states that "While the corporeal body disappears, it is replaced by an immaterial outline of our passing presence" (LaPorta, 2004-2005, para. 1). The wireframe body represents a series of networked links which can be uploaded into the virtual world of the web and subsequently instantly obtainable. *Future Body* shows the female body becoming accessible to anyone surfing the internet, available "anywhere at any time. Thus, the female figure is everywhere and nowhere at all, invisible yet infinitely replicable" (LaPorta, 2004-2005, para. 1).

The third artwork, *Wireframe Torso* (Image 26), shows a body divided into two parts; the natural body, where skin and hair are presented, and the digital networked body, where the wireframing is shown seeping into the flesh. The woman's nail varnish has also transformed from white to red-black as a consequence of the encroaching digitisation. *Wireframe Torso* is an erotic image of a naked woman lying available for the male gaze. Her eyes are closed so she cannot 'challenge the observer'

(Macdonald, 1995). The viewer can therefore voyeuristically see and imagine her transformation into code. Claudia Springer's 1996 book *Electronic Eros: Bodies and Desire in the Postindustrial Age*, examines the way cyborg-inspired images can centre on the erotic, which is a theme discussed in the Gender section of the next chapter. Van Winkle has always had a fascination with the human body and 3D art. *Wireframe Torso* is thus created in order to "show off the underlying structure, to sort of shatter the illusion" of the woman as real through the use of 3D modeling techniques (Van Winkle, email questionnaire, 2007, q. 1). Van Winkle's artistic focus thus centres on the creation of striking visual aesthetics. Nonetheless, Van Winkle states that his artwork shows "That all is not as it seems" (email questionnaire, 2007, q. 3), perhaps pointing to how technology impacts on our lives while we are metaphorically 'sleeping'; how we may opt to remain ignorant regarding its effects.

The group of male cyborg icons has a different focus to the female selection, with machinic and prosthetic technologies visually shown interfaced with the body, as opposed to a focus on digital contours. A deity or God, Jesus and man (in perfection) are symbolically and metaphorically shown as transformed into new cyborgian versions. The first of the three artworks included on the following page is *Bůh Závitu: Screw God* (Image 27), which is created by Jan Doležálek. This paint and airbrush artwork presents the juxtaposition of ancient totemic aesthetics merged with industrial era technological themes. Doležálek depicts the head of what appears to be an Egyptian or South American deity or God figure, complete with traditional headdress. This historical deity is shown with a long neck representing the thread of a screw. The aged figure looks to be carved from stone, and imagery resembling hieroglyphics is positioned on each side of the central screw thread column.

Bůh Závitu: Screw God alludes to the way humanity can worship technology, paralleling Daniel Dinello's claim that we are increasingly "worshipping the God Technology" (2005, p. 18). Dinello (2005, p. 18) refers to this phenomenon as our new "techno-religion" which defines the emphasis we place on technology as able to save us from mundane work and life experiences. *Bůh Závitu* also signifies that we

began our quest for technological enhancement as far back as the invention of the screw, and even prior, with the invention of tools used to carve stone. Andy Clark proclaims that we have always been “natural-born cyborgs” predetermined to become increasingly synergised with technology (2003, p. 1).



Image 27. (Left) *Bůh Závitu: Screw God* (2002).
Paint and Airbrush Art.
Artist: Jan Doležálek.

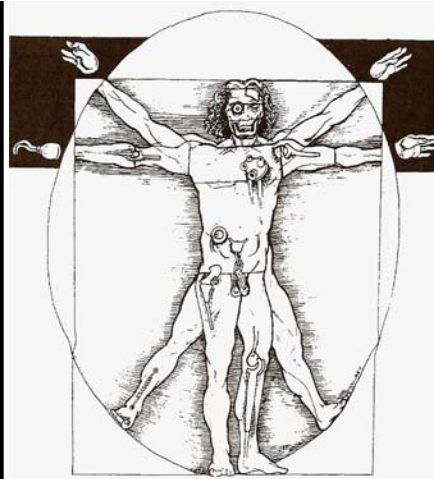


Image 28. (Top right) *Renaissance Cyborg* (1993).
Art Illustration.
Artist: Bob Thawley.

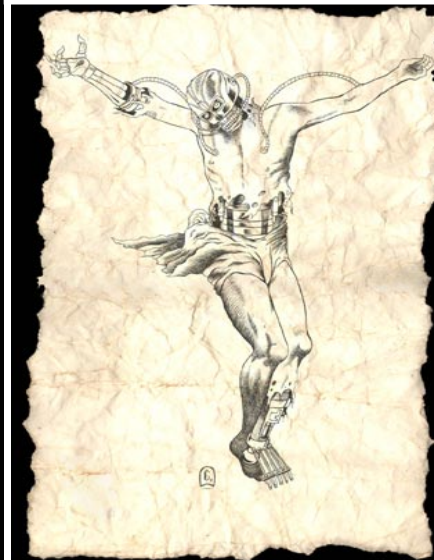


Image 29. (Bottom right) *Cyborg Jesus* (2004).
Art Illustration.
Artist: Massimo Giacon.

Seventeen interview participants responded to questions relating to *Bůh Závitu*; their comments centred on two key themes. Several interviewees felt that the artwork

expressed ideas relating to cultures such as South American, Egyptian, Māori or Mexican. These responses reveal that the ethnicity of Doležálek's 'Screw God' was the most salient feature overall. A number of participants also felt that *Bůh Závitu* depicted an amalgam or juxtaposition of ancient and modern themes. The juxtaposition between historical and contemporary societies is a key feature of many cyborgs artworks, and is explored by Guillermo Gómez-Peña explicitly aligned with his 'ethno-cyborg' performance persona *El Mexterminator* (Image 49, p. 244). Emmanuel provided a compelling interpretation of *Bůh Závitu*, suggesting that it symbolises the elevation of humanity to transcendent or Godlike beings. He stated:

The deification, the turning into a God, and the central role here that technology has sort of taken us.../...It's raising man, humankind to the status of being Godlike or above Gods. Because through technology, or through the use. So almost like this is the Tower of Babel. (Emmanuel)

Phil provided a similar response in reference to a question I asked relating to the potential symbolism of the cyborg. He felt that the cyborg concept:

...embodies the idea, what I will call the myth of progress. It embodies the idea that, well I suppose in a very real sense it's the modern Tower of Babel. It's the tower that we're building towards heaven because we think that by doing [so], we will become God. And I say 'we' as the collective. (Phil)

These responses indicate that the cyborg concept can be deemed a way to symbolise our progress, or our striving for perfection, or what Phil calls our 'myth of progress', through the creation and application of the technologies of technoscience.

The second artwork included in the group, *Renaissance Cyborg* (Image 28, p. 160), is created by Bob Thawley, and also draws on themes of human 'progress'. Thawley's illustration is a reconfiguration of da Vinci's well-known Vitruvian Man, where the human body is shown "in harmony with the world geometric" (Gray, 2001, p. 112). *Renaissance Cyborg* shows the former harmonious and perfectly proportioned man embodied with various prosthetic implants and devices. He is no longer a natural man, but a man fully integrated with technology. His representational aesthetics is one of assemblage and repair related to keeping alive the fallible and mortal human body for longer. Technology not only embodies the idea of progress (social and

individual), it also embodies the idea of human corporeal and cognitive perfection, and prolonged human existence and immortality. Theorists in general agree that the desire for enhancing and extending life is the underlying force behind most technoscientific developments (Aristarkhova, 2005; Bowring, 2003; Kuni, 2004-2005a; Short, 2005). The Vitruvian Man in Thawley's illustration is also shown extending beyond his boundaries; his hands and feet no longer remaining in the circle (ellipse) and square (rectangle). He is a man who has passed beyond the boundary of his environment, into a new uncharted posthuman realm.

Lastly, Massimo Giacon, a well-known Italian artist and designer, has created *Cyborg Jesus* (Image 29, p. 160), to show how the most worshipped Christian male icon can also be transformed into a cyborg. In this image, a cyborg Jesus is shown crucified, hanging from a cross. His skin is shown ripped, exposing the mechanical components of his mid torso, lower right arm, and lower left leg. This Jesus is no longer a human deity, but a sacrificial cyborg. As Giacon, Doležálek and Randolph illustrate, religious iconography is changing and becoming part of cyborg art and imagery. Not even Jesus, the foremost Christian symbol of surrender and salvation, is left out of the debate over the increasing integration between humanity and technology.

The cyborg icons represented in these artworks ultimately point to our changing human ontology. Technology generates new and "blurred ontologies" because of its influence (Bukatman, 1993, p. 5). The artworks show how technology is seeping into, and altering, the representational symbolism of many long-held human ideals and cultural practices, including motherhood, youthhood, religious iconism and worship, and human change/progress, thus identifying the magnitude of technology's current and potential impacts. I sought to discover how the interview participants believed we were 'ontologically existing' today as a result of our integration with technology. Thirty-three participants responded to the question: *In a few words, what do you think it means to be human today in relation to technology?* Their comments centred on three main themes. General human dimensions relating to technology were most often discussed, with several participants feeling that human beings still control

technology today. Blair commented, "...being in control at the moment. Still being in command of it, having it to shape to your will rather than – it's not yet a companionship". Some interviewees also mentioned that human beings still have emotions and are still unique. Donovan responded, "...just love and compassion I think sets us apart". This perception of humanity is discussed in more depth shortly.

A number of interview participants also mentioned the negative impacts technology can have on humanity. Several, once again, commented on humanity's increasing reliance on technology. A few interviewees also felt that human beings were losing their 'naturalness' as a result of technological integration. Matt stated:

It almost feels like we are kind of pushing away from a traditional kind of human...everyone's got technology around them or they depend on it so much...sometimes I feel that people kind of lose the aspect of just enjoying being human.

Matt's comment relates to Heidegger's (1977) concerns, and also to Fukuyama's unease. Fukuyama (2002) fears that by altering 'the human condition' we are altering 'human nature', and as a result we may increasingly lose the innate characteristics that give human beings dignity, aspirations, values, love, pain and the ability to make moral and ethical choices. As mentioned, Fukuyama's concerns are directed at biotechnology's reach and invasiveness. Lastly, a few interviewees also discussed the positive aspects of technology, how it is stimulating, creative and beneficial. Margaret commented, "I think it's quite exciting that for instance my three-year-old granddaughter is in the age that she's in, because she's going to have even more technology. But I think that it has to be measured in some way". These responses once again reveal that technology was deemed to be impacting on our lives in both positive and negative ways. Overall, the comments centred on the way human beings were still in control of technology; that human beings were still unique (in terms of being able to feel); that we are becoming more dependent on technology; and that technology may be causing us to lose aspects of our human essence or 'naturalness'.

Laurie, Demelza and Kirsty provided additional comments during their interviews which centred on the ability of human beings to feel, which they believe contrasts

with the coldness of machinery and technology. Laurie stated, “But a machine is cold. A machine isn’t human. So it’s more or less an artificial sense of us.../...See emotion is a human sort of quality, that can’t be manufactured in a machine – yet”. Demelza commented, “...there’s kind of a lack of feeling in terms of cyborgs don’t feel...that empathy. If I see a picture of a cyborg I’m like ‘wow’ they don’t really seem to feel or have a context for it I guess”. However, as shown, artists such as McKenna and Kim (Images 9, p. 109 & 10, p. 110) are rupturing these notions, by depicting cyborgs that appear contemplative or are shown as able to feel and express sorrow or dejection. Kirsty also felt that communication via technology can be devoid of feeling. She stated, “...when you write a letter by hand there’s more feeling gone into that. It’s quite cold sometimes I think technology.../...And just communication and eye contact; you don’t get that with technology. It’s quite sterile I think”.

Cherie and Laurie provided further responses during their interviews which supported Heidegger’s (1977) concern that we may eventually begin to think in a machinic operational manner due to technology’s reach. They mentioned:

...I think definitely it’s about convenience, efficiency. It’s about getting faster at whatever it is that we do, whether it’s to make food or serve food or just get down to town or driving, anything like that, the speed of computers. It’s definitely about efficiency and speed. (Cherie)

I think we are becoming more machine-like, in how we think, in how we process information. We tend to do things in a more formal sense. There’s less time to reflect, to be able to think about stuff; it’s more do, do, do. (Laurie)

Luke also provided a compelling comment which profoundly addresses Heidegger’s (1977) concerns over transforming human ontology. He stated, “...now we’re more afraid of fundamentally technology rather than just say nuclear annihilation, we’re now afraid of things that could fundamentally change who we are”.

Lastly, due to noted concerns over technology’s impacts and the future of humanity, I sought to understand how the interview participants felt we were changing as a result of our relationship with technology. Thirty-four participants responded to the question: *In a few words, who, or what, do you think we are becoming in relation to*

technology? The responses offered centred on three main themes. Several participants discussed general human dimensions, with a focus on transformation, such as the way humanity is increasingly integrated with technology. As Morten stated, “I think we’re moving towards a place where technology will be even more incorporated into our society, maybe even into our biology in the future. I’m not saying in the near future, but that’s where I think we’re going”. A few interviewees also felt that we would still be ‘human’ in the future, but that the definition of humanity is changing. Emmanuel commented, “We are shifting the definition, but we are still human, and we will, essentially, I think, we will maintain a core of what it is to be human, but we will change what the meaning of human is”. This is Kac’s (2005) perspective; he surmises that our transformations possible via technology do not make us ‘not human’; rather they require us to alter our definition of what it means to be human.

Several interview participants also mentioned various negative aspects of a possible future human-technology relationship, such as the way human beings were becoming dependent, lazy and stupefied, with decreasing levels of creativity. As Demelza replied, “I think we kind of find the easiest way to do stuff, and I think yeah, that’s pretty lazy...” Phil commented, “I think we’re becoming as a society quite slavishly dependent upon it...” Once again the issue of technological dependency was discussed by several interviewees. Moreover, technology was deemed to reduce people’s pioneering approach and creativity, and that people were increasingly subjected to ‘information overload’ via technology, or what David Shenk (1998) refers to as data smog. This term addresses the way the colossal amount of information those of us living in Western society have access to and are expected to absorb, can, at times, be beyond our ability to adequately deal with (Shenk, 1998).

Some participants also felt that the destruction of the planet and the accelerated pace of technology were key concerns. As Luke stated, “We’re destroying our environment just far too quickly. We just don’t look after each other even, rather than the planet”. This is a pivotal concern; however this is an issue which is not addressed in this study, as I focus specifically on technological impacts on the body. Lastly, a

few interviewees also discussed positive dimensions relating to the future human-technology relationship, such as the way human beings are increasingly creative, efficient, and adaptable. Nadz commented, “I think we’re becoming more smart and more efficient and more able. I think we are progressing”. Some participants also felt that technology ultimately makes our lives easier and better. As Kirsty stated, “...there’s nothing that we don’t use that doesn’t have a piece of technology underneath it.../...so it’s good...it’s made our lives easier”. These are issues that underpin utopian cyborg art; the way technology can enhance our lives and our bodies, making day-to-day living more pleasurable overall.

The responses to the question asking who or what we were becoming in relation to technology were somewhat dispersed, indicating that there was not one common way the interview participants saw the future of humanity developing. Once again, negative and positive dimensions of the ‘present’ and ‘future’ human being were discussed. Interestingly, the comments provided in response to the two previous ontological questions paralleled each other. In both instances, the three main themes discussed were general human dimensions relating to technology’s influence, technology’s negative aspects, and lastly, technology’s positive attributes. This indicates a level of continuity pertaining to the responses, and shows that technology’s negative aspects were more often discussed than its positive attributes, signifying that there exists wide-held fears in relation to technology’s reach.

Interface Ethics

Theorists such as Haraway (2000), Kroker (2004), and Shildrick (1997) suggest there needs to be a new way to deal with the politics of the interfaced body; technology’s impacts and influence; and people’s concerns relating to advancing corporeal technologies. Gray and Mentor refer to this focus and approach as “the cyborg body politic” (1995, p. 453). There is a noted awareness that humanity is not “ethically prepared” for the changes that technoscience can generate (Kroker, 2004, p. 209). As

such, there is a need to implement a new bioethics (Mizrach, n.d.; Shildrick, 1997) or cyborg ethics in order to deal with these changes (Gray, Mentor, & Figueroa-Sarriera, 1995; Haraway, 2000). This form of ethics recognises the intensity and relentlessness of our increasing integration with technology, and the levels of control which can be applied by those in power. Warwick vigorously affirms that “The whole topic needs to be brought to the fore, now” (2003, p. 136).

One of the key sociological concerns relating to technoscience is the way continuing developments will exacerbate social inequalities in society. Technological access and knowledge are viewed as crucial forms of cultural capital (Clark, 2003; Stock, 2002; Zimmerman, 1990). Graham rightly asks, “Who gets to participate in the post/human future?” (2002, p. 155). Individuals who have the most financial influence, control and therefore power will have the ability to participate more actively. They will potentially have numerous advantages such as increased health, longevity, and security (Gray, Mentor, & Figueroa-Sarriera, 1995). I asked the interview participants whether they felt inequalities will still exist in the future, in order to gain their perspectives on this issue. Many of the participants who responded to this question felt that social inequalities will still exist in a more technologised society. As Blair commented, “It will start off with the rich and they will get their better lives and better bodies and the poor will be left behind”. Lesley stated:

I think there’s a long way to go before people can have even access to technology. I just think that the people that have the power will retain it with different ways of using technology. And I don’t think that many people are going to be able to afford to access the kind of levels to compete. There’ll be classes.

Blair’s and Lesley’s comments relate to the concerns which many cultural theorists and critics of technology have regarding technology’s impacts: the way advanced developments will create the biological ‘haves’ and ‘have-nots’ (Mizrach, n.d.); those with superior fabricated genes (designer babies), and those with ordinary ‘pot-luck’ genes. Those with less money to compete with wealthy cyborgs may increasingly be viewed as the organic underclass (Gray, Mentor, & Figueroa-Sarriera, 1995).

I also discussed the levels of contribution the participants felt they had towards decisions made on which technologies are eventually developed. Many theorists agree that democratic modes of discussion and voting procedures must be put in place to ensure that everyone in society has a voice regarding what developments are eventually introduced commercially (Beck, 1997; Brate, 2002). Technoscience impacts on all of us and future generations; therefore our mutual vision should fuel developments. New Zealand is addressing the issue of public involvement in decision-making relating to science and technology, as discussed in Chapter Two (see pp. 69-70). However, Andrew Feenberg (1999) believes that obstacles relating to democratic decision-making are increasing. He agrees with Heidegger (1977) that in relation to technology, it is not what people want or believe in that is important, but what is considered the most efficient and what will generate the most wealth.

I asked the interview participants whether they felt they were easily able to contribute to decisions made concerning human and technological merger. Thirty-one responded to this question, with most stating that they had never contributed to decisions made or had never been given the opportunity to contribute. Examples include: "I've never been asked" (Malcolm); "No, I don't think I have. I've never been given an opportunity..." (Art); "It doesn't seem like the big decisions are something that I can have a say in" (David), and "No I don't think so.../...It'd be really good to" (Maddy). Several participants also felt that public opinion has no influence in the choices people in power make. Nico's response provides a good example. He stated:

I don't think my opinion's going to have much sway in it.../...especially not in New Zealand 'cause all the technological research is happening in Japan, America, Britain, [and] a little bit in China. And if New Zealanders object to it they're just going to do it anyway.../...Well, it's just like genetically modified foods. We said no to that, Americans still do it. So what we want as New Zealanders has no effect on what the bigger countries want.

Nico's response addresses the issue of whether public opinion counts, or if members of the general public are even listened to by those in power. His comment also draws attention to whether the political views of smaller less-powerful nations can have an impact on what is happening globally, which is another key concern regarding

technoscience (Critical Art Ensemble, 1996). The responses to the issue of public contribution are revealing; nearly two-thirds of the participants stated that they had never contributed to decisions made concerning technological developments. Several also felt that their opinions would not be listened to even if they were given the opportunity. Nicholas felt that people can have a public voice via online discussions, although he acknowledged that “A random person on the internet will not have as much weight as say the Mayor of a city or a scientist from an esteemed university”.

I also asked the questionnaire respondents if they felt they were able to contribute to decisions made concerning how the human body and technology are increasingly interfaced (Question 14, Appendix H, p. 457). Sixty-four respondents answered this question; 41 said *No*; 12 said *Yes*; and 11 answered *Not sure*. These findings reveal that many respondents also felt they were unable to contribute to decisions made on body-technology incorporation, thus supporting the interview findings. I suggest that art is one way for the public to gain more awareness of what is being developed in the field of technoscience. This increased awareness may potentially stimulate a demand to be more involved with the decision-making processes of technoscience, which is Gray’s overriding premise (Armitage, 2006; Gray, 2005).

Art

Stephen Wilson is one of the leading authors focusing on the links between science, technology and art. His extensive 2002 book *Information Arts: Intersections of Art, Science, and Technology* draws attention to these interconnections. Wilson ardently believes that “Artists should be hungry to know what researchers are doing and thinking, and scientists and technologists should be zealous to know of artistic experimentation” (2002, p. 3). Prominent American curator, Jeffrey Deitch, adds that he is “always fascinated to see how artists parallel the most advanced thinking in science and philosophy, and then crystallize and communicate it” (as cited in Politi & Kontova, 1992, para. 4). The underpinning aim of melding science, technology and

art together is to generate a junction of these ideas in order to create new horizons of thought, and then to share this with the public for scrutiny and debate (Wilson, 2002).

As outlined in Chapter Two, many writers, commentators, and critics such as Gaut (2007), Graham (2005), Gray (1998, 2002), Gotshalk (1962), Hauser (1982), Heidegger (1978), Kieran, (2005), Lovejoy (2004), Mumford (1960), Novitz (1992) and Young (2001) agree that art can have social value, as artworks provide a unique insight into society. Art in general can ignite interest in humanity and its transformations as art exists more as a social agent than a social product (Beatson & Beatson, 1994). Kieran also believes that viewing art “expands our imaginative horizons” (2005, p. 125), and that art “tests us, stretches us, deepens our inner lives and cultivates insight into both ourselves and the world” (2005, p. 99). As such, art is “irrevocably political” as it permeates and evokes the ongoing structures of existence (Novitz, 1992, p. 5). Margot Lovejoy adds that “All art makes a comment on the ideology of everyday life” (2004, p. 281). Yet, I note theorists such as Kuspit (2004) and Baudrillard (1989) are dubious concerning contemporary art’s ability to have societal affect. Volkart (1999) is also unconvinced of art’s potential to be critically resistant for any length of time, and to be able to express ideas oppositional to hegemonic epochal ideologies of any given culture. She surmises that eventually all art is appropriated into mainstream society, seduced by the mechanisms of capitalism.

I asked the interview participants how they viewed art in general, in order to gauge their thoughts, insights and perceptions relating to art as a concept. Thirty-four participants responded to this question, their comments centring on three key themes. Sixteen interviewees had positive attitudes and opinions concerning art, and an overall general interest in art. Matt commented, “There is nothing better than looking at really cool art”, while Chris stated, “I’m a huge fan of art, just in the way that it’s for anyone”. Thirteen interviewees also mentioned that their interest in art depended on which type of art or art style they were viewing. Steven simply responded, “It all depends [on] what I’m looking at”, while Art candidly replied, “I don’t really like

stuff where someone will spray a bunch of paint on a canvas and say ‘oh it’s my cat when I was twelve’...but I really like landscapes, I like realistic art...”

A number of interview participants also discussed the characteristics of art, such as the way art was a form of creative expression for many individuals and something which is unique to humanity. Luke responded that art is an “Indispensable part of human society. One of the few things that makes us quite different from other life forms, and one of the ways in which people can truthfully express themselves without having to use things like language”. Lastly, some participants also felt that art was subjective, individual or personal. As Maree commented, “Art is very individual, likes and dislikes, and what you take from it, and [how] you interpret it. So you can’t say that for one person it’s irrelevant because it’s not what’s meant to be”.

These responses indicate that most of the interview participants felt positive about art. Kayla and Blair were the only interviewees who mentioned that they were somewhat uninterested in art, while Malcolm, Kirsty, and Phil stated that they regarded art negatively at times. Malcolm said he often felt sceptical towards art; Kirsty commented that from time to time art steps over the boundaries of being understandable; while Phil felt that a lot of art was simply pointless. Additional responses included that art was explorative and universal, and a positive influence on people in general. Art was also deemed to be reflective of culture and visually stimulating. The responses reveal that art is predominantly considered a constructive and integral component of society. This indicates support for the perspective of this study which views art as having both individual and social benefit, and also shows support for the art survey findings discussed in Chapter Two (see pp. 67-68).

Nonetheless, debate persists on whether art is deemed to have inherent messages, or whether art is presented purely for aesthetic value, which increasingly became Baudrillard’s premise. He felt that art within postmodern society is merely seduction, not a reflection of actual conditions in the world, but rather existing as an exaggerated illusionary version of the world, what he calls its “hyperbolic mirror” (Baudrillard,

1989, p. 180). As such, I sought to discover whether the interview participants believed art was primarily created for surface aesthetics or with inherent messages, or both. Twenty-nine participants responded to this question; their comments addressing two key themes. Seventeen felt that art was created both with messages and without, depending on the type of art which has been produced. Cherie answered, “A bit of both, it really would depend on the genre of art”, while Laurie mentioned:

I think it’s a bit of both. When it comes to abstract art there certainly is a message behind it, but it’s trying to decipher what that message is. But there are other types of artists, those who paint scenery, that’s more straight forward.

Several interviewees also felt that art was predominantly created with some form of message or theme. Blair commented, “[Art] definitely has messages, meaning, even if it’s hidden”. Nico stated:

I’m a great fan of the ones that have messages. Especially the ones that can change society, where they do a painting or a book or whatever and it’s got a message inside it.../...I like the ideas more than what I’m actually looking at most of the time.

These responses reveal that most of the interview participants felt that art could be created with messages or with a focus on aesthetic appeal, depending on the type of artwork created and the themes the artist wished to explore. Nick and Malcolm were the only interviewees who stated that they focused primarily on the surface aesthetics of art. These responses further indicate support for the perspective of this study which suggests that art does have something to say, and people are receptive to art’s themes and messages. Marion provided an interesting idiosyncratic response on the temporality of art. She stated, “I think it’s temporal, I think it has a position and a time, and you can also come back to it and it can still have meaning but it can have a different meaning”. This is Heidegger’s (1962), Gadamer’s (1986), and Bruns’ (2002) premise; the way art is implicitly connected to the epoch in which it is formed. Art is often seen as a means for unconcealing (bringing to light) the mechanisms of a specific era, intermingled with and testing the prevailing ideologies of that time.

The artists who completed the email questionnaire revealed similar views relating to their artworks, thereby supporting the responses obtained via the interviews. I asked

the artists what messages may be included in their artworks (Question 3, Appendix F, p. 447). Nine of the 11 artists indicated that their artwork had some form of message. Philip Hitchcock stated that *Overlord* (Image 70, p. 316) projected and explored “Strength. Dignity. Perseverance. Survival. Reinvention. Eroticism. Imagination. Power”. Viktor Koen commented that *Plug* (Image 67, p. 308) was created:

As the antithesis of the millennium bug. *Plug* is an ‘inspiration bug’, a positive and creative force. He functions in an ugly corporate world and it’s up to the little guy (or girl) to change it through his everyday decisions, from small to big.

Stelarc mentioned that an artwork takes place in-between an idea and the creation and execution of the idea. He writes that there is “a distinction between an idea and its actualization...it’s often in the space between the idea and the actualization that art becomes possible” (Artwork: *Handwriting – Third Hand: Evolution*, Image 51, p. 256). Stelarc’s response is indicative of his belief in art as a form of praxis, which is discussed further in Chapter Eight. Brice Vandemoortele was the only artist who indicated that his artwork was created primarily for surface appeal.

I also asked the interview participants whether the viewing of an artwork had ever impacted on their lives, in order to ascertain tangibly the power of art, which Gray (2005) and Foster and Blau (1989) rightly state is difficult to establish. Twenty-two participants responded to this question; most stating that art had impacted on their lives in some way. Several mentioned that specific books, films or certain types of music had made an impression on their lives. As Phil responded:

Robert Heinlein’s *Starship Troopers*. Heinlein posits a lot of stuff which is very – I think he’s deliberately doing it to play devil advocate in a lot of cases, but he posits some views which to my 16-year-old mind [at the time] made an awful lot of sense.

Paul spoke about a music compact disc that had impacted on his life. He stated, “I’m not sure why that particular CD stood out to me...but it’s got so many things in there that’s representative of just my life and how I want to live”. The comments overall centred on how books, films or music can contribute to well-being, or help with matters in life in some way. Several interviewees also mentioned that art in general has had an impact on their lives and perceptions in various ways. Examples include:

A lot of the techniques that visual artists can use which suspend our contemporary notions of realism...and start playing around with form and scale and exaggerations of various things, enable you to look at things from a different perspective that you wouldn't necessarily of otherwise understood. (Emmanuel)

I'm sure it has, I cannot think of a good example, but I'm sure some things have changed my thinking about different things. I used to attend quite often graphic design exhibitions as well...there were many ideas that I saw that were interesting and started me thinking in different directions. So I would say yeah, I don't – not like I had an 'aha' moment and it changed my life. But I think that in small ways it has taken me in different directions. (Jason)

Jason's comment is fitting as art and imagery is thought to be able to affect change in a person's perception (Gray, 2005). Norman Bryson (1991) contends that this change in awareness or understanding can be instant and overt, or microscopic and discrete.

Some interview participants also commented that artworks created or owned by friends or family members had impacted on their lives in some way. As Cherie stated:

...I grew up with one particular sister for a couple of years and she was very Sci Fi oriented. She had lots of kind of alien posters on the wall...I still remember them as if they were in front of me, and I think these types of images did impact on how I perceive the world and other planets.

Lastly, a few participants responded that Māori art had made an impression on them. Misty, who is of Māori descent, stated that "...in the Marae, like your whakapapa done in art...in the Māori design kind of way. The visual form will explain to me a lot more than words could". Misty uses the Māori term whakapapa to refer to her family history, and how the visual depiction of her lineage shown in the Marae (which is a sacred Māori community or meeting house), enhanced understanding and awareness of her genealogy. Lesley, who is also of Māori descent, commented:

Oh yes, yes definitely; two that come to mind. I think it was the big [Māori] carving in New Zealand house...when I arrived in London on my OE many years ago, and that moved me immensely...it was just a lovely grounding experience and I felt immensely proud. The other one I think is the statue of *David* on my travels because I was a fan of Michelangelo; that it was just awesome to see it in reality.

These responses reveal that most of the interview participants felt that books, films or music, or artworks in general, had impacted on their lives in some way. Kayla, David and Malcolm were the only participants who stated that art had not made an impression on their lives in any way. The responses therefore indicate support for the premise of this study which suggests that art can have value and effect. Art and images have impact as they present the world in visual terms; relaying back to us our own attitudes, ideas, and experiences (Feagin, 1998). We subsequently learn who we are as both private and public citizens of our respective societies (Helmets & Hill, 2004), as Misty stated in relation to seeing her Māori lineage in visual form.

Nadz's and Marie's comments which related to the pre-viewing of a selection of cyborg art images – shown in a face-to-face search for prospective participants – also indicate that the cyborg artworks pertaining to this study had an impact on them before the actual interviews were conducted. They stated:

I find myself thinking about that image [*The Young Family*, Image 65, p. 300] everyday since you showed it to me. And I was thinking it might be more acceptable to me because I don't really have a problem with the hybrid of animal and human. (Nadz)

Viewing some of the artworks that we were shown last week, I sort of couldn't get that out of my head. And I couldn't quite comprehend it. And I just thought "wow", you read about it, but it's very infrequent that you actually see it. (Marie)

Nadz's and Marie's comments suggest that cyborg art can also have an effect. This is because cyborg art represents versions of the technoscience debate visually. Marie is indicating that she has read about technologies that can alter the human body, but has not often viewed the literal or figural impacts of body-technology integration displayed visually or artistically. Yet as this study shows, many artists are addressing cyborgisation in their artworks. There has simply been, to date, a lack of cohesive grouping of these works and endorsement of this artistic focus as a genre. As such, I include several ideas in the Future Visions section of the Conclusion which are designed to address this academic oversight. The following closing section of this chapter focuses specifically on responses to the concept of cyborg art.

Cyborg Art

Cyborg art or “techno-body art” (Strassoldo, 2003, p. 44) interrogates what it means to be human today, and in the future. The potency of cyborg art lies in its visual articulation of key ideas existent within, and the social forces which lie behind, the cyborg body, as many of these themes are otherwise undecipherable and impenetrable when not visually represented (González, 1995). Artists who create cyborg-inspired artworks explore, examine, embrace, and challenge technology. Yet the concept of cyborg art remains elusive. For this reason, I asked the artists who completed the email questionnaire whether they deemed their art to be ‘cyborg art’ (Question 2, Appendix F, p. 447). All 11 artists responded to this question, their comments centring on four key themes. Lynn Randolph, Viktor Koen and Daniel Lee felt that their art could be described as cyborg art. As Lee stated, “A vision you have never seen before should be part of cyborg art, I think. Although the subjects aren’t supposed to be machines, in that cyborg sense. But they are the product of technological innovations...” (Artwork: *Shepherd I*, Image 66, p. 302). Christos Magganas, Rua Pick and Justin Fox commented that they were unfamiliar with the terminology of cyborg art. Fox responded, “The term ‘Cyborg Art’ isn’t as common to me as other named arts but if I was to see a checkbox with ‘Cyborg Art’ as an option I’d check it” (Artwork: *Bionic*, Image 41, p. 220).

Brice Vandemoortele, Joachim Luetke and Daniel Van Winkle replied that their artwork could not really be considered cyborg art. Van Winkle commented, “Because this was not supposed to represent an actual being that was a cyborg. That would imply some sort of underlying structure made of mechanical or some other sort of synthetic parts...” (Artwork: *Wireframe Torso*, Image 26, p. 156). Van Winkle is indicating that the cyborg concept is based on an entity which has a machine-based structure, which is a common perception relating to the configuration of the cyborg, as discussed. Lastly, Philip Hitchcock and Stelarc mentioned that they were not overly comfortable with the term cyborg art. Stelarc stated, “The word Cyborg was

not common currency in 1982 when I did that. I'm not comfortable calling all this 'cyborg art'. Stelarc is indicating that the term cyborg became more well-known and well-used after he created his artwork *Handwriting – Third Hand: Evolution* (Image 51, p. 256), and that the term cyborg art is overall too broad to refer to the multitude of artworks which explore human-technology links.

I agree with Stelarc's views to a degree, and suggest that the terminology of "corporeal human-technology interface art" (or CH-TIA) is in a sense more accurate and focused, as it encompasses a wide variety of interface configurations, including historical – artworks that were created before the term cyborg was coined. This is why I have used this terminology as the main title heading in the previous chapter. 'Corporeal human-technology interface art' also more readily includes tribrid and quadbrid entities and aesthetics, as these configurations surpass the hybridity of the cyborg term and concept. This phrasing also does not have any of the historical and ideological 'baggage' of the term cyborg; the way the cyborg is often used to refer to entities that are entertainment-based, rather than theory-based (Short, 2005). The cyborg can also be considered a somewhat over-used term today. During her interview with Donna Haraway, Thyrza Nichols Goodeve stated that she, at times, has a desire to replace the term cyborg with something else because it has become so fetishised and trendy today (as cited in Haraway, 2000, p. 135).

The term cyborg art is also used by writers and artists to refer to phenomena and imagery which does not specifically focus on body-technology integration, as discussed in Chapter One. However, I use the term cyborg art in this study as the phrasing of 'corporeal human-technology interface art' is considered too cumbersome and unknown, particularly regarding the accessing of empirical data. Conversely, the term 'cyborg art' is concise, simple and easy to use in text, discussion and within research questions. The cyborg is also the most well-known organic-inorganic interface being in existence today, used in many diverse academic and art fields and actual research-based spheres. In addition, the cyborg concept is increasingly recognised as a metaphor which reaches beyond its hybrid status and configuration,

evoking links between all spheres of existence; plant, animal, human and machine (Haraway, D., personal communication, May 25, 2009). The cyborg concept also continues to be a heavily debated and theorised notion today, thereby generating a vast sharing of ideas. Moreover, cyborg art has already been discussed as a critical art focus by Gray (1998); therefore building on this established term is advantageous, as cyborg art is already a working concept within the field of cyborgology.

However, I note that Gray (1998) is one of the only theorists to date to directly link the term cyborg art with artistic representations of interfaced beings, or technologically altered human beings, and González (1995) is the only theorist aside from Gray who has assembled several cyborg artworks and images together which centre on the melding of flesh and metal, and addresses these representations as a collection. As such, the concept of cyborg art is relatively unknown and unfamiliar regarding both laypersons and cyborg theorists, and under-researched and under-examined in general within scholarly analysis. I therefore asked each interviewee, towards the end of their interview, whether they had been aware of cyborg art before they became involved with this research project, in order to discern how well-known this type of art was for them. Thirty-three participants responded to this question and 18 stated that they were aware of cyborg art. Nine mentioned that they were not aware of cyborg art, while six commented that they were aware that these types of artworks existed, but did not know that as a collection, they may be termed cyborg art. These responses indicate that just over 70 percent of the interview participants had viewed some form of cyborg art before they participated in this research project.

I also asked the hand-distributed questionnaire respondents if they had ever viewed any cyborg art (Question 7, Appendix H, p. 455). Sixty-five respondents completed this question; 39 answered *No*, while 22 answered *Not sure*. Only four respondents answered *Yes*. These findings do not support the responses obtained via the interviews, indicating that the phrasing of cyborg art is perhaps a foreign concept for many. A third of the respondents answered that they were unsure whether they had viewed any cyborg art. People in general may not be sure what the term cyborg art

actually means unless they are presented with examples, such as the images which the interviewees were shown. As discussed, three of the artists who completed the email questionnaire also stated that they were unfamiliar with the terminology of cyborg art.

I also sought to discover whether the interview participants felt that cyborg art can increase people's awareness of the links between the human body and technology, as this is a perspective I investigate throughout this study. Thirty-four participants responded to this question and two themes emerged from the discussions. Nineteen interviewees felt that cyborg art can 'definitely' increase people's awareness of human and technology links. Examples include: "I think it definitely gets messages across, and I think if it's done in the right way, you can get a very strong message across" (Kirsty); "Yes, it definitely made me think about what the things strapped onto the people could be and what they could be for, so I definitely think that the artwork and person is actually actively trying to figure it out" (Maree); "Yes, definitely, without a doubt, art is the main way to increase awareness about anything" (Nicholas); and "Definitely can stimulate public debate...[The cyborg] is a good symbol for public discussions about technology" (Jason). Chris also commented:

Yeah definitely. Just sort of, it makes people think.../...without it, how can you think of something that you wouldn't have thought of...It's just great like that; you can just share something like that, that no one else or that your friend wouldn't have thought of. You try and describe something, and most people end up drawing it.

Chris' comment is pertinent to this study, as many theorists agree that visually representing complex ideas such as changing human ontology can often have more impact than text-based discussion of these ideas (González, 1995; Kieran, 2005; Wilson, 2002). This premise is discussed in-depth in Chapter Eight.

Several interview participants also felt that cyborg art can 'possibly' increase awareness of the links between humanity and technology. These participants were therefore more tentative towards cyborg art's ability to have an effect. As Nick answered, "I think it can, because art is a good way of breaching cultural boundaries, 'cause everyone can see a bit of art, it doesn't matter what language they speak, and it can sort of, it can help to make the idea more powerful". Art is often considered a

universal language which surpasses the limitations of words or text (Luhmann, 2000). Lastly, a few interviewees mentioned that only certain people will respond to the form of artistic expression which cyborg art depicts. As David stated, "...they are quite graphic and I guess that sort of presents a barrier that some people may not necessarily progress beyond, and might sort of interfere with the transmission of the artist's message". David is referring to the fantastical, explicit and transgressive imagery often deployed within cyborg art, and the way the representation of unconventional themes may cause people to turn away from the artworks. I acknowledge that this is a key limitation of viewing cyborg art as a critical sphere of inquiry, and consider this issue in Chapter Eight.

Overall, the responses reveal that the majority of interview participants felt that cyborg art can increase people's awareness of body and technology links. Gregg was the only interviewee who did not believe that cyborg art had the capacity to be awareness-enhancing. He suggested that face-to-face explanation was the key to increasing awareness and knowledge of technology's effects and potential impacts. As he stated, "Not so much art, I think it'd be more explaining, yeah, if someone sat down and explained [it] to you; 'cause anyone can draw anything, but it doesn't mean anything to anybody unless they understand it". Gregg's comment points to the issue of having informed knowledge, before images which depict far-reaching ideas are viewed. I suggest several ways to increase the levels of pre-understanding or informed knowledge the public may have regarding corporeal technologies, cyborg art, and the cyborg concept, within the Future Visions section of the Conclusion.

Additionally, I asked the questionnaire respondents to respond to the statement: *Cyborg imagery can enhance understanding of Western society's relationship to technology* (Question 11, Appendix H, p. 456). Twenty-eight of the 64 respondents who answered this question agreed with this statement; 19 selected the option *Agree*; six selected *Somewhat agree*; and three respondents selected *Strongly agree*. Only five respondents disagreed with this statement. However, a total of 31 selected the option *Don't know*, which indicates that many respondents were unsure whether

cyborg imagery can enhance understanding of Western society's relationship to technology. This also perhaps indicates a measure of uncertainty over the actual statement. These findings therefore were not as conclusive as the responses obtained via the interviews, which again may be due to unfamiliarity with the actual concept of the cyborg and what cyborg imagery actually denotes.

Furthermore, I asked the artists who completed the email questionnaire how they felt cyborg art might enhance society's awareness of increasing human body and technology fusion (Question 7, Appendix F, p. 448). Ten artists responded to this question and their comments centred on four key themes. A few of the artists' responses addressed more than one theme, as shown. Randolph, Magganas, Lee, Van Winkle, Stelarc, Vandemoortele and Pick commented that cyborg art could enhance a general awareness of body-technology fusion and provide new forms of interface representations to reflect on. As Stelarc stated, "I think any projects or performances that involve alternative, intimate and interactive interfaces will sensitize society to alternative and aesthetic ways of meshing meat with metal". Van Winkle commented, "This is an interesting question. I believe that it probably could do it very well come to think of it. It could be used to reduce many people's fear of technology, but it could also be used as a warning to show what could go wrong". In addition, Fox, Randolph, Magganas and Lee felt that cyborg art signifies that people are fascinated with the cyborg concept. Fox and Magganas also believed that cyborg art provided a general indication of the increasing number of cyborg depictions and configurations which exist in society today. Lastly, Koen and Randolph felt that cyborg art shows that the cyborg idea is increasingly a part of our reality and culture. Koen mentioned that "Art is an integral part of popular culture and communicates the expression of ideas on actuality. That means the cyborg idea becomes more and more part of our reality not only in medical news bulletins but in culture".

These responses show the diverse ways the artists felt cyborg art can increase awareness of body and technology amalgamation, which supports the premise of this study. The responses provided by four artists to Question 7 (shown on the next page),

also indicate that these artists were willing to utilise the term cyborg art *within* their replies. This further demonstrate acceptance of this term. Examples include:

Cyborg art should enhance society's awareness of this human and technological fusion, but it all depends on the artist. An artist can glorify or criticize it. I myself think it is fascinating and a bit of a mystery. Nobody can predict the future of all of this. (Lee)

This is the main focus of cyborg art since the early day isn't it? Or in a great part of it, either positively or negatively. I mean there are artists that see it positively as a progression that transcends the human body in a next level/different dimension, and others that condemn it via the worst case scenarios. (Magganas)

These comments fell within the first two themes to emerge from the responses to Question 7 (Appendix F, p. 448), and centred on cyborg art's scope and potential, and the way the artist is considered to have a pivotal role to play in the representation of cyborgs. Moreover, Vandemoortele mentioned, "I think common cyborg art in media is not helping the acceptance of the cyborg concept. They are most of the time shown as freaks, monsters or super-villains". Vandemoortele's comment relates to one of the criticisms of cyborg representations in popular culture; how they are often shown to be sensationalised for voyeuristic value (Volkart, 2004-2005a). This concern is discussed in the following three chapters, and specifically addressed as a constraint of cyborg art's critical potential in Chapter Eight. Lastly, Fox stated, "Cyborg art has no boundaries. It's totally free and it's up to the creative minds of artists to push as much as they like". Fox's response alludes to the way cyborg art can present a variety of interfaces; not only because of the depth of synthesis and transgression which can be explored, but also because the consequences are, for the most part, not as severe as actual experimentation (Wilson, 2002). Ultimately, these artists' comments indicate that the term cyborg art may become more widely accepted and used in the future to describe the visuality of body-technology interface.

Lastly, the hand-distributed questionnaire findings gathered in response to the statement: *Human bodies and technology are increasingly interconnected* (Question 9, Appendix H, p. 456), provide a clear indication that art representing this interconnection is relevant and important today. The questionnaire respondents were

asked to what extent they agreed with the above statement. All 65 answered this question, with 56 agreeing with this statement. Twenty-two answered *Agree*; 18 answered *Somewhat agree*, and 16 answered *Strongly agree*. Four respondents selected the option *Don't know*; four answered *Disagree*; and only one respondent answered *Somewhat disagree*. Therefore 86 percent of the respondents agreed with the statement in total. I suggest that cyborg art is the artistic focus which addresses body and technology links with the most relevance, focus, fervour and critique today.

In this chapter, I have explored how artists are depicting 'the interface', regarding both ubiquitous and far-reaching technologies. I have shown how the cyborg is viewed as both an organic-based and machine-based construct, and that symbolism relating to the cyborg reaches into the depths of ideology, religion and history. This chapter also introduced how the cyborg can be used to express the optimism of the interface, but also the way technology can be seen as potentially destructive. I therefore created the udopian concept in order to address this paradoxical condition and aesthetic. The dependent cyborg was also explored as human reliance on technology is a key theme examined in cyborg art, and was a recurring issue and concern mentioned by the participants during the interviewing process.

I have also demonstrated in this chapter that cyborg art *can* have affect and that people *are* interested in discussing art, and exploring art's imagery, symbolism, themes and potential messages. This runs counter to Baudrillard's (2005a) current premise that images do not wish to be looked at for any length of time. Moreover, the findings that art was likely to have messages as opposed to being solely for aesthetic or surface value, and that art did have an impact on the majority of the interview participants' lives, indicates a further rejection of Baudrillard's notion of art being depthless and meaningless today. The following two more topic-focused chapters present an array of cyborg artworks, further discussion of participants' responses to a selection of these artworks, and key ontological and sociological concepts which the artworks examine. I continue to explore the cultural and theoretical significance of cyborg art, building on the premise that cyborg art has inherent social value.

Chapter Six

Cyborg Art Depicting

Four Fundamental Dimensions of Humanity: Birth, Death, Gender and Ethnicity

The four key biological-cultural dimensions of human existence – birth, death, gender and ethnicity – are changing, both ideologically and in actuality, as a result of the increasing convergence of the body and technology. For example, reconfiguring the concept of procreation alters humanity’s conceptual frameworks, self-perceptions, experiences and future trajectories. The profusion of new reproductive technologies available today redefines the dynamics of natural conception, pregnancy and birth. This includes the screening, monitoring and testing of the female body, embryo and foetus, and the screening, testing, freezing, thawing and implantation of eggs and sperm. Advanced ectogenetic technologies are also able to gestate organic entities artificially, which is the focus of the first section of this chapter.

Cyborgisation has also reconfigured the meaning of death today, generating a “radical rethinking of what death could mean in the future” (Murphie & Potts, 2003, p. 134). The borders are increasingly blurred between the living and the non-living. Neomorts, which are actual cadavers whose bodies are kept alive via machinery, and cryonic suspension ‘candidates’, whose bodies can theoretically be frozen and brought back to life via technology, are two examples. Death now has a three-phase identity: the single dead, where the heart and lungs stop beating/functioning; the double dead (legal brain death), where chemicals are injected into the body to preserve the organs; and the triple dead, where the entire body/brain system collapses and begins to decay (Gray, 2001, p. 108). Yet the concept of death and technology integration, or necrotic cyborgs, is limited in relation to art and theory; von Hagens’ cadavers are the most familiar ‘death plus technology’ artworks created today.

Cyborg art and imagery avidly depicts notions of gender, particularly the representation of conventional feminine and masculine signifiers. I note that female cyborgs are often depicted as sexualised and passive, while male cyborgs feature more often as muscular and active. Female cyborgs can also be portrayed as deadly assassins (Balsamo, 2000; Johnston, 2001; Squires, 2000), yet male cyborg iconography centres on one defining image; the hyper-aggressive killer (Fuchs, 1995; Graham, 2002; Springer, 1996). Nonetheless, artists are also depicting gender relating to the techno-human in ways which rupture traditional representations, thereby transgressing gender norms. Symbolism and imagery relating to the transgendered, hermaphroditic, and androgynous cyborg are therefore also examined in this chapter.

Ethnicity and critical race studies (Foster, 2005) have been largely omitted from visual cyborg theory, with discussions of race and technology focusing primarily on computer access, use, cyberspace (Chaney, 2003; Kolko, Nakamura, & Rodman, 2000), and feminism (Sandoval, 1995). The concept of ‘cyborg ethnicity’ is therefore uncommon, and yet, I argue, is a critical dimension of cyborg theory. Gray, Mentor, and Figueroa-Sarriera agree that cyborgology “must be multicultural” (1995, p. 11), yet, González rightly identifies that cyborg images are most often derived from an “industrially ‘privileged’ Euro-American perspective” (1995, p. 270). For this reason, ethnicity relating to indigenous cyborg themes – from the perspective of cultures peripheral to the Western centre – is a focus of the closing Ethnicity section.

Birth

I begin this section by discussing an artwork which explores organic gestation and issues surrounding pregnancy and the developing embryo or foetus. *Self-surveilling Embryo* (Image 30), shown on the next page, is an image included in Part One of Faith Wilding’s three-part installation artwork *Embryoworld: Wall of Embryos* (1997-1998). This artwork consists of several watercolour drawings which represent assisted reproduction imagery (Anker & Nelkin, 2004). *Self-surveilling Embryo*

shows the transformation from egg, conception and gestation to full-term baby and the various visualisation technologies which may be used during this process, such as computers, sonographic technologies (ultrasound), video cameras, and optic fibre technology (Haraway, 2000). The growing baby is therefore shown as a cyborg foetus; part flesh and part machine. Wilding focuses on issues surrounding conception in this artwork by exploring “various visual strategies to probe the deeper cultural and spiritual meanings inherent in the creation of new flesh” (2002, para. 1).



Image 30. *Self-surveilling Embryo* (1997-1998).
Embryoworld: Wall of Embryos.
Three-part Installation Art.
Artist: Faith Wilding.

The foetus in this artwork is shown positioned downward (by reversing the artwork), preparing for its impending birth. The central top pink peak represents the female birth canal, ready to make way for the baby. Wilding shows the extent to which the technologised gaze is directed at the “cyborg fetus” (Mitchell & Georges, 1997, p. 373). This gaze transforms the developing foetus into an object open to scrutiny, no longer protected by the womb and skin of the mother’s body. I call this new, and for the most part, accepted public vision into the inner body *the permeative gaze of technoscience*. This literal and figural technologised gaze (co-developed with Carolyn Michelle) addresses the way the body’s inner realm is increasingly viewed via technological intervention (Fortunati, Katz, & Riccini, 2003). Technologies of vision include x-rays, computer tomography (CT), magnetic resonance imaging (MRI), nuclear medicine imaging (NM), positron emission tomography (PET) and ultrasound (Gerundini & Castellani, 2003). The word permeate has two meanings: to pervade or penetrate into environments or a certain substance; and to pass through a type of membrane or solution by osmosis or diffusion (Collins English Dictionary, 1991). I use the word permeate in relation to the former definition, to identify the way the permeative gaze penetrates through the skin via new technologies of vision.

The word *permeate* has a double meaning within the cyborg context, containing the word meat, which relates directly to my analysis. ‘Meat’, pertaining to cyberpunk discussion, is associated with the body and embodiment (Springer, 1998), as opposed to post-corporeality and disembodiment. Cyborg artworks can depict the human body and skin as transparent, gaping, torn or entirely removed in order to expose the inner body, thereby enabling the permeative gaze. Examples include von Hagens’ soccer playing plastinate shown in Image 36 (p. 206), and Kothari’s male cyborg, with his artificial heart, depicted in Image 55 (p. 269). I suggest that this new gaze has three key dimensions: firstly, the gaze is not gender specific, although women, by virtue of their reproductive role, are more often objects of the gaze; secondly, the demarcations of the skin as a protective boundary to the external world cease to exist; and thirdly, formerly more hidden/private body functions or states, such as gestation and death, are increasingly subjected to public visual scrutiny.

The permeative gaze is linked to the scientific gaze or eye (developed from Michel Foucault's medical gaze), where the human body is separated from human identity during medical diagnosis and procedures (Cartwright, 1995). The scientific gaze dehumanises the body, subjecting it to ever-invasive scrutiny, which Wilding evokes in *Self-surveilling Embryo*. Jones affirms that Wilding has traced the sexual and reproductive flesh of the female body for three decades; bodies which increasingly exist as "the denaturalized flesh machines of Pancapitalism" (1999, para. 2). Suzanne Anker and Dorothy Nelkin agree that "In this politically inspired installation Wilding explores the colonization of the female body" (2004, p. 142). The male gaze (Berger, 1972) is part of the permeative gaze as men are more often in positions of medical power and therefore able to look into a woman's body directly (Petchesky, 2000). Wilding metaphorically draws attention to the way an expectant mother's body can be penetrated via technology, reconfiguring the manner in which the concepts of pregnancy and privacy are defined. Her artwork draws on Monica Casper's pertinent question, "Under what conditions are pregnant women able to resist becoming cyborgs and, conversely, when are pregnant women able to derive pleasure and economic benefit in being transformed into cyborgs?" (1995, p. 197).

Moreover, Wilding (2002) uses her art to explore how women experience pregnancy. For example, advanced sonographic technologies provide women with a greater sense of empowerment; many women even bond with their growing babies via imagery visible on the screen (Haraway, 2000). Yet, ultrasound also places pressure on women, as they still bear the responsibility (and guilt) for how the baby develops (Petchesky, 2000). Wilding emphasises that the narratives of "Evolution, choice, idealization, immortality and perfectibility" are implicitly aligned with new foetal technologies of vision (2002, para. 2). Furthermore, technologies of vision often discredit a woman's felt evidence concerning her pregnancy, in favour of the more "objective" data which is displayed on screen (Petchesky, 2000, p. 181). As Lisa Mitchell and Eugenia Georges suggest, "The cyborg fetus of ultrasound imaging [is] the mode of knowing and feeling the foetus, through the coupling of human and machine" (1997, p. 373). *Self-surveilling Embryo* also shows how technology renders

the woman invisible, while the foetus is transfigured into ‘digital substance’ (Petchesky, 2000). Foetal imaging and monitoring removes the “technomom” from her pregnancy, “symbolically and visually” separating the developing foetus from her body (Casper, 1995, p. 187). Ectogenesis goes one step further, by removing the woman from the pregnancy/gestation equation altogether.

Ectogenesis

Heidi Taillefer’s 1994 acrylic painting *Introspection* (Image 31), presented on the next page, is one of the most well-known representations of an ectogenetic baby today. This is due to *Introspection*’s selection as the cover art for Arthur and Marilouise Kroker’s 1996 book *Hacking the Future: Stories for the Flesh-eating 90s*. Taillefer is a celebrated Canadian artist who straddles the line between fine art and commercial art, creating creatures which cross the boundaries between the unearthly and the earthbound, such as the mermaid, cherub and cyborg. Taillefer melds mythology and Victorian romanticism with science fiction imagery in order to explore our approaching new techno-age, one which “looms close on the horizon and promises a redefinition of what it means to be human...” (Taillefer, 2008a, para. 3).

Introspection shows a female robot holding an external womb which is clipped onto or linked into her torso. A human foetus in its third trimester floats in the protective artificial amniotic fluid within the transparent womb. *Introspection* shows the way the cyborg foetus is intimately linked to the machine, becoming even more available for the permeative gaze, as the organic opaque pregnant woman’s skin has been exchanged for the translucent artificial womb. Kroker and Kroker (1996, p. 16) suggest that *Introspection* is showing us the future of procreation, where a robot may serve as a “servo-womb for a human species”, ultimately radically disengaging the concept of motherhood from its foundations. They surmise that “Like an amniotic crystal ball, perhaps the baby is telling us about our future. Not the future virtual, but the future terminal” (Kroker & Kroker, 1996, p. 16). I have created a human cyborg

cartoon character *Tora Cy* (2005), which evokes a similar theme to *Introspection*. *Tora Cy* wears a detachable “wombpack” on her back where her baby gestates. She is introduced in the Future Visions section of the Conclusion (p. 409) as a character which may also potentially ignite discussion on, and awareness of, *in vitro* gestation.



Image 31. *Introspection* (1994).
Painting: Acrylic on Board.
45 in. x 60 in.
Artist: Heidi Taillefer.

J. B. S. Haldane, a British scientist, coined the term ectogenesis in 1924 to describe how human pregnancy would one day occur in an artificial womb. He believed that by the year 2074, using an exowomb to gestate a baby full-term would become increasingly viable and popular (Rosen, 2003). Advances regarding reproductive research indicate that it may one day be possible for an embryo to grow to full-term external to a woman’s body. However, it is to be noted that all delegates attending the 2002 artificial gestation conference *The End of Natural Motherhood? The Artificial Womb and Designer Babies*, did not believe this would be possible (Knight, 2002).

Nevertheless, Professor Hung-Ching Liu has already grown a human embryo successfully for six days in an external incubator/womb (Simonstein, 2006), and Professor Yoshinori Kuwabara has kept a goat foetus alive for three weeks in an artificial womb filled with a newly developed liquid substance which mimics amniotic fluid (Aristarkhova, 2005). Julien Murphy rightly notes that “The topic of ectogenesis is no longer confined to science fiction” (1989, p. 184). Kroker and Kroker refer to these developments as the “flesh-eating technology” of technoscience (1996, p. 17). They suggest that the end of pregnancy parallels the end of history, and the constitution of the human body as it has existed for thousands of years.

Shulamith Firestone ignited the debate on ectogenesis when she stated in her infamous book *The Dialectic of Sex: The Case for Feminist Revolution* (1971) that “Pregnancy is barbaric” (1971, p. 224; emphasis in original), and that “Artificial reproduction is not inherently dehumanizing” (1971, p. 225; emphasis in original). Firestone argues that pregnancy is deformation of the body for the sake of continuing the human species. She asserts that childbirth is painful and pregnancy is mystified, and women feel pressured into believing that natural conception, gestation and birth are necessary and an innate aspect of humanity *and* femininity. Firestone further argues that the “Freeing of women from the tyranny of their reproductive biology” – childbearing and rearing – places responsibility for the child onto men and women equally (1971, p. 233; emphasis in original). However, she does concede that society is not ready for external gestation technologies due to the inequalities which still exist between men and women. Men would ultimately have more control over this process due to their positioning in society. Men are able to make most of the decisions concerning the use of advanced technologies today because of their authoritative power (Squires, 2000). Individuals who have substantial wealth will also most likely have access to this type of technology (Simonstein, 2006), and will be able to make the final judgments on how this technology will be applied (Murphy, 1989). There is also a fear that women may no longer be ‘required’ in society, as reproduction is deemed one of women’s main sources of power (Volkart, 2004-2005a).

Joachim Luetke has created *Dream On*, shown here, to depict external gestation and cyborg fetuses in graphic realistic styling. *Dream On* centres on an almost fully-developed human foetus floating and dreaming within a transparent womb sack, which is attached to a machine via tubes and wires. The flesh and metal symbiosis creates a stark and poignant contrast in the conjoining of human and machine. The soft, organic, warm, live body is juxtaposed against the hard, metallic, cold, dead machine. *Dream On* is a section of a larger artwork and shows that this dreaming foetus is one of many, reminiscent of a production line of commodities; showing “Life as a system to be managed...” (Haraway, 1997, p. 174). This production line concept of gestation parallels the imagery presented in Giger’s *Birth Machine* (Image 6, p. 104), where he shows several cyborg babies gestating within the body of a gun, ready to be fired out or birthed into the technological world.



Image 32. *Dream On* (n.d.).
Painting.
Artist: Joachim Luetke.

I sought to understand how the interview participants approached the concept of ectogenesis, by asking how they felt about external womb technology in general. Thirty-one participants responded to this question with in-depth and engaged answers. Their comments overall addressed three main themes. Seventeen interviewees felt negativity towards external womb technology. General feelings of pessimism and disapproval towards the concept were most often mentioned. Misty commented, “It’s bad because; being a mother myself, that’s – why would anyone not want to carry your child. And I hope it never comes to that”. Demelza stated:

If somebody has kind of the power to have an external womb and to cultivate a baby without even being around it, maybe it’s going to detract from that person’s life later on. It kind of irks me a little bit because it seems problematic, and really, you give someone power and they’re probably going to abuse it.

Demelza draws attention to the power a person can have over the gestation procedure, which, as stated, is a fundamental concern regarding this form of technology.

Several interview participants also felt that external gestation is impersonal, that it creates a lack of bonding between mother and child, and that the female body is made for pregnancy, therefore external womb technology is unwarranted. Nadz stated, “No I think you’d be breeding an army instead of humanity. No, I would not be for it at all”. Maree commented:

And I don’t see how a baby could be developed in some little tank, and it just doesn’t seem right. Not right as in moral, as in feeling. I think that women who have had children have always said that there is some kind of feeling and bonding that happens while they’re pregnant and if something is in a tank then it’s so impersonal.

Maree discussed the way ectogenesis is ‘inhospitable’ and the way bonding between mother and baby cannot develop, which is a noted concern within debates that centre on ectogenesis (Pence, 2004). Additional philosophical, ethical and moral concerns include the indefinite legal definition of the unborn child, maternal ‘ownership’ of the child (Aristarkhova, 2005), and protection from abuses this type of technology may generate. The problem of who is liable or potentially responsible if an ectogenetic child is harmed during *in vitro* gestation, or if a defect is only detectable after the ectogenetic child is ‘birthed’, are also crucial ethical concerns (Murphy, 1989).

Some interview participants also felt a general tolerance towards or acceptance of external womb technology, with reservation. Nico stated, “As a gut instinct I’m sort of against it, but I can see the reasons for it. So I suppose at the end of the day, I don’t really like it but I’ll tolerate it”. Morten commented:

Mixed feelings I guess. In some cases it can actually be a blessing for some people who really have a problem, but in general I think that part of nature should be left to nature. If you mix too much with nature then you might mess things up.

These participants indicated that they would accept this form of technology if it was developed, however they still had underlying reservations, derived from the prevalent fears which are associated with ectogenesis. Lastly, a few interviewees also felt positively towards this technology, deeming it just part of human progression. Donovan stated, “I certainly don’t have any problem with it”, while Steven commented, “It doesn’t bother me. I think that’s how technology is going to end up anyway. Just go over there and take a number that you can choose and you can have baby number 526; technology”. Blair also replied, “Well if I was a woman it would be pretty handy, if I could just chuck it off into an artificial womb and leave it there for nine months”. Blair’s candid comment is linked to Firestone’s (1971) perspective that pregnancy places a substantial burden on women’s bodies, and their lives.

Key motivations regarding research into artificial womb technology include the hope of improving the survival rates of premature babies and alleviating abortion rates. As such, Gregory Pence suggests that “the artificial womb is the ultimate pro-life technology” (2004, p. 137). Eradicating the need for surrogacy and *in vitro* fertilisation procedures (Coleman, 2004); helping women who suffer from repeated miscarriages or those who have had a hysterectomy; and assisting women who suffer from acute psychological disorders such as depression would also be key aims (Rosen, 2003). Ectogenesis could also assist homosexual couples who desire to have a child (Simonstein, 2006). Furthermore, the ectogenetic foetus could be monitored directly (Knight, 2002; Rosen, 2003), closely observed for nutritional uptake and developmental progress. These noted benefits create what Irina Aristarkhova calls an

“ectogenesis desire” towards this form of technology (2005, p. 44). This term denotes an increasing fascination with, and support for, the concept of *in vitro* gestation.

The interview participants’ responses relating to the concept of ectogenesis reveal that just over three times as many interviewees felt negatively about, or had reservations towards, external gestation, than those who felt more positively towards or who were more accepting of the idea. Theorists agree that humanity must fully examine the concept of external gestation before this technology is sanctioned because of its dangers. Human values will be radically challenged if ectogenesis does become a reality (Murphy, 1989), and this needs to be acknowledged and addressed “lest we give birth to a technology that we will live to regret” (Rosen, 2003, p. 76). I suggest that cyborg art can foster awareness surrounding the issue of artificial reproduction and ectogenesis, as this form of art is able to bring far-reaching ideas into the public forum, via a visual medium, for scrutiny and debate.

H. R. Giger’s bronze sculpture *Birth Machine Baby* (Image 33), included on the next page, also centres on biomechanical gestation and birth (Barany, 2007). This sculpture focuses on one of the cyborg babies presented in Giger’s 1967 pen and ink artwork *Birth Machine* (Image 6, p. 104). The cyborg baby in this sculpture sits waiting for his or her impending birth and entry into the technoscientific and digital world. The arrow sculptured in the middle of the cyborg baby’s body signals that this is the way up and out of the bullet shell; a biomechanical birthing process. The baby’s muscles are already formed, and he or she is shown wearing protective body armour and goggles. The cyborg baby is also carrying a defensive weapon, thereby ready and prepared for the enemies that will be encountered; humanity.

This artwork has been created in order to provide a visual representation of the way our destinies are irretrievably linked to technology, and the accountability that is necessary in order to manage this increasing union with care (Gelber, 2002). Giger is evocatively “critiquing our civilisation through the backroads of the imagination” (Gelber, 2002, p. 11). The bullet shell in Giger’s work metaphorically represents an

external womb and the fully developed cyborg foetus represents the increasing visuality of the growing foetus today. Hajime Sorayama (2008) has also created an artwork which depicts a futuristic baby floating above a sea of blue, and linked to an external (hidden) apparatus by leads perhaps serving as a type of technological umbilical cord. Haraway (1997) affirms that the visible foetus is developing into an icon of technoscience, due in part to the proliferation of reproductive, gestation and birthing technologies, and our increasing ability to actively participate in the creation of our own progeny and evolution (Bowring, 2003; Rifkin, 1999; Stock, 2002). *Birth Machine Baby* also stands guard outside Giger's Museum in Gruyères, Switzerland, in the form of a large street sculpture, identifying that the cyborg baby has indeed gone public (Dumit & Davis-Floyd, 1998; Haraway, 1997). The representation of babies merged with technology is further discussed in the following chapter, aligned with artworks included in the Genetics section.



Image 33. *Birth Machine Baby* (1998).
Bronze Sculpture.
23 in. x 9 in.
Photo Credit: Marc Adrian Villas.
Artist: H. R. Giger.

I asked the interview participants how they felt about *Birth Machine Baby*. Sixteen responded to questions, and four key themes emerged from the discussions. Several interviewees felt that Giger's sculpture represented the external gestation of a baby, or a type of machine baby, which is Giger's artistic intent. Nick commented:

Well I think from the name I would say that it's the idea of children being reproduced purely through, or something like the whole *Matrix* birth system where instead of the natural way of having children, it's all been mechanised.../...You could also, almost say this is sort of an exit tube.

A number of participants also commented that the baby in the artwork is already born developed, which again centres on the visual aspects of the sculpture. As Nadz stated, "Look he's got [a] really mature expression on his face...and the muscles as well, you can still see it's a baby.../...he's really into adulthood already". Several interviewees also commented on the bullet shell and the way machinery adorns the baby. Nico mentioned that the baby's "...got the machine bits over its eyes and round its neck.../...it just seems like the machine there is important, crucial to the baby, towards its survival". Nico's response centred on the machinery that adorns the baby, such as the coil shown draped around the baby's neck, the goggles and the weapon; the way these may provide the baby with a measure of protection upon being 'born'.

Lastly, a few interview participants felt that *Birth Machine Baby* was objectionable and abject. David simply stated, "It's quite sort of repulsive in a way". David's comment is not related to how the sculpture looks as it is clean, shiny and well-crafted, but to what it represents; the way it disrupts cultural, social and individual boundaries and norms. As Julia Kristeva states, it is not the "lack of cleanliness or health that causes abjection but what disturbs identity, system, order. What does not respect borders, positions, rules" (1982, p. 4). The repulsive or the abject does not refer to what is being observed, but to the radical disruption of accepted ideologies, identities and relationships between set social mores (Oliver, 1993). Kristeva (1982) therefore contends that the abject threatens the identity – the 'I' – of the observer, as the abject both fascinates and repels, which she states is a sinful combination of attraction and repulsion. David and others may have felt this 'paradoxical pull', as the sculpture is both beautiful in its construction and shocking because of its themes.

Birth Machine Baby ruptures the norms of representation regarding fetuses and babies, creating what Kristeva calls “The in-between, the ambiguous, the composite” (1982, p. 4). The sculpture resides in the in-between stage of babyhood and adulthood, which disrupts borders. For this reason, one of the participants declined to discuss the artwork (as mentioned in Chapter Three), deeming it offensive. It is to be noted however that one interviewee was particularly drawn to the sculpture. Maddy stated, “It’s really nice.../...It’s beautiful, I want to stroke it”. Maddy’s comment is idiosyncratic, identifying that art viewing is indeed a subjective experience.

Joachim Luetke is an artist who further shatters ideological boundaries, by combining the concept of ectogenesis with the concept of death, as shown in the following artwork. Luetke graphically symbolises Gray’s contention that “The line between living and dead, human and not human, has never been vaguer” (2001, p. 108). Historically, birth has been considered a natural part of life, in the same way that death was deemed a person’s destiny (Ariès, 1974). However, increasingly natural evolutionary occurrences such as birth, death and aging are looked upon as aspects of life to be challenged and conquered (Kurzweil, 2005; Moravec, 1988; Stelarc, 1998a).

Death

Death in various guises has been a subject of the arts for hundreds of years (Bertman, 1991). Yet, cyborgian death, or the concept of necrotic cyborgs, is rarely artistically represented. This may be due, in part, to death being reconfigured today (Gray, 2001), no longer existing as an inevitable and sacred dimension of life, but something that could be preventable (Stelarc, 1998a). Luetke is one of only a few artists to depict necrotic cyborgs, or the matrix of body/death/technology. *Kreator: Enemy Of God* (Image 34), shown on the following page, is a section of a larger artwork and was selected for German heavy metal band *Kreator’s* 2005 music compact disc *Enemy Of God*. One of the female cyborgs depicted in this artwork is visible just to the side of the CD cover. *Kreator: Enemy Of God* centres on macabre necrotic female

cyborgs lined up in succession in military styling with growing human fetuses positioned in their mechanical wombs. The cyborgs' breasts are shown smooth, without nipples, implying that the babies, when 'born', will perhaps be intravenously fed. The cyborgs, with their skulls, teeth, mechanised legs and incubated human fetuses, create a foreboding mix of vulnerable flesh and assembled metal.

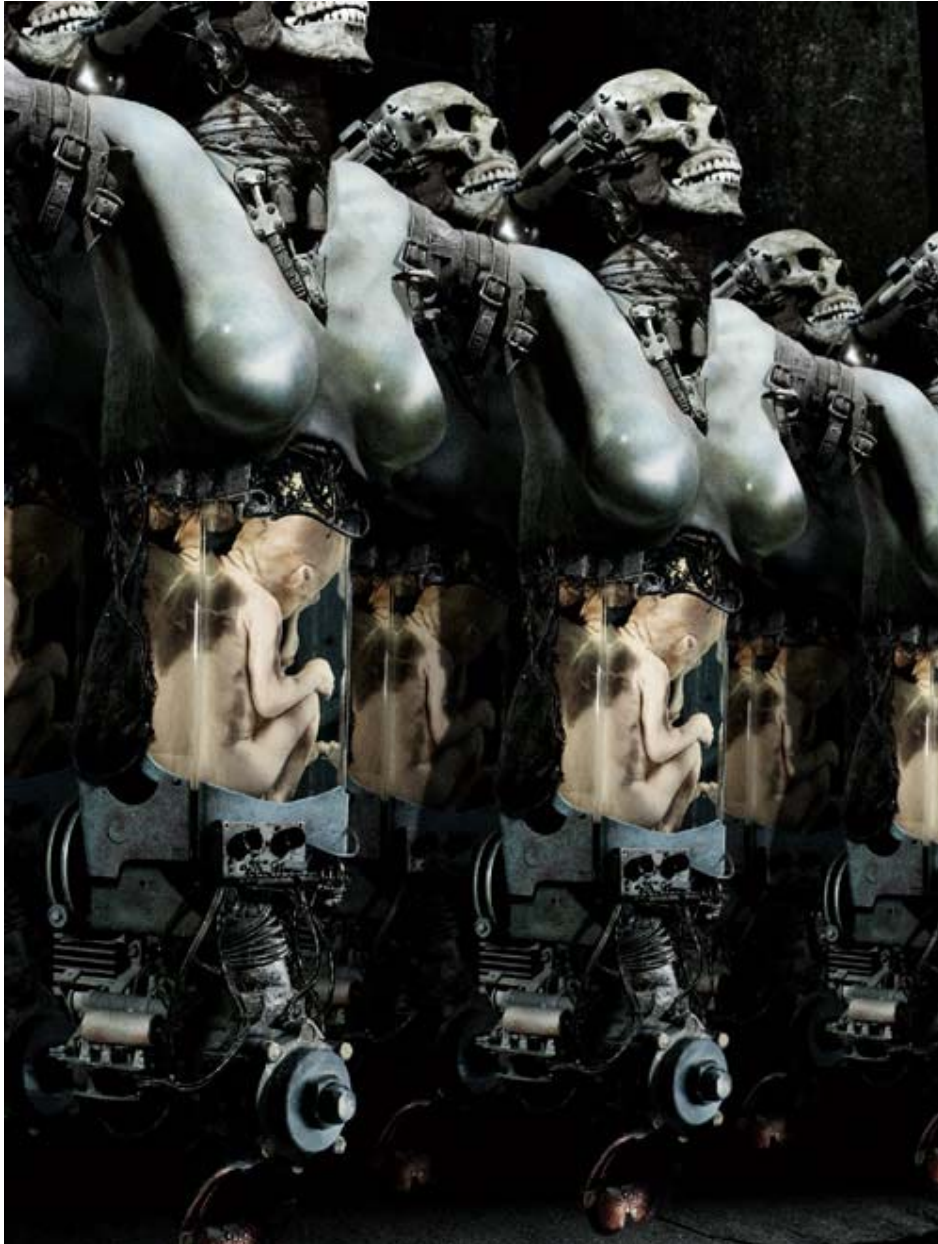


Image 34. *Kreator: Enemy Of God* (2005).
Digital Art.
Artist: Joachim Luetke.

Luetke's artwork alludes to the concept of neomorts; cadavers kept alive in order for their bodies to be utilised in some way, such as the completion of a gestational cycle (Hogle, 1995). The skull represents the human brain in death, while the growing foetus symbolises that the cyborg body remains alive. Neomorts are an example of new configurations of the "living-dead" (Gray, Mentor, & Figueroa-Sarriera, 1995, p. 5). They are "donor cyborgs"; brain-dead cadavers with beating hearts (Williams & Bendelow, 1998, p. 82). The concept of 'neomort art' or 'cryonic art' is rare, however W. J. T. Mitchell (2005), an American visual culture theorist, draws on both these life-plus-death concepts in relation to British sculptor Antony Gormley's dramatic work *Sovereign State* (1989-1990). This artwork shows large rubber hoses inserted into the body of a man lying on his side in a foetal position. Gormley's sculpture evokes the neomort who is kept alive by technology, and the cryonics candidate who hopes to be brought back to life via technology (Mitchell, 2005). Artworks which allude to neomort cyborgs or living cadavers strongly challenge the historical definitions of birth and death by rupturing long-held notions that these are dimensions within life which are fixed and eternal. They also compel us to (re)define the previously distinct and discrete concepts of "humanness" and "technological", and what constitutes a human/cyborg body today (Hogle, 1995, p. 204).

Christopher Conte is a Norwegian-born New York-based sculptor who also unites visions of death and technology. Conte's *BioMechanical Bronze Skull* (Images 35 & 35a) presented on the next two pages, shows a human skull merged with metallic shapes, inserts, coils and fasteners. Conte (2008) is well-versed regarding the actual impacts of meshing technological devices with the human body, particularly in relation to corporeal prosthetic/mechanical additions or interfaces. He has worked in the field of prostheses and prosthetic limb creation for many years, most often creating artificial limbs for amputees. Conte therefore has intimate knowledge of the way prostheses can assist the human body, but also how many prosthetic additions are designed to reconstruct an imperfect (or so-called 'defective') human body. For this reason, Conte is both an artist-practitioner and practitioner-artist, sharing his perspectives on the human-technological interface with both recipients and observers.



Image 35. *BioMechanical Bronze Skull, Version 1* (2006).
Casted hand finished and machined bronze with stainless steel and aluminium
components: 2.5 in. x 3.5 in. x 3.5 in. Front view.
Photo Credit: Amanda Dutton.
Artist: Christopher Conte.

The visible metallic wiring and eyelets shown on the front view of Conte's necrotic cyborg's skull resemble piercings, not unlike those used by body modifiers to adorn their bodies. They have been inserted with care and aesthetic splendour, alluding to notions of embellishment. The skull sits on a screw thread neck column, evoking similar aesthetics to Jan Doležálek's *Bůh Závitu: Screw God* (Image 27, p. 160). The technological adaptations beautify the skull, enabling it to radiate imagery of opulence. Image 35 therefore shows a reverence for technology; an appreciation of its interface appeal. Yet, Image 35a, which shows the side view of the cyborg's skull,

provides an entirely different impression; one of subjugation, where the cranium looks to be altered in such a way as to incite control. The clockwork-like cog or disc inserted into the skull socket possibly allowing entry into the skull. This view of Conte's sculpture alludes to the invasiveness of brain-machine interface (BMI) and neuroprosthetics, evoking cyborg configurations where minds are increasingly linked to devices and systems. Actual brain-technology links are growing in number and type, such as the electrodes (stimulators) which help those who suffer from epilepsy or Parkinson's disease (Naam, 2005). Conte uses the iconic human skull to showcase technology as implanted or inserted into the brain. It is also utopian; both majestic and intimidating, paralleling technology's duality overall. The skull is a prescient vision of a future mortal cyborg whose resting place has been exhumed.



Image 35a. *BioMechanical Bronze Skull, Version 1* (2006).
Side view.
Photo Credit: Amanda Dutton.
Artist: Christopher Conte.

Prominent Australian artist and sculptor Patricia Piccinini has also recently created a glistening skull, entitled *Not Quite Animal (Transgenic Skull for the Young Family)* (2008). This sculpture is a striking image of death, animal and human symbolism. As the title of Piccinini's artwork indicates, her artistic focus centres on transgenics while Conte's work is an exploration of prosthetics. Piccinini has sculptured imagery denoting a necrotic transgenic creature; a posthuman being molded in bronze. The skull evokes futuristic themes which are juxtaposed dramatically with the historical animal (human ancestry) theme. Her skull is a postmodern symbol for our time as it resides in the mid-way zone between our animal past and our posthuman future. Piccinini has created a number of sculptures which depict an array of transgenic and imaginary creatures. *The Young Family* (Image 65, p. 300), discussed in the following chapter, shows a transgenic human-dog entity/mother feeding her young.

Conte's and Piccinini's skulls signify our mortality within the technoscientific age. No matter how interfaced we become with technology, or to what extent our genetics are altered via technology, our mortality lingers; we still die and decay. The following anatomical artwork has been created as a way to overcome the decomposition of skin and viscera which usually accompanies death. Gunther von Hagens, a controversial German artist-scientist-anatomist, has developed a technique that enables the entire human body to be preserved, giving those who have passed away a chance to live on as nimble dancers, gallant horse riders and more. *Body Worlds (Körperwelten)* is the touring exhibition which brings the anatomical art specimens to the public. Conte has also recently exhibited a collection of his cyborg-inspired sculptures at the New York Last Rites Gallery along with celebrated artist and illustrator Fred Harper, who creates startling and erotic oil paintings of cyborgs in metaphoric styling. I introduce two of Harper's paintings in this study, as his work centres on fantastical, sexual and provocative mergers between machinery and the human body. Conte's and Harper's show, which was held between May and June of 2008, was called *Cyberdine: Fred Harper and Christopher Conte* (Last Rites Gallery, n.d.). The exhibition showcased the diversity and quality of work which is being created in the field of body-technology interface today, and within the broad realm of cyborg culture.

Anatomical Art

Gunther von Hagens (2005) is well-known for merging death, technology and art together, and subsequently bringing his creations into the public sphere. He has spent over 20 years developing his preserving technique called plastination, which he uses to create his anatomical art specimens. The procedure involves a cadaver being immersed in formaldehyde to stop it from decaying. The corpse is then submerged in a warm basin where acetone replaces the remaining body's fats and fluids. Finally, the acetone is replaced with a synthetic resin, and the plastinate can be positioned into the pose selected with gas or hot air, sealing the body into place for 2,000 years (van Dijck, 2001). The process for a whole-body specimen takes approximately 1,500 hours, at the cost of 50 thousand dollars (Goldman, 2006). Von Hagens' creations can be deemed hybrid cyborgs (van Dijck, 2001); amalgams of technological application and organic constitution: part cadaver and part sculpture (Leppert, 1996).

Von Hagens' anatomical art is controversial because it defies the social conventions and categorisations on which ethical judgments are made, including whether the exhibitions should be viewed as “*either science or art, either instruction or entertainment*” (van Dijck, 2001, p. 102; emphasis in original). Von Hagens' (2005) overall aim is to ensure the science of the body is compelling, and he promotes his specimens as being didactic; instructive in health and corporeal constitution. Bodies affected by smoking and overeating, in addition to those having various tumours and congenital birth defects, are included in the exhibitions. Von Hagens surmises that “Posed specimens provide an optical bridge to self-awareness” (2005, p. 32). *Soccer Player* (Image 36), included on the following page, is one of von Hagens' most familiar whole body specimens. He is a plastinate who is shown poised in action, kicking a soccer ball, with leg and arm muscles hard at work. The expression on his face denotes studied concentration, while he looks towards the soccer ball in flight. The white light shown as part of the blue-black sky behind *Soccer Player* presents the illusion that the cadaver is in flight beyond the boundaries of earth and death.

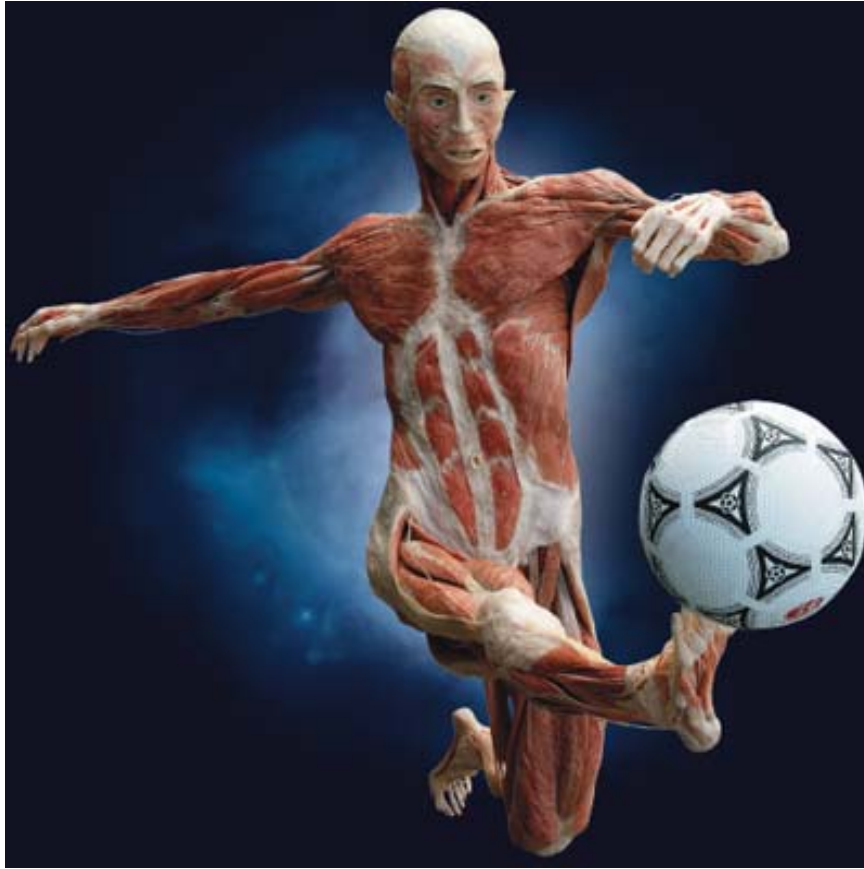


Image 36. *Soccer Player* (2006).
Body Worlds 2 Exhibition.
Anatomical Art: Whole-body Specimen.
Artist: Gunther von Hagens.

I asked the interview participants to share their views on the representation of *Soccer Player*, after they were informed that this was an image of an actual corpse. Seventeen participants responded with forthright comments; their responses addressing two main themes. Several felt that viewing the interior of the human body was fascinating, and/or a bizarre concept. Phil commented:

Fascinating, very interesting, particularly because of the fact that it's like a snapshot and you've just gone 'whoosh', let's just peel back the outer layer and have a look at what's underneath.../...It is, I find...[it] to be quite beautiful. Not in the sense that I would necessarily like to see someone walking around like that, but in the sense that this is an exploration of the element, or elements of what a human is, rather than attempting to alienate oneself from the human.

During his time perfecting the process of plastination, von Hagens became aware that the general public were interested in viewing the body in death without the burden of cruelty (O'Rourke, 2001) or decay. Since 1998, more than 15 million people have attended Body Worlds in various countries such as Japan, Germany, Austria, Switzerland, Belgium, England, Korea and Singapore (Whalley, 2005). Many exhibitions have also had to institute 24-hour opening times in order to cater for all those who wished to attend (Kriz, 2005). Furthermore, most of the attendees surveyed stated that they enjoyed the exhibitions and had gained new perspectives on the human body (Kriz, 2005; Lantermann, 2005; Whalley, 2005).

Despite Body Worlds' appeal, some of my interview participants stated that they felt discomfort towards *Soccer Player* and would not attend an exhibition which featured these specimens. Paul commented, "I'm not comfortable with it; I'm ok with the picture of it...I don't think I'd want to go and see an actual body". However, more interviewees overall found the concept and image fascinating as opposed to disconcerting or offensive, which supports von Hagens' findings obtained via surveys conducted following several of his shows (Kriz, 2005; Lantermann, 2005). Marion and Nicholas commented that they would attend Body Worlds without reservation, and Jason mentioned that he had actually attended the exhibition overseas. He stated:

I went to the exhibition.../...when you saw them just straight away, for me I didn't get an impression that it was a person somehow. It was really, I don't know, it didn't feel like a person to me.../...The idea was [to] educate people about the inside of the body.../...But if you said that you would add your name to the list of people that would donate their bodies, you got a free ticket. (Jason)

Von Hagens employs many methods to recruit potential specimens and promote his exhibitions, however, people predominantly sign up to be part of his exhibitions upon their death via the Body Worlds internet site. As of 2006, 6,500 individuals were on the list (Goldman, 2006). There are many reasons why people may wish to donate their bodies and become immortalised as one of von Hagens' specimens. One anonymous donor stated, "Using plastination as a way of furthering the development of art and culture is what fascinates me most" (as cited in von Hagens, 2005, p. 30). The potential plastinates show they have a desire to be immortalised in art.

I also asked the interview participants if they felt any moral issues were raised by the image of *Soccer Player*. Seventeen responded to this question; some found the concept of plastination acceptable, while others had noted concerns. Overall their comments centred on two key themes. Several participants felt that plastination was an acceptable art form if donors gave their consent. They felt that people have the right to do what they wish with their own bodies upon death. Examples include: “I don’t have a problem with it as long as people know what they’re doing...” (Margaret); “If people give consent that it is ok” (Jason); and “I’ve always believed that it’s your life, your body, it’s up to you” (Misty). Some interviewees also mentioned that this form of art generated concerns of exploitation and issues relating to having ‘respect for the dead’. Matt commented, “There’s that whole kind of respect, the respect to that person, and the body, their body”, while Sally stated, “I can live with education being in medical myself, but I certainly can’t live with exploitation so there’s a whole big question mark all over that, and I can’t make a decision ’cause I don’t know”. The responses reveal that while there is concern over exploitation of the dead, most of the participants felt that everyone has the right to do whatever they wish with their own body; that a person’s body belongs to them.

Misty and Darri offered their views on perspectives of death relating to elements of their Māori culture. Misty stated, “I’m really open to new and different stuff; so you might get different reactions from different Māori depending on their tribal beliefs and their cultural – how they were brought up”. Darri’s comment related to the practice of organ donation upon death. She mentioned:

I’ve said on my licence I’ve donated my organs.../...Mum said that Māori people don’t do it, you know you are supposed to let your body rest, instead of donating your body parts, but I said that’s my choice because I’d like to help other people.

Misty’s and Darri’s comments indicate that they feel it is up to the individual to decide what he or she wishes to do with his or her own body. Sally, who is also of Māori descent, provided a comment relating to the sacredness of the body. She stated, “Well the whole body is what we call tapu which is holy...that’s why there’s so much controversy over exchange of organs”. Tapu is a Māori term which means sacred, and

Māori in general view the body in this way (Singer, N., personal communication, September 18, 2007). Even so, Misty's and Darri's responses indicate that although many Māori may view the body as holy, this does not override a personal view that a body belongs to the person who exists as part of it; that each person has the right to do what they wish with their body, which is a prevailing postmodern perspective.

Lastly, I draw attention to the way some of von Hagens' specimens (especially his earlier creations) reinforce existing gender codes, as they are posed and presented in stereotypical ways. For instance, many of von Hagens' male specimens are depicted in active poses such as skateboarding, fighting, or playing a sport, such as *Soccer Player*. Yet his female specimens are often shown in sexualised and decorative poses; 'waiting' to be looked at rather than looked upon whilst in action, as with the men. One of von Hagens' most controversial specimens is a woman with a five-month-old foetus clearly visible in her womb. She is shown reclining in an Ingres-like pose (O'Rourke, 2001), with her head tilted back to expose her neck, signifying submission. Even in death, she is presented as an object of desire for men. Naomi Wolf refers to this mode of representation as "beauty pornography" (1991, p. 132), where the female body is positioned as a state of "to-be-looked-at-ness" (Mulvey, 1999, p. 383); with mouth open, eyes shut and nipples visible or erect. Conversely, *Soccer Player* has had his nipples removed as they are not a signifier of his masculinity, whilst the action of kicking a ball is. Nonetheless, I note that von Hagens' recent exhibitions (particularly Body Worlds 3) present female specimens in active poses, including a swimmer, an archer, and a gymnast – though still with their sexuality overtly on display.

José van Dijck (2001) argues that people predominantly attend the Body Worlds exhibitions because of the way the specimens are posed, and not due to the health issues and the body's inner workings which are on show. The plastinates are significantly more than mere educational constructs; they are a provocative mix of corporeality, death, art, science, technology, entertainment and sexuality. The issue of gender is an integral element of von Hagens' work in the same way that gender is a key dimension of many cyborg bodies depicted in art and popular culture imagery.

Gender

Female cyborgs are often depicted as submissive, passive and inferior (Kirkup, 2000); as “techno-sexpots” or “docile sexualised machine[s]” (Devoss, 2000, p. 840). They are also shown as killers and femme fatales (Balsamo, 2000; Sobchack, 2000; Squires, 2000). These types of representations have been used as templates for decades, often created to cater to male fantasies of desire, power and control (Balsamo, 1996; Featherstone & Burrows, 1995; Springer, 1998). In contrast, male cyborgs are largely portrayed in one defining manner: as hyper-violent, competitive and muscular (Fuchs, 1995; Graham, 2002; Springer, 1996). Despite these familiar depictions, I note that cyborgs are not always shown as gendered, but also, at times, as a blend of both masculine and feminine signifiers. Julie Clarke (2002, p. 36) argues that “cyborgs and transgenders are two of the potent metaphors” in existence today as they are both liminal creatures; a melding of organic/inorganic and male/female parts. Dixon goes so far as to suggest that “The cyborg is tri-gendered and tri-sexed – as man, woman *and* machine” (2003, p. 1; emphasis in original). This form of imagery is examined following a discussion of classic female cyborg types.

Femininity

Óscar Chichoni is an award-winning Argentinean artist well-known for depicting “worlds where machines and bodies melt, where rust and metal triumph and [the] human figure achieves a new dimension” (2000, p. 3). Chichoni’s artwork *Mekanika* (Image 37), shown on the next page, can be seen as an exploration into the gendered techno-body. Key themes explored are eroticism, beauty perfection, objectification and sacrifice. *Mekanika* is the cover artwork selected for Chichoni’s 2000 art volume, also titled *Mekanika*, and shows two replicants or clones, in differing degrees of their transforming interface. The semi-naked woman standing at the rear of the image is at the very beginning stages of her interface, with only a thin metal rod piercing each of

her palms. Yet, the woman standing in front has three-quarters of her body covered in antiquated metal body-armour, containing devices which can be turned and tightened, pushing the framing closer to her body. These devices allude to the medieval practice of imposing chastity belts on women, in order to retain their virtue and to enforce control (Davis, 1971). This clone is also shown with the metal rods piercing her palms, which may point to religious and sacrificial themes. Holes where the rods are yet to enter can also be seen on her chest and neck area, and the sides of each hand.



Image 37. *Mekanika* (2000).
Art Illustration.
Artist: Óscar Chichoni.

Both Chichoni's clones are also shown standing in water, in surroundings that suggest a spa or communal bathing chamber. This imagery is heightened by the background which shows intricate tiling and harlequin patterning. *Mekanika* can be read as an erotic illustration, fueled by the clones' perfectly formed bodies. The clones' mouths are full-lipped, open and inviting and their voluptuous breasts, small waists, luxurious long black hair, and long lean limbs are archetypal signifiers of femininity (Cutler, 2001; Springer, 1996). Erotic art such as *Mekanika* defines what levels of sexual expression might be permissible, as this type of representation exists on the border between purity (respectability) and debasement (non-respectability) (Nead, 1992); a boundary which viewers ultimately determine for themselves.

Nude or semi-nude women such as Chichoni's clones are often represented within art in such a way as to imply that they *want* to be looked at (Worth, 2002). This is enhanced by creating images of women without facial expression, as expression is one of the key outward signs of innate character, personality, individuality and critical thought. Showing these traits on a face inhibits the observer projecting their own fantasies onto the female being looked at (Macdonald, 1995). This is why a woman's eyes in Western imagery are often depicted as averted or downcast, so as to enable the male gaze to land on the face resolutely, and set the fantasy in motion. Chichoni goes one step further by hiding the clones' eyes from sight altogether. These clones are therefore unable to challenge the male gaze and the observer.

The male gaze was first written about by English art critic John Berger in his acclaimed 1972 book *Ways of Seeing*. Berger argues that the male gaze is a means of controlling women's appearance and actions. He contends that the gaze incites women to view and police themselves in society in relation to men. Berger believes that the observer, the man, has an autonomous sense of being. A man's appearance and actions are things in themselves, whereas a woman's appearance and actions define who she is. Berger therefore argues that "men act and women appear" (1972, p. 47). He further states that a woman's nudity is not an expression of her own sexual feelings, but rather, her nakedness and the passive expression that often accompanies

images of the female nude are a sign of her submission to men (Berger, 1972). Kieran suggests that the male gaze is ultimately a type of “visual molestation” (2005, p. 162), reducing women to passive exhibitors and non-thinkers (Worth, 2002).

Fred Harper is a celebrated New York-based artist who also centres his artistic focus on erotic female cyborg imagery. His evocative and curiously titled oil painting *If I Had My Gloves On I'd Pick It Up* (Image 38), included on the following page, shows a mutant female cyborg who is emerging from a hole within, what looks to be, an outdoor bathing area or disused two-tiered pool. The mosaic tiling depicted in this artwork is similar to Chichoni's aesthetics in *Mekanika*. However, Harper's cyborg is far removed from Chichoni's perfect clones. She is in many ways a deformed creature, with a stunted prosthetic/robotic left arm, and a bulky steampunk-inspired telematic eye piece. As pointed out, pre-digital technologies and technological shapes and devices are often incorporated into cyborg artworks, as these technologies are bulkier and therefore more visually arresting than the many unimposing and miniaturised technologies which are increasingly created and available today.

The cyborg in Harper's oil painting is also shown with a mass of feathers covering her flame-coloured tentacle-like tresses, alluding to themes of triadic convergence. As such, she could be considered a type of tribrid entity. The other striking aspect of this artwork is that the cyborg's left nipple is missing, shattering conventional norms associated with sexualised and eroticised imagery. Harper's cyborg is shown as a flawed, chaotic and cataclysmic creature residing in an increasingly disordered postmodern world. Volkart (2004-2005a) claims that these types of images, where the sexualised female has become a mutant female, are often created simply for the pleasure of voyeuristic viewing. She contends that “many portrayals of monsters and mutants have gotten stuck in an ambivalent spectacle of fascination and horror, norm and deviance, especially in art” (Volkart, 2004-2005a, p. 1). Yet, I suggest that Harper uses his art to transform the perception of the observer; to splinter the norms associated with the eroticised female and therefore to test the viewer's reaction – to gauge whether the woman looked upon remains enticing or merely repellent.

Volkart goes on to argue that images of female mutants or monsters are often depicted as representing notions of freedom from the human organic configuration. She claims that “the monstrous and mutation tables have repeatedly been stylized as figurations of liberation” (Volkart, 2004-2005a, p. 1). This is an argument which is often linked to representations and ideas of gender transgression, discussed shortly. However, I propose that Harper does not depict his female mutant as a liberated entity as such; rather she remains decorative, provocative and even seemingly restricted by her configuration. Nevertheless, Harper has gifted her with sight, and she uses this endowment to look directly at us; thereby confronting our gaze.



Image 38. *If I Had My Gloves On I'd Pick It Up* (2008).
Painting: Oil on Canvas.
36 in. x 48 in.
Artist: Fred Harper.

Harper's (n.d.) artistic inspiration is frequently derived from the internal piping networks of New York's roads and buildings, and the people who use these systems and structures. Key points of interest for Harper include the way that many of the visible and non-visible pipes are used, maintained, or left to deteriorate; their age and state of decay; and their connections with newer constructions within the city. *If I Had My Gloves On I'd Pick It Up* shows his captivation with the city's formations. His female cyborg entity could well be considered a metaphorical representation of a melding of the city's people and animals, its pipe works and waterways, and its buildings and structures, each coexisting with the other, in a bizarre permutation of life as it exists in the often muddled reality of postmodern society.

Female cyborgs are not only represented in art as decorative 'living dolls', but also as sexualised dangerous vamps (Squires, 2000). This is how pin-up and cartoon/comic-art illustrator and designer Victor Rinaldi depicts *Cybergirl – Russian Agent* (Image 39), presented on the following page. This femme fatale is an example of a hyper-sexualised female cyborg with exaggerated female gender signifiers and cultural codes (Shabot, 2006). *Cybergirl's* breasts are considerably over-inflated, and she exudes the coy expression combined with an averted gaze which is prevalent in this type of imagery. She also displays full lips, full make-up and an open, alluring mouth. *Cybergirl's* body armour, head covering and propulsion jet pack are extensive, overbalancing her head, yet counterbalancing her over-sized breasts.

Cybergirl is a hyper fusion of feminine allure coupled with independence and strength, which Mary Ann Doane (2000) proclaims can be at once enthralling and terrifying. Springer (1996) affirms that many female cyborgs carry a similar message alluded to in Fritz Lang's acclaimed 1927 science fiction film *Metropolis*. Lang's film centres on a female robot Maria who uses her 'dangerous sexuality' to create discord among the working men who feature in the film's narrative. Springer contends that "sexuality is dangerous, and sexual women pose a threat either because they are killers themselves or because they incite violence in men" (1996, p. 157).

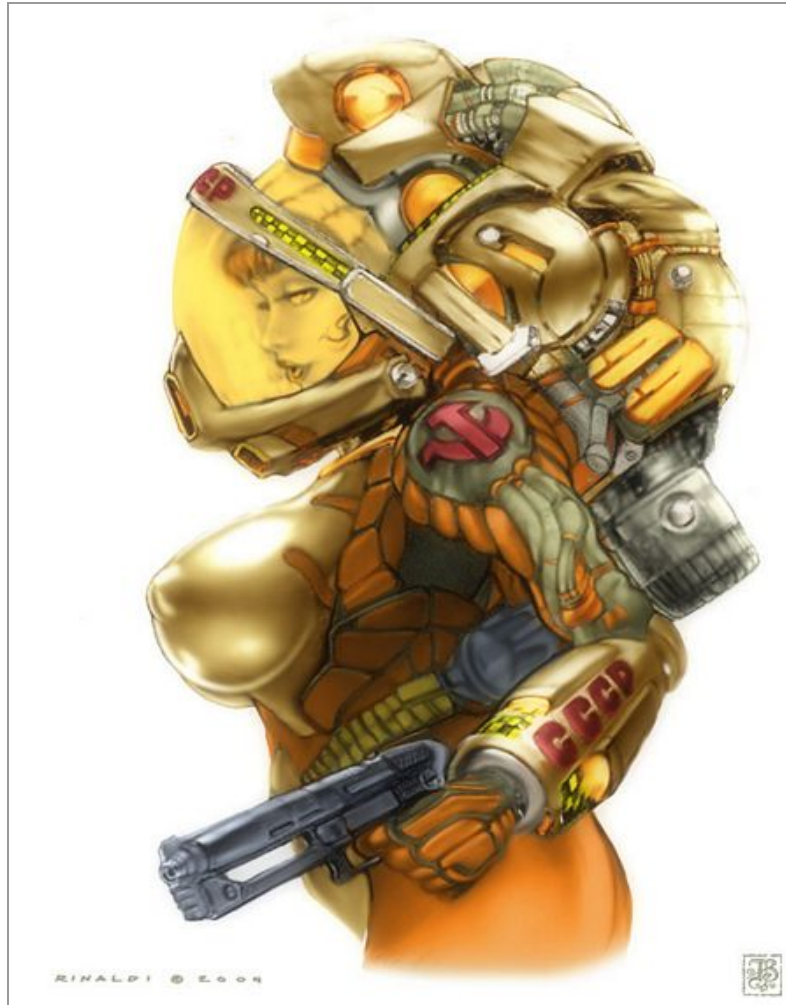


Image 39. *Cybergirl – Russian Agent* (n.d.).
Art Illustration.
Artist: Victor Rinaldi.

Seventeen interview participants responded to questions relating to *Cybergirl – Russian Agent*. Their descriptive comments centred on four interrelated themes. A number of participants mentioned that Rinaldi’s illustration centred on the classic/fantasy/sexy image of a large-breasted female. Matt stated, “You can tell that whoever drew it was sort of just drawing something that they wanted to have fun drawing. That’s why there’s all this real detailed technological stuff and why it’s a pretty girl with huge breasts”. Several interviewees also discussed *Cybergirl’s* exoskeleton; her helmet, gun, and the large propulsion device positioned on her head

and shoulders. The bulky body and head gear was considered a salient feature of this artwork due to its volume and detail. As Phil commented, “The completely human face within an atmosphere helmet, then this mass behind the helmet which appears to incorporate some manner of engine”. Some of the interviewees also discussed *Cybergirl’s* typical cartoon, anime or video game aesthetics. Demelza simply stated, “It reminds me of *Tank Girl*”. *Tank Girl* is a feisty cartoon character (created in the 1980s by Alan Martin), who symbolises a rejection of stereotypical female codes.

A few interview participants also felt that *Cybergirl* presented more a depiction of a character wearing a suit rather than a cyborg. Nicholas commented, “Not so much a cyborg as somebody who is wearing a lot of equipment”. I note that there can be ambiguity between various representations of cyborgs, the interface, or what can be defined as an interfaced being. This is because actual interface configurations are at present rare, and because artworks such as Rinaldi’s do not clearly show whether the cyborg represented is literally interfaced with technology, or wearing technology as Nicholas states. Nevertheless, exoskeletons, which are outer body technological devices or structures that can be used and/or worn, are often linked to the cyborg concept as they are one of the main ways human bodies are integrated with external prostheses today, as discussed in the following chapter. Overall, the responses to *Cybergirl* reveal that the illustration’s visual qualities were the most salient, such as *Cybergirl’s* overt sexuality and her substantial technological equipment and garb.

Lastly, Kayla and Darri mentioned that they enjoyed seeing a female depicted as tough and powerful, with a gun and protective and enhancing body gear. Darri stated, “It’s kind of cool ’cause she’s a woman...it’s usually the guy with all the powerful things”. The following section introduces powerful female cyborgs who are not sexualised or subjugated. As such, they point to Haraway’s (2004) post-gender premise; of gender not being eradicated but also not exaggerated, and a gender identity which is not explicitly linked to sex and sexuality. Balsamo (2000, p, 156) argues that we need to “search for cyborg images which work to disrupt stable oppositions” of gender, and the following artworks certainly answer this call.

Androgyny and Post-genderism

The concept of an ‘androgynous cyborg’ or the term ‘cyborg androgyny’ is used rarely within cyborg discussion. Cynthia Fuchs (1995) deploys the former term in relation to the liquid metal cyborg (T-1000) wrecking havoc in the 1991 film *Terminator 2: Judgment Day*, while Bruce Isaacs uses the latter expression within his discussion of *Trinity*, the female lead character from the popular science fiction film *The Matrix* (1999). Isaacs suggests that *Trinity*’s black leather clothing and pale skin allude to a type of “neo-Gothicism and cyborg androgyny” (2006, p. 112). *Trinity* is lean, courageous and smart, and is presented with little make-up and with a demeanour which is non-sexualised or passive. She is also rarely shown smiling or laughing; as such, she is presented as serious and in control. *Asian Cyborg*, shown here, shares elements of *Trinity*’s androgynous aesthetics. She is a textured gaming character created by Belgian graphic artist Brice Vandemoortele.



Image 40. *Asian Cyborg* (2004).
Textured Gaming Character.
Artist: Brice Vandemoortele.

Asian Cyborg's stance is rigid and powerful rather than submissive and sexualised, and her pale face is "sinister and inexpressive" (Vandemoortele, email questionnaire, 2007, q. 4), as opposed to portraying coyness. *Asian Cyborg's* breasts are also hidden and unnoticeable under her garb, and her hips and waist are subtly shaped rather than exaggerated. She appears male at first glance due to her stance and due to her lack of sexually overt imagery. *Asian Cyborg* is also an amalgam of different cultural styles, including Celtic-inspired designs and Art Nouveau fabric patterns and shapes (Vandemoortele, email questionnaire, 2007). In addition, her right arm and hand is encased in, or constructed as, a weapon in itself, paralleling Teen Titan's *Cyborg's* imagery (Image 47, p. 236). *Asian Cyborg* also wears a Celtic-type shield and various pieces of body armour strapped and clipped onto (or into) her lean frame.

Justin Fox, the well-known Australian artist and founder of Australian INfront, the online collaborative artist support base, delves even further into rupturing normative notions of gender. His digital illustration *Bionic* (Image 41), shown on the next page, alludes to a new "polygendered" (Fuchs, 1995, p. 290) or polymorphous post-gender identity (Dewdney, 1998). *Bionic* is an androgynously depicted dual-gendered cyborg presented as strong and commanding. She was initially designed as a magazine cover concept created from three different images. The model in one of the images was chosen specifically for her androgynous pose. Fox wanted *Bionic* to "jump out from the other magazine covers...I wanted to shock people. I wanted to get a 'wow' out of people. I wanted something sexy and strong, something hardcore, but beautiful at the same time" (email questionnaire, 2007, q. 4). Cutler (2001) emphasises that powerful irreverent 'sheborgs' (such as *Asian Cyborg* and *Bionic*) are models of liberation for women, providing a vastly different female icon than the pervasive hyper-sexualised models frequently encountered in film and imagery.

Bionic's stance also shows control and determination rather than objectified passivity, and she does not avert her eyes but rather challenges the observer's gaze. Her femaleness is subtly depicted by her face, breast shape and the silhouette of her dress, yet her hair configuration is male, and the circuitry and shapes superimposed on her

dress show a phallic symbolic protrusion, alluding to her joint gender status. *Bionic*'s dual-gender identity is only hinted at, signifying a duality more in relation to a fluidity of sex/gender; an ability to oscillate between female and male (sex), and femininity and masculinity (gender), as opposed to a hermaphroditic state.



Image 41. *Bionic* (2001).
Digital Art.
Artist: Justin Fox.

Bionic also evokes utopian imagery of both allure and fear within her representation. Fox shares a memorable response from a male viewer who was one of the first to see *Bionic's* imagery. Fox said the man commented, "I don't know whether I want to kiss her or run away from her!" (email questionnaire, 2007, q. 5). Fox designed *Bionic* to be shocking, beautiful, kinky and discomfoting, and above all to have an impact. He surmises that the "Cyborg is already 'cool' and it's only going to get cooler" (Fox, email questionnaire, 2007, q. 7); the fantasy is not just wearing technology, "But having it mix with our flesh and bones" (Fox, email questionnaire, 2007, q. 6).

Gender and sexuality, and sex organs are increasingly viewed as existing on a continuum today, discussed more in relation to degrees rather than polarities (Cranny-Francis, 1995; Hester, 2004). Blending, morphing, mutation and fluid transformation are therefore dominant themes of postindustrial society (Volkart, 2004-2005a). The notion of fluidity and 'degrees' collapses the modernist Western episteme of gender binaries into a postmodern gender polymorphism (Stryker, 2000). This is exacerbated by the scope of advanced medical technologies which can refashion the natural body (Balsamo, 2000; Hausman, 1995). Many people find the concept disconcerting and abject, while others find the notion liberating (Fausto-Sterling, 2000). Ultimately "the fluidity of bodily morphology upsets the system" of gender hierarchy (Hester, 2004, p. 220), by destabilising disempowering modernist principles of sex and gender. Dixon emphasises that the "socio-cultural-biological" reflections of gender cannot fully acknowledge or even address the nature of the "new techno-bio-cultural creature[s]" of technoscience which are increasingly emerging (2003, p. 2).

Opening up the gender system and gendered scripts (Pitts, 2003) can also provide relief to those who feel they do not sit at the polarities of female and male, and their socially determined 'equivalent' sexual and gendered identities. As such, many transgender activists (transgirls, transboys and bi-dykes) are creating their own zones for expression "free of any biological determinants at all" (Gray, 2001, p. 112). In addition, individuals who wish to have their sex literally transformed through surgery can now do so with more support and acceptance (Stone, 1987). Increased dialogue,

theory, research, and art, which shows that sex is non-dichotomous will increase acceptance of this concept, perhaps reduce the practice of infant genital reassignment surgery (Fausto-Sterling, 2000), and lessen the multitude of gender-related pressures which are placed on people daily (Holland, 1995; Kirkup, 2000).

Artists such as Bob Thawley and Robert Longo explore the concept of dual-sexed or intersexed cyborg identities even further than Fox, and in a more blatant and menacing manner. Thawley has created *Armed Hermaphrodite* (Image 42), presented on the following page, which is a macabre portrayal of a hermaphroditic cyborg. This cyborg is sketched in black and white, and shows a transgressive manifestation of technoscience research within the spheres of medicine and the military. Thawley radically expresses the contention that the “Marriage of war and technology breeds nightmares” (Gray, 2001, p. 112). Longo, an American artist and photographer, also created a hermaphroditic cyborg as part of his 1986 installation sculpture entitled *All You Zombies: Truth Before God*, which González rightly refers to as expressing and exhibiting a “cultural and semiotic nightmare of possibilities” (1995, p. 273).

Armed Hermaphrodite shows a deformed cyborg entity sitting on what appears to be a pillow, holding a gun. An artificial heart device, a hearing device, a reconstructed jaw, and metal plates in the cyborg’s head, are clearly visible. A possible waste pipe is also shown inserted into the left hip region. Thawley’s cyborg is a monstrous incarnation of technological and organic convergence symbolising chaos and mutation. Thawley has drawn his mutant with a resigned sardonic grin; alluding to the futility and consequences of war, and the dehumanisation inherent within using cyborg technology to excess. Moreover, one female breast is visible behind the hook on the prosthetic arm, which is strapped onto the shoulder, further intensifying the confrontational imagery. The cyborg’s artificially erect penis is also shown ready for cyborg sex, paralleling the imagery of the gun, which is raised and ready for cyborg war. Fred Harper goes even further with the depiction of technologically enhanced or ‘cyborgian’ genitalia in his painting *Gear Head* (Image 56, p. 271), discussed in the following chapter. Harper’s artwork shows embodied machinery *as* female genitalia.



Image 42. *Armed Hermaphrodite* (n.d.).
Art Illustration.
Artist: Bob Thawley.

I asked the interview participants to comment on their impressions of *Armed Hermaphrodite*. Seventeen responded with candid answers, which centred on four main themes. Several participants felt that Thawley's artwork pointed to transgenderism or hermaphroditism, and the way cyborgs can be any sex. Malcolm stated, "I think they're trying to make the point that everything is all one...you don't need to have male and female". Luke commented:

In this one we've got hermaphrodite so we've got male and female genitalia.../...we wouldn't be shocked if we saw just the cybernetics. But because we see a

hermaphrodite, we're shocked...I think that more people would have more problem with the hermaphroditism than with the cybernetics.

Luke is suggesting that the natural occurrence of hermaphroditism visually represented can generate more discomfort than body and technology merger. David Hester affirms that the fluidity of sex in relation to intersexed individuals is an issue which "confronts us" today (2004, p. 218). Yet, Dixon (2003, p. 2) suggests that cyborgs which are composed of "a trinity of male/female/metal" foster a reconceptualisation of gender today, enabling new cultural narratives to be fashioned and explored.

Some participants also felt that *Armed Hermaphrodite* was objectionable or abject. Darri stated, "I don't really want to look at it...it's a bit disturbing". Thawley's artwork is unconventional, presenting a postmodern mix of violence, sexuality, and actual and imagined interface technology. As such, a few interviewees also stated that the illustration represented mixed messages or random imagery. Paul responded:

There's so many bits and pieces there, there's just bits of human organs everywhere; a metallic arm like a hook, as in *Dr. Hook*, like the character from *Peter Pan*, the sunglasses...just a mis-match, like someone's just had a bit of fun.

Paul is alluding to Thawley perhaps experimenting with ideas rather than exploring any deeper issues of cyborgisation. This may well be the case; I note that one artist who completed the email questionnaire affirmed that he had not created his artwork with any specific social themes or messages in mind. Lastly, a few participants also mentioned that *Armed Hermaphrodite* alluded to ideas of modification, mutilation, and experimentation. As Matt replied:

...makes me think of body mutilation, or sort of modifying the body so much that it's almost grotesque. That's sort of one of the things that technology will let us have, that we can sort of modify our bodies to our heart's desires. So I think that the whole body modification possibly appeals to those who are really into cyborgs.

Matt's response centres on modification of the body, which is an integral aspect of cyborgisation and cyborg art, as discussed in relation to techno-body artists Orlan, Stelarc and Isa Gordon. Body adaptation is addressed in the next chapter within the Prosthetics and Genetics sections. The final section on gender examines male-defined cyborg aesthetics, where conventional ideals are both supported and rejected.

Masculinity

Hyper-masculine cyborgs embody the ideal fantasy of constituting invincible forces consumed with power and fighting strength (Springer, 1996). They are often encrypted in contemporary society as destructive killing machines (Graham, 2002), as patriarchy clings to traditional notions of sexual difference and gender roles (Holland, 1995; Kirkup, 2000). The physical overcompensation by men today is visibly noted in conditions such as “bigorexia”, where men pump their muscles up to such an extent that the act itself becomes pathological (Leone, Sedory, & Gray, 2005). This activity is a way for men to resist the transformations brought about by new postmodern ideals of binary gender disbandment and post-gender fluidity. Susan Faludi (1999) believes that the symptomatic loss of gender boundaries in society creates an identity crisis for men. Many film characters such as *The Terminator* and *Robocop* and comic book heroes such as *Wolverine*, *Cyborg* and *Deathlok* epitomise strength and resilience in the face of suffering and/or threats to their masculinity. For this reason they exist as contemporary popular culture icons (Adam, 2002; Springer, 1996). These characters represent the ‘bulked up’ man fighting against evil and the impending loss of identity (as breadwinner) and security (as dominant male).

Deathlok (Image 43), included on the following page, is created by well-known artist Rich Buckler. *Deathlok* is a character who constitutes an exemplary example of the hyper-muscular and hyper-violent macho-cyborgs prevalent in pop culture today. *Deathlok* has large metallic muscles and a massive chest and shoulders. He is shown posing in a menacing and aggressive manner typifying the “hyper-macho invulnerable techno-hero” (Graham, 2002, p. 228). He is also carrying a weapon, which is common in male cyborg iconography (Devoss, 2000). *Deathlok* the man was rebuilt after a horrific accident; as such his narrative is based on an attempt to reclaim his former humanity in the manner of *Robocop*. This popular 1987 film character was recreated into a corporately controlled cyborg (Fuchs, 1995). Buckler refers to *Deathlok* as a “Twenty-First Century schizoid man” (as cited in Best, 2004, para. 25).

In an interview with Daniel Best, Buckler states that *Deathlok* was developed from an interest in cybernetics and the idea of a super soldier or “superhero being a monster” confronting the people who controlled the technologies (2004, para. 25). Buckler became aware of the impact of technology in the early 1970s, when he noticed that machines seemed to be taking over everyday activities. He observed that, “Banks, accounting, buying and selling, letter writing, graphics, music, military weapons, satellites, etc.; just about everything humans did, or needed to do, there would be a computer application for it” (Buckler as cited in Best, 2004, para. 25).



Image 43. *Deathlok* (1974).
Art Illustration.
Artist: Rich Buckler.

I asked the interview participants to share their views on *Deathlok's* imagery. Seventeen responded and their descriptive comments addressed two interrelated themes. Most of the participants mentioned *Deathlok's* hyper-aggressive aesthetics; the way he resembled a fantasy Terminator or ninja-type character. Phil stated, "...you get the idea of the solider who's so tough that he never wants to stop the fight. It's always just quick fix me up and then send me out, so he ends up with artificial components all over the place". Margaret commented:

...big muscles, ugly face, quite violent with the weapons...it's quite a violent image and I'd also think "well it's that kind of bulging muscle type"; torso, legs, huge thighs. [It] is kind of sexist as well. I don't know many men who look like that.

These responses reveal that *Deathlok's* hyper-masculine imagery was the most visual feature of the illustration. A few participants also mentioned that male cyborgs in general denote violence or aggression. As Malcolm stated, "Everything that I've ever seen which involves these cyborgs just about has violence in it". Malcolm's comment is fitting, as to date, I have only located four artworks which do not conform to the conventional macho-cyborg template: McKenna's *Cyborg* (Image 9, p. 109); Kim's *Tears* (Image 10, p. 110); Benedict Campbell's digital artwork *Jass* (Image 44, p. 228); and Takashi Murakami's well-known 2004 sculpture and film character *Inochi*.

Campbell is a celebrated British photographer and artist who creates sleek futuristic cyborg imagery. *Jass* (Image 44), presented on the next page, is a unique artwork as Campbell has created a cyborg that has a conventional muscular male body, with a thick neck, prominent shoulders, narrow hips, a groin bulge, and torso and abdominal muscles; however this 'male' entity is also created with a feminine face, which displays large open eyes, long eyelashes, a clear smooth complexion, lightly frosted lips, and two 'beauty-spots'. He is also shown wearing a three-ringed upper armlet. As such, Campbell's cyborg contrasts dramatically with *Deathlok's* imagery. *Deathlok's* face is darkened and contorted into a snare, his red eye adding to the hostility portrayed. His overall aesthetic evokes that of a historical warrior, pirate or ninja, as mentioned. Conversely, Campbell's cyborg's face is open, pink-skinned and delicate in appearance; evoking a futuristic clone. Moreover, while *Deathlok's* stance

is confrontational, with hands beckoning combat and weapon in hand, *Jass* stands in a military-like pose, with hands by his side, seemingly awaiting orders. Yet both cyborgs have a tube entering/exiting their heart region, metaphorically suggesting that the core and perhaps functioning centre of the cybernetic body remains the heart.



Image 44. *Jass* (n.d.).
Digital Art.
Artist: Benedict Campbell.

Inochi, which means ‘life’ in Japanese (Hinckley, 2007), deviates even further from the typical macho-cyborg imagery. Murakami’s *Inochi* is a rare depiction of a physically non-powerful young cyborg character, originally based on Stanley Kubrick’s design for the child portrayed in Steven Spielberg’s 2001 movie *A.I. Artificial Intelligence* (Kaikai Kiki, 2005). *Inochi* is fine-boned, with a small chest, a small penis, and a thin neck. His alien-inspired face is non-conventional, having an open-eyed innocent look, and his posture is non-threatening. His slightly webbed hands are shown splayed, signifying passivity. *Inochi* was created as a way to draw attention to the obsession many Japanese youth have with technology, in addition to being a tribute to the Japanese *otaku* concept, which is a term related to the Western colloquial word ‘geek’. *Otaku* represents schoolboy angst and comic book devotees (Mulholland, 2005). Japanese culture is swarming with robots, superheroes and cyborgs, thus providing young people an escape into these fantasy realms and alternative ways to explore their individuality and sexual identity. Japan is overall a closed homogenous society, which Murakami states can be difficult to escape from. He believes that the role of the artist is therefore to offer people ideas and hope, and to provide them with a means of escape (Murakami as cited in Wakasa, 2000).

Murakami is a respected commercial and fine artist, sculptor, entrepreneur, theorist and one of Japan’s most celebrated contemporary designers. Murakami centres his artist focus on facets of Japanese culture such as childhood innocence, the responsibilities of adulthood, Americanisation, and the opposition between East and West (Friis-Hansen, 1999). Murakami believes in the power of art to convey complex ideas about society and ideology and uses fantasy creatures as a way to draw attention to changing perspectives. I have included Murakami’s sculpture *Second Mission Project Ko*² (Images 52 & 52a, p. 259) in Chapter Seven, and discuss the interview participants’ responses to this provocative and transgressive installation artwork.

Overall, the Japanese do not perceive technology as a cold and fearful human adjunct, but rather as an integral facet of their existence and culture, which sits comfortably alongside traditional ceremonies (de Kerckhove, 1997; Grenville, 2001). Japanese

culture is as enthralled with the cyborg as North American culture (Gray, Mentor & Figueroa-Sarriera, 1995). However, while the USA and Japan readily illustrate and share their infatuation with the cyborg, indigenous and black explorations of the cyborg concept are limited. Mark Bould (2007) argues that there is also limited black representation within science fiction literature and film, although this is changing. This is noted by theorists and writers such as Mark Dery and Alondra Nelson, who have both played a role in drawing attention to how people of colour regard history, futurism, art, literature and technology studies and the junction of these spheres. Dery coined the term 'Afrofuturism' in 1993 to denote artistic and theoretical interest in, and engagement with, technology and its effects (Bould, 2007). Nonetheless, Michael Chaney affirms that in general, "There has been an alarming scarcity of critical work on the intersection of race and technology in contemporary literature" (2003, p. 261).

Ethnicity

Haraway ignited discussion on ethnicity, race and human-technology ties in her seminal *Cyborg Manifesto*, when she linked cultural theorist Chela Sandoval's term 'women of colour' with the cyborg concept (Rutsky, 1999). Sandoval (1995, p. 408) theorises that women of colour and Third World feminists adopt an oppositional consciousness, what she calls a "cyborg consciousness", in order to present their lives as visible and significant in the encroaching technological world. Haraway (1991a) suggests that marginalised people (and cyborgs) refuse to adopt marginal positions of self or 'other'. Women (and men) do this by challenging their positioning through writing and art and by shifting the focus from hierarchy to difference. I introduce Mexican artist Guillermo Gómez-Peña in this section as a manifest example of this form of re-positioning. Haraway maintains that "Cyborg writing is about the power to survive, not on the basis of original innocence, but on the basis of seizing the tools to mark the world that marked them as other" (1991a, p. 175). She cites science fiction author Octavia Butler as a woman of colour who critically engages with technologies in her writings, merged with themes of gendered, sexual and racial doubt.

Yet, Haraway does not mention women of colour regarding cyborg imagery in her Manifesto, although she does undertake an analysis of Lynn Randolph's 1989 painting *Cyborg*, shown here, in her essay *The Promises of Monsters: A Regenerative Politics for Inappropriate/d Others* (1992). Randolph is known for using women of colour or 'non-white' women as leading characters within her artworks. *Cyborg* is the cover art selected for Haraway's celebrated book *Simians, Cyborgs, and Women* (1991). Randolph's painting shows a young Chinese woman sitting amongst a vast multi-toned landscape, which metaphorically alludes to our multicultural world. The landscape shows white ice peaks, golden lands, and deep black/brown terrain. The woman's fingers are shown pressed to a keyboard, symbolically linking her corporeality with global digital computer networks (Haraway, 1992).

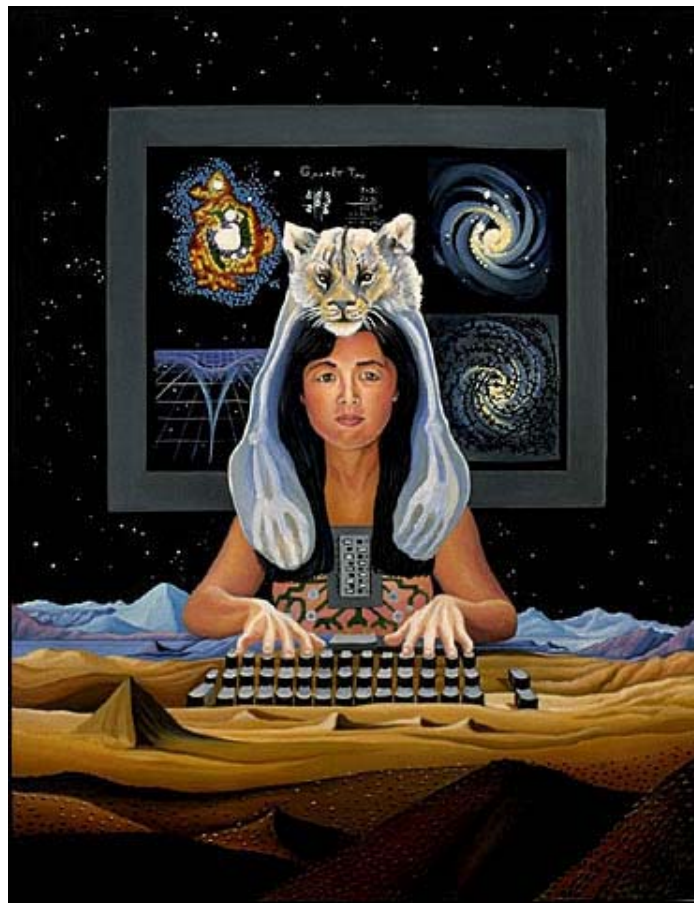


Image 45. *Cyborg* (1989).
Painting: Oil on Canvas.
36 in. x 28 in.
Artist: Lynn Randolph.

Haraway (1992, p. 329) suggests that Randolph's painting is "in conversation" with Vietnamese film-maker and feminist Trinh Minh-ha's concept of the Inappropriate/d Other, which refers to a political/cultural positioning of non-white peoples who have historically been denied (the illusion of) an identity, and who refuse to adopt the mask of suppression. Haraway (1992, p. 328) feels that *Cyborg* evokes the collective identity of women of colour, as it creates links between, and resonates with, "local and global conversations" of women and 'others' who are intimately linked with the cosmos, and earth, animal, human, and machinic spheres. The large cat or white tiger, the woman, and the circuitry shown on her chest, are also suggestive of a triadic union of animal, human and machine, alluding to the kinships between these realms.

Randolph's cyborg is not shown linked to technology as a 'cyborg worker', but rather as a virtual construct, and as an entity who exists within the earth's borderlands and who is becoming part of the "topography of combinatorial possibility" (Haraway, 1992, p. 328). Randolph explores a non-sexualised and non-hyper version of a woman meshed with technology and using technology. She is not a fantastical figure of a patriarchal order, but rather a woman who is equally part of the kinships and connections of our current digital epoch. She becomes a fluid actual and virtual subject traversing the borderlands of the cosmos. The large screen shown imprinted into the stratosphere serves as the pathway guiding her journey.

LeiLani Nishime (2005, p. 34), who centres her academic interest on American multicultural studies and Asian American literature, adopts the term "mulatto cyborg" to point to the underlying fluidity and hybridity of the cyborg concept. Mulatto is a historical term often used in reference to a person of mixed race, who has a light brown skin tone. Nishime suggests that "The cyborg offers a safe space in which to explore the controversial issues surrounding multiracial identity", because "the destabilization and undermining of racial categories that accompany racial mixing may be too threatening to challenge explicitly" (2005, p. 36). The cyborg is therefore deemed to be able to serve as both a metaphorical and tangible discursive tool for analysing issues of race and hybridity. Short agrees, stating that "Because it is

fundamentally ‘impure’, neither simply human nor machine, the cyborg confounds the notion of biological essence or racial purity” (2005, p. 107).

González (1995) reflects that her own interest in cyborg bodies began through an exploration into race and race mixtures, and observes that the term miscegenation refers not only to the forbidden coupling between races, but also between human and machine. She contends that simply by existing the term miscegenation alludes to the supposed reality of a pure state, species, or race. This links to political and ethical concerns associated with what can be considered a legitimate or illegitimate melding. González (1995) explores the issue of race (and gender) throughout her discussion of a female cyborg *Kiddy*, included in the 1991 Japanese comic book series *Silent Möbius*. She writes about how *Kiddy* ‘passes’ as human, and is only shown to be a cyborg when her brown skin melts from her body, revealing a metal frame underneath. González (1995) surmises that *Kiddy*’s imagery can represent fears of contamination, miscegenation and trepidation associated with passing as either a human or another ethnicity, as this passing tests “the boundaries of permissible difference” (Short, 2005, p. 110). Nevertheless, González (1995, p. 277) believes that the issue of race is “decidedly fraught” regarding the cyborg concept, and that there are few cyborg images which feature women of colour. I agree with this premise. To date, I have not been able to find an artwork which unambiguously shows a black cyborg female character. Jessica Johnston rightly asks, “Why, if a cyborg is represented as female, is the body always white?” (2001, p. 74).

Spanish artist Pasqual Ferry’s art Deco style illustration of Natasha Irons as *Steel* (Image 46), shown on the following page, is a rare artistic portrayal of a black woman interfaced with technology. *Steel* is therefore significant due to the scarcity of her imagery. *Steel* is not regarded as a comic book cyborg character as such; however, she is, at various times during the narrative of her story, heavily integrated with technology as she dons an armoured suit, which she helped to create (Comic Vine, n.d.). The suit allows her the ability to fly and provides her with enhanced strength. Irons is a technologies expert with an avid interest in engineering. She is presented as

intelligent, able and courageous (Comic Vine, n.d.). Image 46 is a stylistic representation of Irons as the new *Steel*. Irons took over this superhero role from her uncle John Henry Irons when he was injured. John Irons was one of the original *Steel* comic book characters from the DC Universe created in the early 1990s.



Image 46. *Natasha Irons as Steel* (2003).
Art Illustration: Pencil and Ink.
Artist: Pasqual Ferry.

Ferry has depicted *Steel* as a cyborg being, complete with mechanical discs as limb joints. She is a blend of black and silver, with curvaceous calves, thighs and breasts, and a tiny waist. However, *Steel's* ethnicity is all but lost in Ferry's illustration. The black elements of her representation and suit certainly hint at her ethnicity, yet a large portion of her body and face are configured more as 'white', due to the metallic silver

of the suit and mask. *Battle Angel Alita* (Image 57, p. 273) and *Major Motoko Kusanagi* (Image 58, p. 274), two familiar female Asian cyborgs, are also created as more European than Asian, with fair skin and large eyes.

Steel is created by a male artist; I note that only seven of the 54 artists whose works contribute to this study are female, and these artists are also predominantly European. Comic book or cartoon cyborg art also remains the domain of men, as shown in this study. David Christopher notes that historically in Britain, “Black female artists are few”, due in part to art institutions being primarily dominated by white men (1999, p. 170). Nevertheless, multimedia artists such as Roshini Kempadoo, Mona Hatoum, Lisa Reihana, and Louise Potiki Bryant, are exploring the merger of their bodies or the female body and technology, within their performance, installation and digital art. Hatoum’s 1994 work *Corps Étranger* goes so far as to explore an invasive interface. Hatoum had an endoscopic camera inserted into her body, enabling observers to see inside her corporeality (Christopher, 1999). Stelarc (2004b) completed a similar artwork a year earlier entitled *Stomach Sculpture* (1993). His stomach served as a ‘host’ to the artwork, which was a capsule with camera attached.

Artistic imagery of black male cyborgs, or bodies interfaced with technology in some way, is also seldom created. Yet the ethnicity of Teen Titans character *Cyborg* (Victor Stone) is often enhanced in the many images showcasing his configuration. *Cyborg* (Image 47), included on the next page, is one of the most recognised male cyborgs within popular culture, and is one of the main characters from the DC comic Teen Titans series and animated television series (Titanstower, n.d.). He was initially developed in the 1980s by Marv Wolfman and artist George Pérez. Image 47 is created by comic book artist Mike McKone. *Cyborg* has a history and corporeal composition similar to *Robocop* and *Deathlok*. Following a devastating accident, most of his body was rebuilt, transforming him into a human-robot complete with a sonic cannon on his right arm and hand, and enhanced sight (Titanstower, n.d.). *Cyborg* is depicted as powerful, hyper-muscular and hyper-masculine. Silver metallic body armour also covers most of his body, as with *Steel*.



Image 47. *Cyborg* (2004).
Teen Titans: Cyborg – Victor Stone.
Art Illustration.
Artist: Mike McKone.

One of the most recent and novel illustrations of *Cyborg* is created by Spanish illustrator Angel Unzueta. This artwork is the cover art for Titans 2009 June Issue (DC Universe, n.d.), and is compelling for two key reasons. What remains of Stone's vulnerable human body (a portion of his head) is the focus of the artwork, rather than his indestructible technological body, and the facial features of Stone's ethnicity are pronounced rather than diminished or 'Europeanised'. Unzueta chillingly shows the extent of Stone's interface and the dependency he has on his cybernetic body. Dangling interface wires are vividly shown in place of Stone's neck and spine.

Moreover, both McKone and Unzueta have depicted *Cyborg* in an archetypal masculine manner, where the face is contorted into a grimace denoting aggression.

Jeffrey Brown (1999), who has written extensively on comic book characters, affirms that black male superheroes (such as *Spawn*, *Luke Cage* and *War Machine*) are often inscribed with aggressive characteristics and violent tendencies, and that black men have historically been depicted in a similar way. Brown states:

As much as the body has been related with the “virtues” of masculinity, it has also been associated via racial and class prejudices with the insensitive, the unintelligent, and the animalistic. Moreover, the more one’s identity is linked to a hypermasculine persona based on the body, the more uncultured and uncivilized, the more bestial, one is considered to be. Following the binary logic of the male/female, nature/culture, uncivilized/civilized, body/mind dynamic, blacks have historically and symbolically been represented as pure body and little mind. (1999, p. 30)

However, Brown (1999, p. 25) affirms that this form of representation is changing, spurred on by Milestone Media Inc., which is a “black-owned” comic book publishing company established in 1993. The creators of this company are developing new black characters that constitute a mix of ‘brains’ and ‘might’.

I asked the interview participants how they felt cyborgs were presented in relation to ethnicity, in order to gauge their thoughts on the ‘race and interface’ relationship. Thirty-four responded to this question; their comments addressing five main themes. Several participants commented that cyborgs are generally European, white or Caucasian. Kayla stated, “You don’t really think of a Māori being a cyborg. When you think of a cyborg...you don’t think of any other sort of ethnicity, you just think of a white person being half robot, half human”. Jason responded, “...the examples I am thinking of are movies and TV series from Hollywood which typically depict Caucasian rather than any other”. These responses support González’s (1995), Johnston’s (2001) and Short’s (2005) views, and my own. A number of interviewees also mentioned that they had never thought about the ethnicity of cyborgs represented in popular culture, and had no experience in order to respond to such as question. David commented, “I can’t think of many black cyborgs”, while Morten stated, “Yeah, that’s a good question. I haven’t really thought about that...” These responses once again allude to the limited number of black cyborgs created and represented within popular culture. This study includes 72 artworks, and only two depict

noticeably non-Caucasian or black male cyborgs (McKone's *Cyborg* and *The Black Knight*), and there are only a few artists whose works contribute to this study who are not Caucasian, or European and Asian in origin (such as Guillermo Gómez-Peña and Rua Pick). I suggest that the focus on 'white' cyborgs or European-featured cyborgs reduces the ability for the cyborg to be considered a universal symbol, which I discuss further in Chapter Eight and in the closing Future Visions section.

Several interview participants also felt that cyborgs were mostly European and/or Asian, which again links to the first and second themes discussed. Emmanuel stated, "European and Asian, but that's probably more a factor of what I've been exposed to". Art commented that cyborgs "...often seem to be Asian, but that's just because the culture of anime and manga, like the *Ghost in the Shell* picture ...". In addition, a few participants felt that ethnicity is not an issue; that cyborgs are 'post-race' constructs. Examples include: "I think that when it comes to cyborgs, ethnicity is not such a poignant matter. It doesn't matter so much" (Cherie), and "...I don't really see a reason for there to be – why would one particular race be any more inclined towards becoming a cyborg?" (Nick). These interviewees felt that ethnicity does not necessarily apply to the concept of the cyborg, perhaps because a machine is considered race-neutral in the same way it can be considered gender-neutral (Fuchs, 1995). González argues that the realm of cyberspace and the concept of the cyborg are now being used as convenient sites "for the erasure of questions of race identity" (1995, p. 277). The logic of this "e-race-sure" centres on the argument that if outward signs of racial difference no longer existed, we would reside in a utopian landscape of equal representation and thus equality (González, 1995, p. 277). Yet, this argument is based on the idea that race is predominantly visual and does not take into account the deeper issues of ethnicity, difference and culture. As González affirms, the cyborg's "racial' body politics have a long way to go" (1995, p. 278).

Lastly, a few participants suggested that the focus of black cyborgs is on strength and not intelligence. As Gregg stated, "...they make the black guy out to be the big strong tough people all the time.../...And you might see the white sort of nerdy one, like you

never see a black nerd cyborg”. The emphasis on black male cyborg characters has to date centred on physicality and aggression, although as discussed, this type of representation is shifting (Brown, 1999). Nonetheless, Brown warns that:

For true change to take place, for stereotypes (both imposed and internalized) to be broken, alternative representations of blackness in relation to masculine ideals must come not just from comic books but also from the realms of music, film, literature, education, and politics. (1999, p. 40)

The film industry is now using black actors to portray intelligent cyborg characters and explore issues of “cyborg ethnicity” (Lavender, 2004, p. 1), such as in *The Matrix* (1999) and *I, Robot* (2004). Alex Proyas’ *I, Robot* is particularly interesting as Will Smith plays the sceptical and free-thinking prosthetically-enhanced black detective Del Spooner, while the subservient and subsequently destructive robots are depicted more as ‘white’. The 1994 television show M.A.N.T.I.S also centred on an intelligent black male cyborg character; Dr Miles Hawkins, whose spine was severely damaged by a bullet. He subsequently developed an exoskeleton, which gave him mobility and super-powers. Isiah Lavender (2004) refers to the merger and exploration of technology and ethnicity within the science fiction genre as ‘technicity’, suggesting that this term can draw attention to the new ways ethnicity is deployed within films such as *The Matrix*. Black actor Laurence Fishburne played a leading role in this landmark cyborg-themed film, along with Māori actor Julian Arahanga.

Philip Hitchcock, a renowned American sculptor, and author of *Dark Impressions: The Art of Philip Hitchcock* (2000), has created an arresting mixed-media sculpture depicting a black male cyborg character, entitled *The Black Knight* (Image 48). This sculpture, presented on the following page, evokes a merger of medieval and futuristic ideas, eroticism and the utopian aesthetic. Hitchcock uses the technique of lifecasting or bodycasting to create his sculptures. Eroticism is an element of *The Black Knight*, as Hitchcock portrays his cyborg with substantial genitals straining a fabric pant covering. The knight also wears a telematic and phallic helmet, thus being eroticised both in flesh and metal. Stuart Hall (1997) suggests that black men are frequently aligned with eroticism and represented in ways that depict their sexuality as the sum of their embodiment in a way similar to women. However, as Brown

(1999) contends, black men in general do not rebuff their portrayal in this regard as it serves to strengthen their perceived sexuality and sexual prowess.

Rundu Staggers (2007) and the late Robert Mapplethorpe are two photographers well-known for their representation of black men in erotic poses. Mapplethorpe's infamous 1980 photograph *Man in a Polyester Suit* is one of the most contentious, as this shows a black male with his penis exposed through an opened pant zip (Celant, 1993). Hitchcock suggests that "Nudity, especially male nudity in American culture, is always tricky. It seems a depiction of an erect phallus is more dangerous than a loaded gun" (email questionnaire, 2007, q. 8). The focus of black men in art often centres on their physicality and/or sexuality, due to the perceived beauty and power of their innate corporeality, which *The Black Knight* manifestly projects.



Image 48. *The Black Knight* (2007).
Life-size Mixed-media Sculpture.
Artist: Philip Hitchcock.

There are a number of ways the Black Knight has been referred to historically, including as a comic book and film character; a knight with or without a lord represented in Western literature; as a reference to the gallant knight Sir Morien who was considered a black man and thought to be alive during King Arthur's realm; and as a derogatory term directed towards certain cultures (Brunson & Rashidi, 1991). During the Middle Ages, men and women who had a dark complexion were often known as Moors, which is a term thought to originate from 'Mauri' referring to Northwest African peoples, or 'Maurus', which is a term believed to have meant 'black' (Brunson & Rashidi, 1991, p. 27). During this time, Moors were thought to hold various positions within the Almoravid army, such as high ranking officers, foot soldiers, and lancers on horseback. However, in Europe, the Moors increasingly began to be associated with evil and were despised because of their colouring and Islamic faith. Medieval folklore referred to them by various names, including "Black Knight", "Big Negro", and "Black Ethiopian" (Brunson & Rashidi, 1991, p. 28).

I suggest that Hitchcock's sculpture alludes to past definitions of black men, transforming the way these men have often been historically defined and portrayed. *The Black Knight* may well represent an allegorical futuristic vision where power and subservience converge. The cyborg's corporeal aesthetics include prosthetic metallic wired attachments linking into his skin, particularly on his right arm and neck area. Four rings link his neck-chest plate into his skin, and four wires positioned on each side of the transmitter plate link into his helmet. This may enable him to see and hear what is being relayed to him either by his design and control, or via others' input and control. Hitchcock therefore metaphorically represents the paradoxes of technological interface; the fear/pleasure, beauty/abjection, and the control/being controlled condition – leaving it up to us to decide *The Black Knight's* fate. For this reason I suggest that he exists in a utopian zone; a postmodern actual/virtual place/space where neither positive nor negative attributes reign supreme.

The Black Knight's shoulder and chest muscles also appear to be genetically enhanced, or represent synthetic muscles, and his left leg is covered with animal

markings, alluding to human-animal-technology mix. He is thus a complex fusion of the three main spheres of corporeal developments in existence today: prosthetics, telematics and genetics (which are the focus of the following chapter), as opposed to a crude and manual augmented entity. Hitchcock ultimately sees his work as “metaphorical for the human condition in modern society...” (n.d. para. 3), alluding to the survival strategies required for living in today’s Western culture, where discriminations against individuals still exist (Hitchcock, email questionnaire, 2007).

Indigeneity

Joseba Gabilondo adopts the term “postcolonial cyborg” as a way of bringing to light inequities regarding computers and cyberspace. He states that “there is no such thing/subject as a ‘postcolonial cyborg’, because postcolonial subject positions are always left outside cyberspace” (Gabilondo, 1995, p. 424). Gabilondo addresses conditions of access and knowledge, as these are pivotal concerns relating to computers and telecommunications technologies (Chaney, 2003; Kolko, Nakamura, & Rodman, 2000). Guillermo Gómez-Peña (2000), the celebrated Mexican performance artist and writer supports this focus, emphasising that it is not a lack of interest or skill which is the primary issue regarding Mexican peoples and their use of technology, but the limited resources, computer access, and knowledge they are often faced with. Gómez-Peña therefore aims to ‘brownify’ cyberspace with his radical art practices, giving non-white cultures a stronger voice within this realm.

Gómez-Peña (2000) is one of only a few artists focusing on the links between identity, ethnicity, technology, and the body in relation to performance art. He is an interdisciplinary artist who has been involved with over 1,000 performances and has written five books to date. He uses performance and interactive art, the internet, film, radio, journalism and written text to communicate his ideas on race, class and politics. Gómez-Peña is a critical postmodern conceptual artist; a “public intellectual and a socially committed artist” attempting to bridge the gap between “cultural

identity and performance persona, practice and theory, art and activism, transgressive aesthetics and radical politics...” (2000, p. xiii). Gómez-Peña writes that “As a performance artist my job is precisely to ask questions in original ways” (2006, p. 5).

Gómez-Peña (2000) presents his ideas on the interactions between Mexicans and Western culture and ethnicity and technology via various performance personas, such as *El Mexterminator*, *Information Superhighway Bandito*, *El Web-back* and *El Mad Mex*. Gómez-Peña and his colleague Robert Sifuentes began inviting the public to contribute to ideas on their performance presentations in the early 1990s. Ethno-cyborgs are cyborg personas which are co-created or co-imagined by audience members via input through various techno-confessional mediums provided after a performance has been viewed, or via internet feedback mechanisms (Gómez-Peña, 2000). Audience members were asked what they felt Mexicans represent as a people and a culture. Following over 20,000 hits on his website, Gómez-Peña (2000) found that most of the responses portrayed Mexicans as enemies of America’s national identity, as threatening ‘others’, or as country and cultural invaders. Internet users identified that they deemed Mexicans overall to be primeval (yet techno-literate), spiritual (having shamanic powers), violent, seductive and unpredictable.

Gómez-Peña and Sifuentes therefore titled their subsequent 1995 project *Mexterminator*, with reference to the cyborg assassins in the cult *Terminator* film series (1984-2003). *El Mexterminator* (Image 49), presented on the next page, is one of the satirical ethno-cyborg personas created for this project and is shown armed with mysterious shamanic artifacts, a prosthetic (plastic) arm brace, and a science fiction-type weapon. He also wears an animal-print gangster design vest, a Western-inspired cowboy hat, a lace corset, and cyberpunk glasses. Gómez-Peña (2000) as *El Mexterminator* irreverently shows that the traditional Folk bandit has been surpassed by the cyborg/robo-Mexican. Gómez-Peña’s artistic goal was to “incarnate the intercultural fantasies and nightmares” of his audience (2000, p. 40). As such, *El Mexterminator* exists as a caricature of internet users’ ideas of the fantasy Mexican identity, fused with stereotypical Hollywood-based fears and desires.



Image 49. *El Mexterminator* (1998).
Performance Art.
Photograph of artist: Eugenio Castro.
Artist: Guillermo Gómez-Peña.

I asked the interview participants to offer their views on *El Mexterminator*. Seventeen responded; their forthright and engaged comments centred on three key themes. Several participants felt that *El Mexterminator* presented ideas on the juxtaposition between old/primitive and modern/futuristic ideas and/or the way these ideas are in conflict or discordant. As Emmanuel stated:

I think like a lot of art, he seeks to provide a different perspective through means that aren't always necessarily realistic. The themes I think he's exploring is...this juxtaposition of old technology which appears to be more spiritual, or superstition-based, and putting that right next to ideas of technology and what technology can do. Gómez-Peña does indeed explore the melding of so-called primitive and advanced cultures. He uses *El Mexterminator* as a discursive tool in order to present collective

ideas on what constitutes a twenty-first century Mexican identity; one that sits within both the historic and futuristic planes. A few interviewees also mentioned Gómez-Peña's use of humour and parody in *El Mexterminator*. Marie stated, "This to me is a bit of a satire, a bit of poking fun at, you know, we can be cyborgs too almost, we can be. We can have a gun and have a metal arm". Gómez-Peña often uses tools such as satire and transgression relating to the representation of the 'other' in our current technologised society (Dixon, 2004). He believes humour is an effective medium to visually present complex cultural issues, and to adequately address the "millennial culture of apocalypse and despair" he feels is an integral aspect of the fabric of postmodern society (Gómez-Peña, 2000, p. 7). However, one of the concerns of using metaphor, parody, irony or satire within art (or text) is that the messages and themes presented can be difficult to grasp. This is discussed in Chapter Eight as a limitation of viewing this form of postmodern art as having critical potential.

David, Art and Chris also mentioned that Gómez-Peña as *El Mexterminator* depicted the Mexican tradition of Day of the Dead. Art commented, "Remembrance of the dead...Like we might have an urn or flowers on a grave, they have massive skulls that they parade around to remind them of the dead, it reminds them of people of the past". The Day of the Dead festival is referred to as Día de Muertos (or All Souls' Day) and is an annual celebration which usually lasts for a two-day period in early November (Palfrey, 1995). Lastly, Nico and Nadz felt that *El Mexterminator* presented a negative perspective of technology and the cyborg concept. Nadz stated:

It's people like him; they portray a certain image of things and then people get stuck with it. I think he's really negative for technology, as well as the whole cyborg thing...he might influence you negatively, even if it is in a humorous way.

Nadz felt that Gómez-Peña's portrayal of this polymorphous Mexican persona is audacious, and may contribute to ill-feeling towards Mexican peoples, and/or body technologies. This is a risk Gómez-Peña takes with his art and he admits that people can misunderstand his artistic intentions. Nevertheless, his performance work is an effective medium for presenting perceived social distinctions, cultural anxieties, and racial biases, as his art can be deemed a "symbolic chronicle" of collective social

feeling (Gómez-Peña, 2000, p. 8). His performing body is an active agent; a mid-way site of contestation where people's cultural inscriptions can be tested and rearticulated (Heathfield, 2004) in a way that conveys the biases within everyone.

Lastly, a photograph of Cornel Winiata, shown here, also identifies links between indigenous themes and body technologies. Winiata presents aspects of his cultural history via the interface, choosing to focus on prosthetic reconstruction or rebuilding of the body in a creative and novel way. Winiata, who is of Māori descent, was severely injured as a result of a work place accident in 2002. He lost his right arm and began wearing a prosthetic limb (Kelly, 2005). Winiata has adorned this limb with a stylistic version of the iconic koru spiral sourced from his son's much-loved Māori design T-shirt. Koru is a Māori term used to represent the emerging New Zealand native fern frond, and symbolises renewal and strength. The design was incorporated under the final layer of fibreglass of the prosthetic limb (Kelly, 2005).

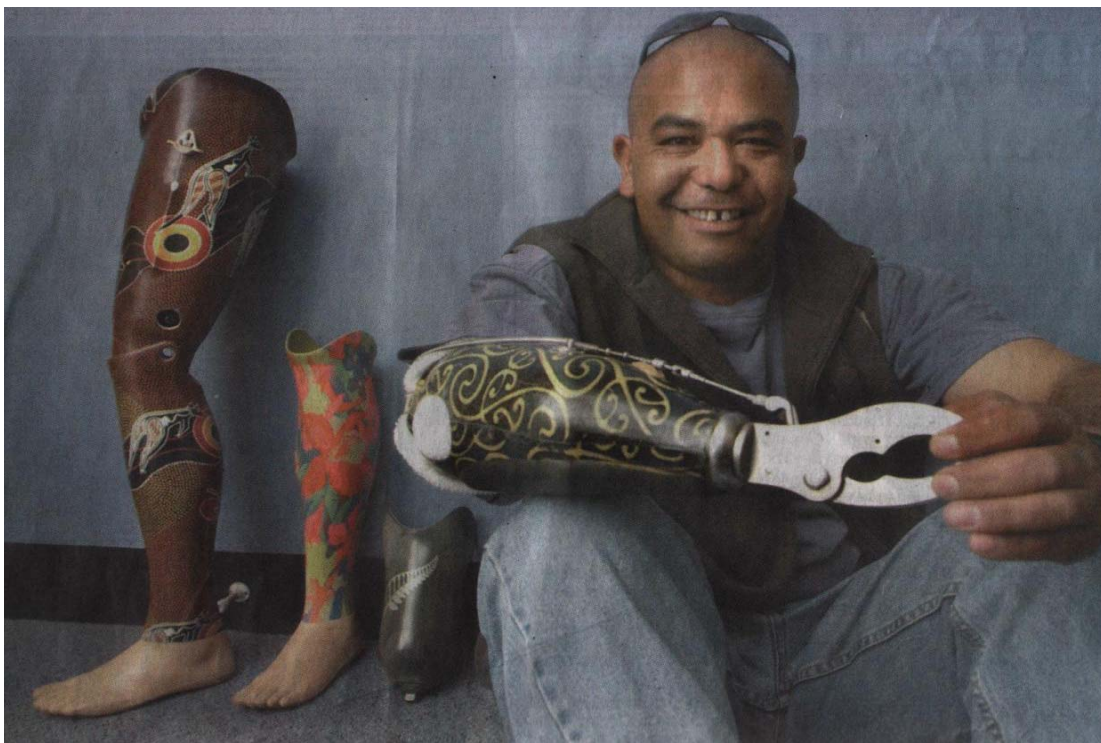


Image 50. *Cornel Winiata* (2006).
Koru Design Artificial Limb.
Photographer: Ross Giblin.
Creators: Wellington Artificial Limb Centre and Cornel Winiata.

Ray Binet, the manager of the Artificial Limb Centre where Winiata was able to create his designer limb, believes that individuals such as Winiata are not afraid to stand out in the crowd and show who they are. As such, they are an inspiration to others who have lost limbs (Binet as cited in Kelly, 2005). I asked the interview participants to respond to Cornel Winiata's imagery in order to obtain their views on this cultural-technological representation. Seventeen responded and their comments addressed three interlinking themes. Several participants felt that Winiata is revealing his connections to Māori culture and heritage, and/or shows elements of Māori pride. Misty commented, "To express himself, like a tattoo, but he can remove it whenever he wants or change it.../...he's a Māori and he's proud to be a Māori". Phil stated:

...he could view it as being something imposed on him by a technological structure that comes from a Pākehā culture. He's simply taken this as well "this is something I need because I decided that I can't function without it, so I'm going to make it part of me; I'm going to make it defined as part of my culture".

Phil uses the Māori term Pākehā in reference to New Zealand European culture (see p. 419) (King, 1985). These responses centre on the way the Māori design on the limb represents Winiata's heritage, and a celebration of Māori culture and story-telling.

A number of participants also felt that Winiata's imagery shows a personalisation of the artificial limb. As Luke responded, "To personalise it, to make him feel more that it's a part of himself rather than what it is". Kayla commented:

He's trying to personalise it so it's not harsh.../...'cause when you say you've only got one arm, some people might get freaked out, and then when they see it, and it looks quite pretty, you'd be like 'wow', it's not that bad at all.

These interviewees felt that an artificial limb could be made more personal to the wearer rather than appearing as an imposing metallic attachment. Some participants also felt that the koru design reduces the focus on disability and loss, which Kayla's comment also alludes to. Javin stated, "To pretty much abolish...the negative energy that's associated with being disabled". Jason mentioned that the design "...makes it much more friendly...[a] metal or just plain fibreglass finish; it looks very unfriendly, and this has a much more warm feel to it". These interviewees felt that the prosthetic limb generated positive feelings for the viewer due to the design which adorns it.

The participants' responses to Winiata's limb suggest that technology – meshed with the body – is able to represent individual, spiritual and cultural values, although this notion has not been addressed in-depth in theory to date. In addition, the artificial limbs featured in the photograph of Winiata are rare examples of prostheses which have been adorned in this manner. I suggest that the aesthetic appeal of technology is overall under-examined. David Gelernter (1999) is one of the only authors whom I am aware of that has focused on this topic to date. He believes that the concepts of beauty and technology are considered discordant for a number of reasons. These include that beauty and attractiveness are more often thought of as 'soft' concepts and unimportant, while science, mathematics and technology are primarily considered 'hard' concepts and thus important. I suggest that the attractiveness of technology may increasingly be discussed with more engagement the more we become integrated with external visible technologies, as the concept of beauty is a pervasive cultural value embedded within most societies (Pitts, 2003). I propose that cyborg art can ignite discussion and debate on this under-examined issue, due to the various technologies which are evocatively presented on the body within this art genre.

The cyborg artworks presented in this chapter identify the way body and technology links are redefining and reconfiguring birth, death, gender and ethnicity. I examined how perspectives towards these four fundamental human dimensions are changing, and will continue to change as technology infiltrates these realms with increasing speed. However, I note that the societies in which these technologies are created and impacting on its members do not yet have adequate ways of dealing with the consequences of these developments. This is because the technologies are developing faster than the social and cultural structures in which they are formed, generating discontinuity and fear. As Mann contends, "Fuelled by the rapacious needs of consumer society, technology is evolving faster than our ability to harness the energies of technological metamorphosis" (2001, p. 2). The following chapter therefore focuses on certain types of corporeal technologies developed today, in order to examine how artists and theorists currently and prefiguratively represent, explore and discuss these technologies and their impacts on the human body and society.

Chapter Seven

Cyborg Art Representing Three Key Corporeal-technological Realms: Prosthetics (Machinic), Telematics (Electronic), and Genetics (Biotechnic)

Prosthetics, telematics and genetics are three key technological spheres in existence today altering the constitution and configuration of the ‘natural’ human body. Prosthetic devices and technologies have the potential for both enhancing human abilities and for restoring, reconstructing or replacing missing body parts. Both actual and conceptual artistic ventures are created in order to demonstrate interface themes regarding both fully functioning bodies and disabled bodies (Gray, 2001; Maldonado, 2003; Smith, 2006). Artists represent an array of prosthetic-corporeal interfaces in their artworks in order to point to the ideological and cultural implications embedded within their increased usage. A prosthetic device currently more often exists as an addition to the body, rather than as “a tool totally embodied” (Ihde, 2001, p. 14). However, internal devices such as heart pacemakers, deep-brain stimulators and cochlear implants are becoming increasingly common. Prosthetics overall signify that technology has the potential to become part of our homeostasis system.

Telematics centres on electronic networks and the interaction between computer and telecommunications technologies. In the past few decades the convergence of these technologies has created one unified sphere of operations, consisting of “electronic media, including video, sound synthesis, remote sensing, and a variety of cybernetic systems” (Ascott, 2003, p. 232). Vision-based communication networks such as Skype are also increasingly linking and interfacing geographically dispersed individuals to data-processing systems, enhancing the speed, diversity and availability of human interaction. PDAs (Personal Digital Assistants) worn on the wrists with intelligent pens and voice control capabilities are another type of advanced telematic technology in existence today (Gizmag, 2008). Eduardo Kac

(2005) and Kevin Warwick (2003) have also inserted biotelematic devices *into* their bodies for prefigurative exploration. These types of devices, known as RFID (Radio Frequency Identification Device) implants, were approved for human use in 2004 by the US Food and Drug Administration (FDA) (Swartz, 2005). They are part of the emerging phenomenon known as “chipification” (Michael & Michael, 2006, p. 1).

Genetics is the field of research derived from biotechnologies and is the most far-reaching technology in existence as it can transform the human body at a foundational molecular level (Perkowitz, 2004). Theorists often refer to the twenty-first century as the age, epoch or century of biology and biotechnology due to the continuing developments and discoveries being achieved (Rifkin, 1999). Humanity now engineers its own life and life trajectories through genetic engineering and biotech research and advancements (Sandel, 2007). As such, Best and Kellner (2001, p. 151) use the term “biomanipulation” to identify the way in which the limits of the human body are increasingly transcended. The genetic code can now be reprogrammed to suit tangible human needs and ideological desires (Wilson, 2002). Technologies used to grow organs, skin, valves, breasts, ears, cartilage, noses and other body parts also continue to develop, as the self-creation/fabrication of these body parts is preferred over transplantation and xenotransplantation (Rifkin, 1999).

These three spheres of research, development and corporeal experimentation are presented in this chapter in individual sections. However, I note that there are several theoretical, actual and artistic overlaps within these domains (González, 1995). One artist in particular, Stelarc, works in all three spheres, although his creative and conjectural interest in body-technology integration and transformation began in the field of prosthetics and remains concentrated in this area. Stelarc is a leading performance artist who centres his artistic explorations on redesigning and enhancing the human body. He experiments with prosthetics, robotics and systems with the aim of overcoming ‘natural’ human corporeal frailties such as ageing, illness and death. Stelarc’s well-known 1982 performance artwork *Handwriting – Third Hand: Evolution* (Image 51, p. 256) therefore heads the Prosthetics section.

Before the machinic, electronic and biotechnic spheres of research are discussed in relation to cyborg art, I present findings on which of these three key spheres of research the questionnaire respondents felt could have the most impact on human bodies in the near future (Question 15, Appendix H, p. 457). As shown in Figure 6, 65 respondents completed this question. The option *All of the above equally* was most often selected, followed closely by the option *Prosthetics*. The responses indicate that not one option was selected in substantially greater numbers than another. This suggests that none of the three technologies were considered to have a significantly greater impact on human bodies in the near future. *Biotechnology* may have been the least selected technology option because of its potential to profoundly alter humanity, which can cause anxiety and fear. Biotechnology can also be regarded by the public as risky and “out of control” (see p. 69) (Network Communications, 2002).

Overall, which area of technological development do you think has the potential to have the <u>MOST</u> impact on human bodies in the next few decades?	Number of times an option was selected by 65 respondents
1. Communication technologies (telecommunication extensions of the human body such as wearable computers, cell phones, the internet and virtual reality)	14
2. Prosthetics (mechanical and electronic interfaces with the human body such as exo-skeletons, artificial limbs, bones, sight and hearing devices, and implants)	19
3. Biotechnology (adaptations to the human body using techniques such as genetic engineering, assisted or artificial reproduction, xenotransplantation and cloning)	7
4. All of the above equally	20
5. Not sure	4
6. None	0
7. Other	1 response: 1 & 2 equally

Figure 6. *Three Main Spheres of Corporeal Developments*. Findings from Question 15 included in the hand-distributed questionnaire.

Prosthetics

‘Bionic beings’ today are an assortment of externally and internally enhanced, reconstructed or repaired (post)humans. This form of transformation is achieved through the use and application of biocompatible and increasingly microminiaturised technologies, either implanted into, or attached onto, the body (Wilson, 1995; Zylinska & Hall, 2002). Terms such as “the prosthetic body” (Maldonado, 2003, p. 16) and “prosthetic couplings” (Zylinska, 2002, p. 216) are therefore used to define changing human physical ontology. Yet, prosthetic couplings can generate wary responses from people, as prosthetic limbs and devices are often viewed as artificial components invading the natural body (Clarke, 2002). These technologies therefore challenge what Graham calls the human body’s “ontological hygiene” (2002, p. 33).

Similarly, Wilson (1995) suggests that negative reactions occur because prostheses are still often defined from an anthropomorphic perspective, where technology is viewed as contaminating the natural body. He states that “Prostheses cause disgust because they indicate the collapse of the body, its fall from integrity” (Wilson, 1995, p. 250). However, as mentioned, Stelarc (1998a) believes that prosthetic-human interface and augmentation is an integral aspect of our humanity. He also feels that the body’s organs and functioning systems are inadequate, and the concept of aging is ‘outdated’. Aristarkhova (2005), Bowring (2003), Kuni (2004-2005a), Short (2005) and others agree that the quest for enhanced bodily strength, splendour, longevity and immortality fuels the impulse of technoscience. These desires also form the underlying impetus of the Extropian Transhumanist philosophy (More, 2003).

External

External prosthetics are for the most part still appendages to the human body, existing as attachments, which can be worn and subsequently removed. The most common are

artificial limbs and exoskeletons, and hence, these are the focus of this section. Artificial limbs vary in degree of advancement, ranging from Cornel Winiata's basic claw mechanism (Image 50, p. 246), to the multimillion dollar bionic limbs worn by Jesse Sullivan, Claudia Mitchell and Evans Reynolds. These individuals can move their artificial limbs, which are controlled by muscle impulses, via thought processes due to direct electrical fibre and nerve links. Reynolds is the youngest recipient at aged 18. His artificial hand can even pick up eggs without breakage (TVNZ, 2008). Stelarc's prosthetic Third Hand is one of the most recognised artificial limbs today, due to his performances with this extra arm/hand.

Exoskeletons are external machinic structures which can be worn, or used by the body. Examples include the wheelchairs which aided Christopher Reeve's life until his untimely death, and which continue to assist Stephen Hawking's life in many ways, ranging from alleviating problems of mobility to enhancing communication links. An exoskeleton cyborg system has also been created at the Tsuyama National College of Technology, Okayama, Japan with the goal of helping those who have a disability with more functioning ability, and to help with lifting and supporting those who are elderly or those who have limited mobility in general. This system includes a basic body trunk, head support, arms, hands, and legs, and is controlled using sensors, actuators and a data input-output unit (Onishi, Arai, Inoue, & Mae, 2003).

Engineers and designers are also developing load carrying exoskeletons which can assist soldiers in combat situations and aid disaster relief workers and fire fighters. These types of advanced exoskeletons are able to carry a 34 kilogram payload, and they have a walking speed of two miles per hour. Their configuration is based on a backpack-like frame structure, powered by anthropomorphic robotic legs (Kazerooni, Steger, & Huang, 2006). Stelarc has created his own robotic exoskeleton, and has performed with his "six-legged pneumatically powered walking machine" since 1998 (1998b, para. 1). Stelarc stands in the centre of the exoskeleton, which is powered by an air and pressure locomotor, and is able to move the entire system and thus himself forwards, sideways, or in rotation. Exoskeletons came to prominence in the cult

science fiction film *Aliens* (1986), when the heroine in the film, Ripley (Sigourney Weaver), used an enormous exoskeleton to do battle with the aliens.

Enhancement

Norman (2001) and Brooks (2002) claim that prosthetic augmentation will gradually become just as common and socially accepted as procedures such as cosmetic surgery, blood transfusions and IVF. They argue that resistance to ‘techno’ additions to the body will gradually decrease as prosthetic augmentation is increasingly adopted by the general public. Stelarc suggests that humanity should not view the prosthetic or machine-body interface for purposes of enhancement in a Faustian manner – or in other words that we are selling (or relinquishing) our souls in order to have the so-called forbidden advantages and energies that technological augmentation can provide (as cited in Atzori & Woolford, 1995). He supports Andy Clark’s (2003) premise that we have always been ‘natural born cyborgs’ and it is our teleological destiny to become increasingly integrated with, and augmented by, technology. Stelarc believes that “Technology is what defines being human” (as cited in Hall, 2002, p. 139), therefore, guilt, shame or fear linked with intimate technological interfaces is misplaced. Stelarc feels that the desire to prolong life and be stronger/healthier and more robust throughout life is a ‘natural’ human compulsion.

I asked the interview participants how they felt technology related to issues surrounding the prolonging of human life, in order to gauge their thoughts and ideas on this topic. Sixteen participants responded to this question, and although their comments were fairly dispersed, several centred on one main theme; the importance of the quality of life and not the duration. As Margaret stated, “I don’t have a problem with it as long as the quality of life is there. It all depends on the quality; if there is no quality, then there’s not worth having any life”. Paul commented:

Oh, sometimes I think its ok, other times I think it’s a bit cruel. Keeping someone alive on a life-support machine...if the technology wasn’t there that person would

have died. And then their family would have been at peace, so keeping someone alive on a machine isn't necessarily fair, but depending on the scenario.

These interviewees felt that the way a life is lived (in health) prevails over the length of a life lived, which is a perspective openly discussed today, particularly in relation to the practice of euthanasia (Olver, 2003) and the 'right-to-die' laws of The Netherlands (Gray, 2001). Misty's and Javin's responses focused on the right of individuals to use technology to extend their lives, while Darri spoke about the unnaturalness of using technology in this regard. Luke discussed the prevalence and dominance of technology in all medical-related practices, while Matt felt that technology lessens the accountability people have regarding their bodies. He stated:

I think maybe for a lot of people they have the idea that...technology will help prolong human life because, say you think "oh they're going to cure cancer in five years time so I don't care if I smoke", and so a lot of people have put a lot of expectation on technology to do everything and more in a short span of time. (Matt)

Moreover, Steven mentioned that it is inevitable that human beings will increasingly utilise technology to prolong their lives. He commented that "Your average 40-year-old is now like a 20-year-old...that comes from technology, what we've learnt". Lastly, Jason responded with the remark "[I] think it'd be great. I would like to live longer". The dream of living longer is a dream which most of us share in some form and at some time, and as mentioned, is thought to be the catalytic force behind the majority of human-technology experimentation and exploration.

Stelarc was one of the first artists to explore the human dream of living longer tangibly, by using medical instruments, prostheses, robotics, virtual reality systems and the internet to explore and increase the parameters of the human body. His art therefore provides mediation between the varying discourses of cultural and social theory, and technology and science. Stelarc's performance art is a form of praxis, as he combines theory and action to present his views on the inadequacy of the natural body today, and the potential of technology to counterbalance the body's inherent weaknesses. Stelarc focuses on the "aesthetic of prosthesis" (Dery, 1996, p. 154), by developing new evolutionary strategies of human and technological enhancement, thereby redefining the concept of humanity.



Image 51. *Handwriting – Third Hand: Evolution* (1982).
Performance Art.
Photo Credit: Keisuke Oki.
Artist: Stelarc.

In *Handwriting – Third Hand: Evolution*, shown here, Stelarc simultaneously writes EVOLUTION on a plane of glass, using his existing organic hands, and his prosthetic/machinic Third Hand. Stelarc's left hand writes I O N, while his right hand writes L U T, and his mechanical hand writes E V O – back to front and from right to left. The Third Hand's technology and Stelarc's body processes work together to create a symbiotic writing event developed from complex body-technology integration systems. The Third Hand is an attachment or an addition to the body as opposed to a replacement, and is able to move independently due to activated EMG (electromyographic) signals sourced from Stelarc's leg and abdominal muscles. The Third Hand also has a pinch-release gripping system and can write in a rotation of 190 degrees (Stelarc, 2004a). Stelarc states that *Third Hand: Evolution* is “a gesture. An intimate interface. A mechanical hand actuated by the artist's muscle signals. It's about re-wiring additional and alternate capabilities. It's exploring alternate anatomical architectures” (email questionnaire, 2007, q. 6).

I asked the interview participants to offer their views on Stelarc's performance artwork and 17 responded. Although the comments were somewhat varied, several participants' responses addressed one broad theme; the desire for, exploration of, and usefulness of technological augmentation. Blair mentioned that Stelarc's artwork draws on the "Utility of technology. How much handier it would be if you could write an essay and get it done in half the time 'cause you've got an extra hand to write with". Matt stated, "I think he's sort of taking it that evolution – we'll be adding things onto us that will allow us to do a lot more simultaneously, sort of pushing the barrier of what we can do". Sally commented, "It looks to me as if two hands are not enough for the things he wants to do.../...Yes, he wants to have that third hand as well". The responses indicate that just over half the participants interpret Stelarc's artwork in a way which supports his artistic motivations; as being a literal experiment and experience into the realms of prosthetic enhancement.

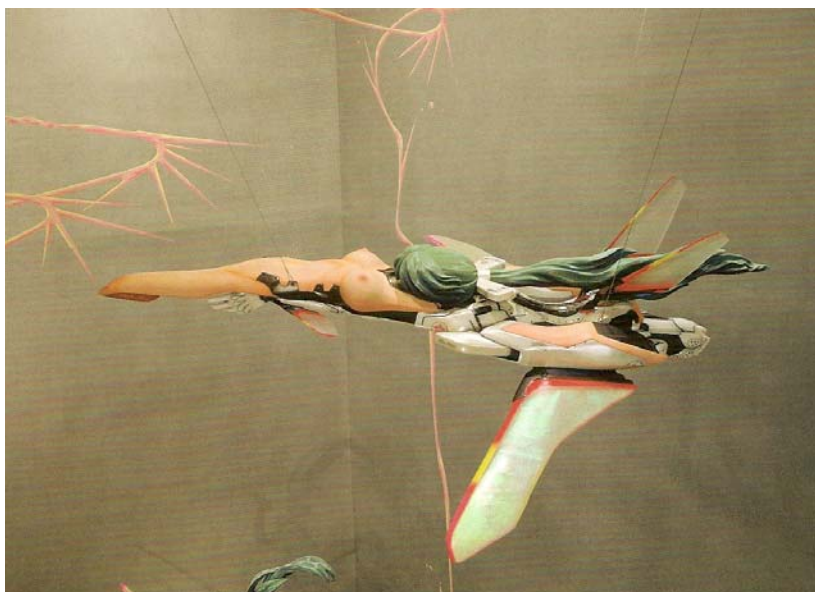
The remainder of the interviewees' comments did not form an identifiable theme. Steven felt that the type of evolution Stelarc was alluding to was inevitable, while Darri felt that *Third Hand: Evolution* shows how we are increasingly becoming dependent on technology, which I note was a concern discussed right through the interviewing process. Marion had a derisive reaction to Stelarc's artwork. She stated, "I'd rather be spiritually dead than alive like that". Marion felt that Stelarc's *Third Hand* significantly imposed on the human body in a negative way. Phil's discussion centred on Stelarc's choice of using the word 'evolution'. He commented:

...I find it rather amusing, his choice of word, because the very act of what he's doing is disproving the whole concept, because this third arm has been systematically created. It is the product of an intelligent creator and so his choice of word there is kind of ironic...perhaps he's meaning it in the general sense of progress.

Phil sees the term evolution linked to natural human evolution, whereas Stelarc uses the word evolution not only to point to human-technology evolution as a combined concept, but also to point to the redundancy of organic human evolution, as he sees birth and death as evolutionary strategies that are no longer required. Stelarc claims that "Evolution ends when technology invades the body" (1998a, p. 117). He argues that we are in a post-evolutionary phase now (Stelarc as cited in Farnell, 2000).

Stelarc believes that operationalist paradigms are integral components of human development. This perspective therefore views organisms as no longer passive entities resulting from random processes of natural selection, but rather as dynamic self-organising systems and processes, where human beings can be authors of their own evolution (Bowring, 2003; Rifkin, 1999). Stelarc is ultimately positive about body integration and transformation via technological means, theorising that the human body's organs and skin are conceivably replaceable. He argues that "The body must burst from its biological, cultural, and planetary containment" (Stelarc, 1998a, p. 116), and become intimately interfaced with technology in order to thwart its tendency towards malfunction and fatigue. Stelarc adds that today, "The most significant planetary pressure is no longer the *gravitational pull*, but the *information thrust*" (1998a, p. 116; emphasis in original).

Takashi Murakami, the acclaimed Japanese artist, has created a figural representation of Stelarc's body augmentation and transformational perspectives. He explores these ideas within his inimitable three-part fibreglass sculpture *Second Mission Project Ko²* (Images 52 & 52a), presented on the next page. Murakami's techno-girl defies the gravitational pull; embracing instead the information thrust. Image 52 is the first sculpture in the three-part installation, and Image 52a is the third sculpture. *Second Mission Project Ko²* shows a naked, green-haired and hyper-sexualised teenage girl with silver metallic arms and lower legs. These metallic limb structures contribute to forming the tail-end of the aeroplane (Artfacts, 2000), which becomes her corporeal construction, as shown in Image 52a. The wings shown emerging from the back of her knees in the first sculpture, create the wings of the aeroplane in the last sculpture. *SMP Ko²* is thus a transformer; a cyborg entity able to oscillate between the configurations and conditions of (being) human and machine. She is an evocative pop culture emblem emulating the popular Transformers concept. Transformers are Japanese-designed children's toys, originally developed in the 1980s, which can transform, for example, from a robot to a car (Dewdney, 1998). The Transformers concept has become hugely popular in recent years due to Michael Bay's blockbuster films *Transformers* (2007) and *Transformers: Revenge of the Fallen* (2009).



Images 52 (Top) & 52a (Bottom). *Second Mission Project Ko²* (1999-2000). Series of three sculptures: 1 & 3 are shown here. Fiberglass, iron, acrylic and oil paint.
Artist: Takashi Murakami.
Collection of Rachel and Jean-Pierre Lehmann.

Seventeen interview participants responded to questions relating to *Second Mission Project Ko*². Their candid responses centred on two broad themes. A number of the interviewees' comments were descriptive, with many feeling that Murakami's sculpture was similar to the children's toy Transformers or Gundam Wing characters. Donovan commented that Murakami's cyborg resembled a "...transformer robot", while Nick stated that "...she appears to be very similar to *Gundam Wing*, 'cause *Gundam Wing* also transforms into a plane or spaceship". *Gundam* is a Japanese anime metaseries originally created in the late 1970s, where giant robots feature as central characters. These participants' comments focused on the cartoon or comic book imagery which the sculpture represents. Several interviewees also commented on the exaggerated or over-sexualised female form which Murakami has depicted in this artwork. David stated, "Again it's a highly exaggerated representation of a female". As shown throughout this study, the sexualisation of female cyborgs is a prevalent aesthetic. Yet, Murakami does not wish to exploit the sexuality of women with his art; rather he uses *SMP Ko*² as a satirical tool, drawing on the sexualisation of women within many Japanese anime and Japan's hyper-consumerism overall. *SMP Ko*² also draws attention to the expectations of Japanese girls and women in contemporary society, and their societal positioning, while at the same time alluding to the potential of young Japanese women to excel amidst the conservatism of Japanese society (Cruz, 1999). As such, *SMP Ko*² can be viewed as a triumphant super-girl (Artfacts, 2000), conquering the objectification of her gender.

Several interview participants also felt that *Second Mission Project Ko*² presented metaphorical ideas. Some suggested that the sculpture alluded to the human dream of flying. Cherie felt that Murakami's artwork shows "That perhaps one day people will have the ability to fly because it will become part of their genetic makeup". Cherie is referring to the levels of transformation which may increasingly become part of humanity. This is one of the key symbolic functions of cyborg art; to draw attention to the way art can visually express and prefigure new configurations for our viewing pleasure, insight and consideration. Lastly, Lesley and Nadz felt that Murakami's cyborg represented freedom or a breaking free of social mores. Nadz responded:

I suppose it's about freedom. But I suppose she loses a piece of her identity by being morphed like that. Although I suppose she looks very content with what's happened...She looks as if she is enjoying it...I can actually relate with this. I think this is really good. She's coming into her own.

Nadz felt that Murakami's artwork metaphorically alludes to the ability for women to attain freedom through the use of, and fusion with, technology, which is Haraway's (1991a) premise. *SMP Ko²* has indeed transformed from sexualised earthbound human to powerful airborne machine; "shifting from flesh to machine, from feminine to masculine, from passive to aggressive" (Friis-Hansen, 1999, p. 40).

SMP Ko² is a hyper-sexualised and somewhat perverse representation of the Western female body merged with the optimistic Japanese perspectives on technological usage and augmentation. I therefore suggest that *SMP Ko²* evokes a type of utopian aesthetic as she is a contradictory cyborg representing both the positive and negative elements of society and technology. She is a paradoxical entity representing both the open and transformational and shallow/surface aspects of postmodern society. She is a woman who can fly, but who remains grounded (burdened) by her gender. Murakami refers to his overall resistant artistic doctrine as *Superflat*, which is a cultural oxymoron examining the rebelliousness existing within Japanese life. This is manifested in a mix of 'high' and 'low' art, and the sexual fetishism and juxtaposition of passivity and rebellion noted in prevailing pop culture images (Mulholland, 2005).

While Murakami's installation sculpture and Stelarc's performance artwork focus on prosthetic augmentation for human expansion, Judson Huss' painting *Bellum (The Survivor)* (Image 53) shown on the next page, focuses on technological augmentation for human survival. Huss is a well-known and celebrated American-born artist, and the author of *River of Mirrors: The Fantastic Art of Judson Huss* (1996). *Bellum (The Survivor)* represents a cyborg soldier set amongst an apocalyptic landscape, swathed in combat gear and an exoskeleton-type mask. He is enhanced by prosthetic body armour which is designed to protect him from injury and death. This artwork is entitled *Bellum* as this is the Latin term for war (Huss, 1996).

Bellum presents a dystopian science fiction illustration of a man who is immersed in technology. His headgear is encasing his face, eyes and mouth, perhaps enabling him to transform the polluted air into breathable oxygen. The background of the artwork is created in reds and golds, showing a sky filled with smoke and fire. The pessimism Huss presents in artworks such as *Bellum* is a reflection of how human beings still have a long way to go before they can live in a world where conflict and pain do not exist (Huss, 1996). Huss draws on important and relevant themes in his painting, with a focus on human destruction and environmental pollution. Haraway suggests that war today is ultimately “a cyborg orgy” (1991a, p. 150), where people live and die interconnected and interfaced with technological devices and machinery.



Image 53. *Bellum (The Survivor)* (1980).
Painting: Oil on Panel.
35 cm. x 27 cm.
Artist: Judson Huss.

Many soldiers remain fighting on the frontline today, particularly in war-torn countries of the Middle East (Defense Industry Daily, 2008). This is despite the widespread use of virtual cyborg soldiers engaging in combat from a distance (Robins & Levidow, 1995). *Bellum* is a fictional illustration of a frontline cyborg soldier party to the destruction of war; with only an exoskeleton and a gun for protection. Huss presents a figural depiction of body armour; however, this type of gear is increasingly being developed today, in order to protect frontline soldiers from harm. At present, the US Defense Advanced Research Projects Agency (DARPA) is funding a 50 million dollar exoskeleton project aptly named Exoskeletons for Human Performance Augmentation (EHPA), which is designed to aid soldiers during combat situations (Guizzo & Goldstein, 2005). The Pentagon is also working on ways to reduce fatalities and conflict during war. Researchers are designing a new Future Warrior Concept, which includes an exoskeleton helmet enabling the translation of a soldier's voice into any foreign language which is required (Hickley, 2007).

Jeffrey Eby (2005), a soldier in the United States Marine Corps, agrees that it is time for the exoskeleton, not only to help save soldiers' lives, but also to help soldiers carry and manage their combat units. Eby (2005) states that in the mid 1990s the amount of gear he was instructed to haul quadrupled. He now carries/wears a profusion of devices, garb and weaponry, including a global positioning system (GPS); a rifle with infrared lasers, magnified optics and thermal sight; a helmet with personal role radio (PRR); Wiley X and night vision goggles (NVGs); a K-bar or bayonet; a Gerber multitool; a Camelbak personal hydration system; and a 3-day assault pack. The ammunition load includes 180 spare rifle bullets, extra fragmented and smoke grenades, a claymore mine, explosives, and a breaching kit consisting of bolt cutters and sledgehammers. The weight of this combat gear substantially impedes the mobility and speed of any soldier forced to bear such a load, adding to the potential risks of injury (Eby, 2005).

Nonetheless, no matter how extensive these combat units are and how advanced the exoskeletons become, cyborg soldiers are injured and can die like any other human

being during warfare. As Gray surmises, “For all the flash of high-tech cyborg systems, war is still political and it always comes down to what is done to messy bodies” (2005, p. 41). Fittingly, the United States government has, of late, substantially increased its funding to researchers, designers and engineers in the area of war disability and artificial limb technology, in response to the number of soldiers being maimed during the ongoing Iraq and Afghanistan conflicts (Woodard, 2006).

Reconstruction

Theorists such as Marquard Smith (2006), Vivian Sobchack (2006) and Katherine Ott (2002) draw attention to the actual realities of artificial limbs and replacement prosthetics. They argue that behind the hype and techno-fetishism of prosthetic augmentation exists the reality of loss and disability; both as a result of war activity and civilian accidents or illness. These theorists suggest that the reality of injury and/or illness dims the glamour which can be associated with prosthetic enhancement. Sobchack (2006), a Professor of Critical Studies at the University of California, Los Angeles, is herself an amputee. Her left leg was surgically removed above the knee in 1993, and she now wears an artificial limb.

Sobchack (2006, p. 19) contends that while theoretically prosthetics can be deemed a “sexy new metaphor”, and body-technology augmentation can appear enchanting and thrilling, a disabled human being interfaced with prosthetics is in general not regarded in this way because of associations with loss, disability and disease. Ott agrees, and rightly suggests that “Rehabilitation technology is not worshiped in popular culture. A dusting of disability on the technology ends the beauty pageant” (2002, p. 21). Ott identifies that “a high-tech human is sexy”, however disability is not (2002, p. 21). Additionally, having no option but to wear a prosthetic leg or arm is much more mundane than often theorised. It can be painful and monotonous, rather than exotic and experimental (Smith, 2006; Sobchack, 2006).

Matthew Barney has used paralympian athlete Aimee Mullins' disability as a feature in his artwork, thereby radically transforming the way amputees and prosthetic limbs are portrayed in art and viewed via artistic means. Barney is the celebrated American artist and director of *Cremaster 3* (2002), which is the third instalment of a five-part motion art film series he began working on in the 1990s. Mullins, shown below, is Barney's art muse, and leading character in *Cremaster 3*. She is an athlete, below-the-knee amputee, actress, model and motivational speaker, and is perhaps the most well-known double amputee in Western culture. Mullins was born without fibula bones in her shins, and the decision was made at an early age to amputate her lower legs in order to offer Mullins more mobility throughout her adult life. Mullins has appeared in fashion shows as a model and in a wide range of visual images in the past few years – including photographs, advertisements, and in film and art – due to her athletic ability, buoyant attitude, and natural beauty (Sobchack, 2006).



Image 54. *Aimee Mullins as the Cheetah Lady* (2002).
Art Film Character: *Cremaster 3*.
Director/Creator: Matthew Barney.

Image 54 is a screen shot taken from *Cremaster 3*, and shows Mullins as a half-human, half-cheetah character, complete with cheetah ears and facial features, sharpened claws on each hand, and cheetah legs and paws. The prosthetic legs she

wears in this image resemble the Sprint-Flex III cheetah foot which was designed by Van Phillips for Mullins' track work. The carbon-graphite foot was designed to resemble the world's fastest land animal; the cheetah (O'Mahony, 2002), mimicking its sprinting technique, thereby enhancing Mullins' running style and speed (Ott, 2002). The prosthetic limbs she runs with and wears in Barney's film have not been created to pass as 'normal' human legs (Smith, 2006), in the same way that Cornel Winiata's koru design limb does not attempt to pass as a 'normal' human arm. Rather, the emphasis is on the prosthesis as a striking triumphant artificial construct.

Yet, Barney also presents Mullins as an "eroticized Cyborgian sex kitten" in *Cremaster 3*, evoking elements of techno-fetishism, as her limbs are transformed from a utilitarian construct to a fetishised attachment (Smith, 2006, p. 47). Barney utilises Mullins' amputee status and beauty to provocatively combine these attributes in a bid to explore both sensuality and difference. Nonetheless, Mullins does not consider her disability exploited in *The Cremaster Cycle*; she willingly agrees to her distinctive representation in this art film series. Mullins states that Barney became like "family" during the filming, and that it was a pleasure to work with "someone who was going to push the envelope" (as cited in Donnelly, 2008, para. 9). Barney has ultimately developed Mullins' cheetah lady character as homage to her success on the sprint track. He also explores triadic convergence with Mullins' cheetah imagery; combining the strengths of all three spheres of animal, human and machine.

In 2004, the Society for Disability, Arts and Culture provided an avenue for disabled artists to explore art, corporeality and disability links. In their exhibition *Borg Again: Reframing Cyborg Culture*, presented in the Pendulum Gallery, West Georgia (USA), seven artists with severe disabilities were asked to think about cyborg culture from their own perspectives. They were asked to contribute artworks which demonstrated how they felt about their disability and body-technology interface. The curators of the exhibition, Persimmon Blackbridge and Sima Elizabeth Shefrin (2003), suggest that people with disabilities are ideally suited to contribute to the discourse on body and technology synthesis, or cyborgs, either in dialogue, art, theory, or research, as they

exist on the frontlines of medical procedures and practices. Disabled individuals are also often perceived to require ‘fixing’ or reconstructing via technological means.

Cleo Pawson is one of the disabled artists who contributed to the *Borg Again* exhibition. She created a mixed-media wall sculpture entitled *My Backless Dress* (2003). This artwork was an actual sewn and constructed garment, with a back panel resembling the rods which were inserted into her back at the age of 12 to help with straightening and realignment. Pawson (2003) admits that she is more of a reluctant cyborg as no one asked her permission to carry out the alignment procedures at the time of her reconstructive surgery. She therefore feels to some extent that the surgery was imposed on her. Pawson believes that her work allows viewers to metaphorically see beneath her skin, into her broken and reconstructed corporeality. She states, “Art is how I claim my own inner territory...I am Broken. I am Healed. I am Beautiful. I am Deformed...I am living a mystery which I don’t have words for, so I make my Art about this” (Pawson, 2003, para. 5). Pawson’s views on art therefore indicate support for this study which suggests that art can often communicate ideas which are difficult to express in words alone, such as the trauma she has experienced.

Pawson’s artwork also parallels Frida Kahlo’s artistic expression in her 1944 self-portrait *The Broken Column* (1944). Sharon Betcher has selected *The Broken Column* as the cover art for her recently published book on disability *Spirit and the Politics of Disablement* (2007), due to the way Kahlo’s artwork evokes the pain of her broken and reconstructed body. Kahlo is one of Mexico’s most revered and well-known female artists. She was also the wife of Mexican artist Diego Rivera, who created the celebrated hybrid goddess-robot street sculpture *Pan American Unity* in 1940 (Rivera, 2004). As a teenager, Kahlo was a passenger in a bus which collided with a tram, impaling her with a metal rod and severing her spine in three places. This horrific accident forced Kahlo to wear a steel corset repeatedly to support her body. A broken stone column shown in the centre of her body in *The Broken Column* is used as a metaphor for her damaged, weakened and irreparable spine (Burton, 2005).

Internal

Internal prostheses include rods, valves, ligaments, joints, and implanted devices. The most common are pacemakers, which send electrical impulses to the heart muscle of individuals whose hearts beat too slowly, in order to set a proper rate (Perkowitz, 2004). Cardioverter-defibrillators are implants which have sensors that monitor when a heart attack may be about to occur, sending an electrical signal to the heart in order to prevent an attack (Gray, 2001). Cochlear implants are another example of an embodied technology. These internal hearing aids enable direct communication between the human nervous system and a silicon device, allowing people to “hear through a combination of flesh and machine” (Brooks, 2002, p. 216). Michael Chorost, the author of *Rebuilt: How Becoming Part Computer Made Me More Human*, writes poignantly (before his cochlear implant was inserted), that “It really *is* a computer. It’s cold, angular, and digital, yet it’s going to be embedded in my flesh, which is warm, squishy, and wet – how is that even *possible?*” (2005, p. 8; emphasis in original). Kac rightly states that “We are as intrigued as we are perhaps fascinated and terrified by the notion that we are embodying technology” (2005, p. 233).

Most artworks and images which focus on embodied technologies are figural representations (this is discussed as a limitation of cyborg art’s critical potential in the following chapter). Sanjay Kothari’s photo illustration *Digital* (Image 55), included on the next page, provides a compelling example of figurative internal prosthetics. Kothari explores artificial heart imagery, complete with a central cylinder, valves, plastic tubing, wiring and a pressure gauge. The chalk-like deathly appearance of the cyborg’s skin presents a striking contrast to the metallic machinery, which is pumping lubricating fluid or ‘blood’ through his machinic body. Kothari’s illustration is also an evocative example of the penetration of the permeative gaze of technoscience, as this gaze enables us – the viewer – to voyeuristically explore the cyborg’s inner artificial corporeality. The cyborg’s eyes are hidden from view so that our gaze is not confronted. This also projects him as more anonymous, signifying that the emphasis is solely on his internal mechanised configuration.

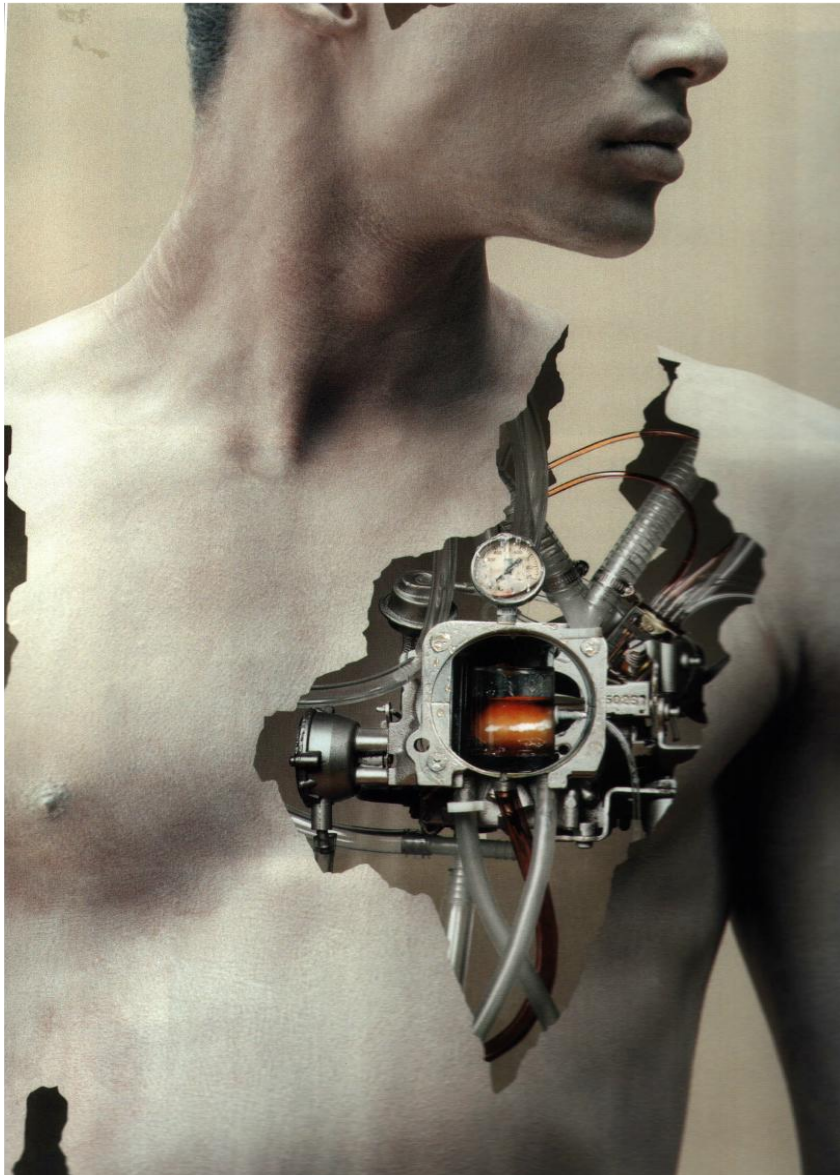


Image 55. *Digital* (2003).
Photo Illustration.
Artist: Sanjay Kothari.

Digital presents the extension of organic life via technology and the creation of artificial life via technology simultaneously. Moreover, Kothari encourages us to contemplate Graham's (2002) contention that prosthetics can challenge the human body's ontological hygiene. Kothari inspires us to ask – regarding the interface – whether extensive prosthetic integration makes us more than human, posthuman or

non-human. I asked the interview participants to share their thoughts on *Digital*. Sixteen responded to questions with a range of comments; however, several participants' responses were similar and centred on two themes. Some felt that *Digital's* aesthetics represented a mechanical heart or pacemaker. Kayla commented, "It's very bizarre. Like a digital heart. Maybe just that his heart's really mechanical or something. It's very cool". A few participants also suggested that *Digital* may allude to the replacement of human parts or a type of cyborg aesthetic. As Steven responded, "Cyborg. Definitely like *Terminator*, the first one.../...This is what I was talking about before, like the machine inside and skin on the outside". Steven's comment is fitting, as cyborg imagery and aesthetics often focus on entities that have organic or synthetic skin covering internal machinery and embodied digital components.

Fred Harper's oil painting, *Gear Head* (Image 56), shown on the following page, is another provocative example of embodied prosthetics. *Gear Head* depicts a female cyborg sitting on a pile of sacks or cloth in a type of utility room, with her left arm raised and a plug inserted into her underarm, perhaps recharging her machinic body. Her eyes are also hidden from view in the manner of Kothari's cyborg, so that we can look onto her imagery and into her body with the permeative gaze, without being confronted by her returning stare. The small domed skin flaps shown protruding from her inner legs and beneath her navel add to the imagery that she is an entity which can be clipped together and assembled to make a whole. Furthermore, she is sitting with her legs slightly parted to signify that she is in a state of relaxation. Her plugged-in and languid symbolism combined with her nudity and sexuality can be seen as erotic.

Yet, what is most striking about Harper's painting is that two wheel rims have been strategically positioned between the female cyborg's legs to figurally depict her genitalia (labia). Harper thus ruptures norms of aesthetic expression by creating a female cyborg whose genitals are not only exposed, but are shown as completely machinic. In addition, the 'wheels' are shown as protrusive, signalling a rejection of the socialised and supposed normative appeal of smaller and hidden labia (Davis, 2002). The subtle indications of steam shown rising from the cyborg's inner body

also add to her erotic appeal, suggestive of the heat, warmth and moisture of a woman's inner realm. Her machinic constitution – consisting of cogs, wheels, tubes, pipes, cylinders, and coloured cabling – does not reduce her erotic power, but rather enhances it, as the viewer is not only able to fantasize how she would look if she were flesh, but is given a new bodily composition to visually explore. This parallels the manner in which von Hagens' female cadaver plastinates remain provocative, as the viewer can imagine the body as live flesh, but can also explore the erotic appeal of dead flesh. As Stephen Lemons writes after viewing von Hagens' female specimens, "I was also fascinated to discover that the women were still appealing, even with their outer layers of flesh stripped away" (2007, para. 7).



Image 56. *Gear Head* (2007).
Painting: Oil on Canvas.
24 in. x 32 in.
Artist: Fred Harper.

Harper's inspiration is derived from science fiction films, and as already mentioned, from the networks and structures which comprise New York City. He writes, "I think it's something inside the mind to discover why we as humans or more specifically, me as an artist, feel compelled to recreate the human form in different medium" (Harper, F., personal communication, May 18, 2009). Harper is also interested in our everyday interconnections with technology. He acknowledges that the technologies we now own, carry, and use alter the way we act and appear in daily settings. Harper states, "Being in New York City, almost everyone has a cell phone, ear phones, or some kind of electronic device. They seem attached to the devices as much as the device is attached to them" (Harper, F., personal communication, May 18, 2009). Artworks evoking the bodily impacts of telematic devices are introduced shortly.

The final two artworks discussed in this section depict manga and anime cyborgs. *Battle Angel Alita* (Image 57), shown on the next page, is created by Japanese manga artist Yukito Kishiro. This illustration is another echoing example of how eroticism and sexuality are intertwined with techno-embodiment. *Alita* is shown with the synthetic skin of her upper torso and arms removed in order for us to see her inner mechanical composition. *Alita* is a well-known Japanese comic book icon whose body was rebuilt after she was found under a pile of machine-junk in a scrap yard. Her brain was her only residual human body part (Rothschild, 2000). Kishiro presents *Alita* as a defeated and sexualised winged cyborg angel. She is on her knees with her back arched erotically, the curve of her hips prominent. The metal lead attached to her spine resembles a dog lead or harness, adding to her subjugated state.

Major Motoko Kusanagi (Image 58, p. 274) shares *Alita*'s sexualised aesthetics. Both these female cyborg's internal mechanised bodies are clearly visible, adding to their transgressive erotic appeal. *Kusanagi* is the lead female character from the 1991 to 2004 comic book and film series *Ghost in the Shell*. Her entire body has also been transformed into machinery, aside from the small kernel of human brain which remains within her (Ueno, 2001). These cyborgs are figural representations of the premise that human beings can or will become machines themselves. This theme has

captivated creators' and viewers' imaginations for decades and continues to do so. James Cameron, the director of the blockbuster film *Titanic* (1997) has been working on a *Battle Angel (Alita)* film which is due for release in 2011 (Knowles, 2006).

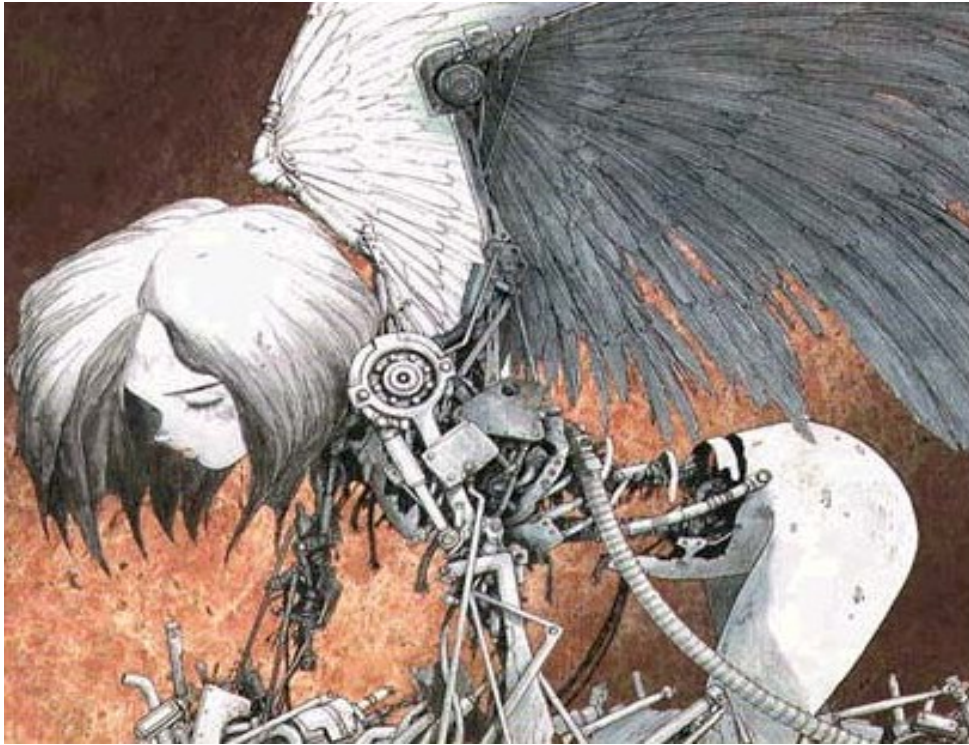


Image 57. *Battle Angel Alita* (1991).
Art Illustration.
Artist: Yukito Kishiro.

The illustration of *Major Kusanagi* (Image 58) is created by Japanese comic book artist Masamune Shirow. He has depicted *Kusanagi* with vivid blue hair, and shows her body being refuelled via portals into the computer's mainframe; the connecting wires and devices linking into her head, back, front torso, and legs. *Kusanagi's* cyborgian representation is significant for two reasons. Firstly, her interface imagery shows provocatively that she remains dependent on external technology for both repair and maintenance, which is a common form of cyborg symbolism. *Kusanagi* reveals that exchanging all the body's organs with machinery will not necessarily lead to the homeostasis cyborg Clynes and Kline (1995) envisioned. Secondly, her

sexual imagery keeps her within the realms of gender stereotypes. Hence, *Kusanagi* remains trapped by her gender and the machine, despite her physical strengths.



Image 58. *Major Motoko Kusanagi* (1991).
Art Illustration.
Artist: Masamune Shirow.

The ‘ghost’ reference in the title of the comic book series and films in which *Kusanagi* appears pertains to the spirit, unconsciousness, and memory of the human being. The *Puppet Master*, who is the rouge character in the series, deems this to be indefinable, but that which defines humankind (Ueno, 2001). *Kusanagi* retains this ghost despite her body becoming a machine. *Robocop*, the lead character from the 1987 cult film by the same name, whilst initially losing his ghost or spirit (memory) in the narrative of the movie, eventually begins to remember traces of his human past. This is suggestive of the strength of will he has to overcome complete technological governance (Perkowitz, 2004). *Robocop* has significance in Western popular culture as he was a man transformed into a machine in order to become fully operational and controllable in a cold and calculating manner; a programmable corporate product and tool (Fuchs, 1995). *Robocop* is thus a metaphor for human salvation, despite all odds.

The narrative in the second *Ghost in the Shell* film, *Ghost in the Shell 2: Innocence* (2004), shows *Major Kusanagi* transformed into a post-corporeal virtual being, merging with the *Puppet Master* to reside within the computer networks. She chooses to become a disembodied cyborg, in order to communicate directly with both humans and machines. Her ‘ghost’ or spirit survives post-corporeality, which I note theorists such as Moravec (1988) and Kurzweil (2005) believe is plausible. *Kusanagi* places unencumbered, instantaneous communication between human and technology above corporeality, as a way to both fight and harness advanced artificial intelligence technologies. However, human beings today are not required to reject their corporeality in order to gain access to sophisticated telecommunications technologies, as the internet is increasingly deemed an external cyborg nervous system connecting geographically dispersed individuals. Human beings using this system become the connective nodes linking the computer networks, and the networks use these nodes in order to maintain functioning (Warwick, 2003; Zylinska & Hall, 2002). Developing cell phone technologies, cable, the World Wide Web, satellite links, teleconferencing, telepresence, telesurgery and new hologram technologies all contribute to advancing communication links (Ascott, 2003; Best & Kellner, 2001). Telematics is at the heart of this growth, and is a central topic of discussion today as geographical borders diminish and the speed of communication increases (Packer & Jordan, 2001).

Telematics

Telematics encompasses interactions between human beings and artificial systems (Ascott, 2003), and focuses on the increasing complexity and connectivity which exists between remote individuals today. Telematic cyborgs can be human beings jacked into global systems, becoming integral parts of these networks (Warwick, 2003; Zylinska & Hall, 2002), or they can be human beings with biotelematic devices inserted into their bodies. Kac (2005) and Warwick (2002) have both experimented with these implants, not only to explore the body’s physical reactions, but also to experience and examine how it feels to communicate directly with computer systems.

Telematic cyborg art focuses on actual time-based art practices, as shown by Stenslie's, Antúnez Roca's and Kac's performance artworks included in this section. Telematic art is primarily presented as an active, interactive, literal and tangible art practice, in order for the principles and themes of telematics to be fully explored. Telematic performance art creates avenues for the viewer to become the participant, immersant or user within the artwork; able to co-create or co-author its design, coordination and direction. Telematic art favours interaction, immersion, negotiation, participation, collaboration, transformation, and emergence (Ascott, 2000, 2003). As such, it is a fitting example of critical postmodern art as it dissolves the distinctions between artist and viewer, and the modernist notion that art is created by 'divine' individuals, and can only be understood and/or enjoyed by those who possess the necessary cultural capital (Packer & Jordan, 2001). Yet, Ascott notes that using "telecommunications media in the context of art not only imparts a new idea to that technology but raises significant challenges to artistic traditions" (2003, p. 83). Representing communication within two-dimensional art poses several challenges due to its static composition. As such, the use and deployment of elaborate themes within these artworks is a way to compensate for the motionlessness of its form.

Connectivity

New frontiers of communication systems and virtual worlds constitute an ontological shift for humanity (Heim, 1993); a cultural turn into the virtual realm, where divisions between the material and the virtual dissolve. As Scott Bukatman contends, "The body must become a cyborg to retain its presence in the world, resituated in technological space and refigured in technological terms" (1993, p. 247). Dissolving borders and the increased velocity, instantaneity and type of telecommunications technologies developing today, significantly impacts on society in ways we are only beginning to comprehend (Ascott, 2003; Featherstone & Burrows, 1995). Mann claims that "Technology changes individual lives and whole societies, and then changes us again, before we've even begun to grasp the implications of such systemic

alterations to our daily fabric” (2001, p. 2). Ascott’s (2003) term telematic culture refers to the new set of principles, frameworks and ideas that are reshaping society today. Ascott (2003) and Lévy (1998) suggest that the most significant change telematics generates is that individuals – as nodes – linked into networks no longer think or feel in isolation. Rather, ideas and authorship are shared. These theorists emphasise that this does not deny an individual creativity or autonomy, instead intensifying individual capacity as information and ideas are more easily pooled. Ascott contends that “With the convergence of computers and telecommunications, the ‘thinking system’ becomes planetary” (2003, p. 216).

I sought to discover whether the interview participants felt human beings were becoming increasingly globally connected today. One key theme emerged from the discussions; the way we are more globally and digitally connected. Examples include:

Well, we’ve got the internet and networks and everything where, bar say Third World countries, we can talk to someone across the road in seconds, and across the world in seconds. I think it is increasingly happening and perhaps in the future it will become more. (Maree)

Even on an individual basis. It’s amusing when my friends from the UK tell me things, and I speak to my other friends in the UK and they haven’t heard yet. (Marie)

I mean you see people now walking around with things in their ear and that’s their phone.../...and why you see people walking down the street talking to themselves.

But they’re actually talking to five Chinese businessmen in Beijing. (Art)

A few participants such as Art added that this increased global connection will not necessarily change us or make us more tolerant towards other cultures, or even more interested in learning about other cultures. Art stated, “I don’t think it will change us, because there’s too much cultural, almost like a genetic history in people.../...just because you know heaps about something doesn’t mean that your attitude changes”.

Nonetheless, theorists such as Ascott (2003), Lévy (2001), Haraway (1991a), and Stelarc (1998a) believe that this increased global shared thinking encompasses a new type of advantageous cybernetic system and cyborg identity, what Hayles (2006) refers to as the *cognisphere*. She argues that the emerging cognisphere enables open

and dynamic cognitive flows to exist between humans and machines as it is a system not founded on binaries, but on multiples. Yet a key concern relating to this theorised sphere is that our languages are not conducive to thinking in a collective manner because we still retain the modernist concept of ‘I’, which is relational and oppositional (Stelarc as cited in Farnell, 2000). Ascott (2003) and Hayles (1999, 2006) argue that deconstructing the term ‘I’ in relation to remote information transfer within virtual worlds will enable society to transform from one based on antagonism, opposition and hierarchy, to one of unity, collaboration and cohesion. This “ontological shift” (Heim, 1993, p. xiii) is deemed necessary in order to prevent the destructiveness and oppression regarding societal and individual difference – and domination and control over nature (Haraway, 1991a). As a consequence of this ontological shift, human beings may have to give up elements of their individualised ideologies, becoming instead a collective type of cybernetic organism in order to aid survival. Hayles affirms that “Each person who thinks this way begins to envision herself or himself as a posthuman collectivity, an ‘I’ transformed into the ‘we’ of autonomous agents operating together to make a self” (1999, p. 6).

Fembot (Image 59), included on the following page, is created by Justin Fox, and is a utopian representation of a globally connected cyborg identity. Fox presents *Fembot* as a cyborgian entity transformed into a ‘node within a network’. *Fembot*’s head and face are enveloped with telematic devices, including what appears to be a headset with a microphone, possibly a camera, and a type of screen. These technologies are also positioned directly alongside the cyborg’s face, enabling rapid utilisation of these devices when required. *Fembot*’s expression is one of contentment as she embodies the “telematic embrace” (Ascott, 2003, p. 1), and our telematic dreams of instantaneous and continuous connectivity. The soft lime greens, pale yellows and rich golds add to the calmness of *Fembot*’s representation. She is thus a depiction of an optimistic and progressive telematic cyborg. It is to be noted that the word ‘fembot’ is a portmanteau of female-robot; however, Fox’s cyborg could represent either a distinctive rendition of an anthropomorphic robot, or a human being who has been telematically and technologically transformed.



Image 59. *Fembot* (2002).
Digital Art.
Artist: Justin Fox.

Steve Mann, the world's first literal/actual telematic cyborg, is a living incarnation of *Fembot's* aesthetics. Mann has worn his WearComp for over twenty years, and regards his equipment as a second skin and an extension of his nervous system. Mann (2001) views the world through a camera lens, where he can record, freeze, block and enlarge incoming sights. However, while *Fembot* presents aesthetics of calmness and tranquillity, Mann states that the literal repercussions of actually wearing visible head-based telematic devices have been far from tranquil. Mann (2001) has

encountered many hostile reactions from members of the public who have taken offence to his WearComp. He has been physically and verbally assaulted, insulted, snubbed, and accused of promoting technological control over human beings. Mann is often deemed by the public he encounters to be an embodiment of Big Brother corporate control; “A kind of walking, talking technological slave” (2001, p. 79).

Mann has also experienced significant loneliness and visual confusion while wearing the WearComp, and often struggles to both negotiate and uphold the parameters of his and the computer’s being – determining where each boundary begins and ends. He therefore thinks of himself as a “reluctant cyborg” (Mann, 2001, p. 5); someone who wants to “harness technology’s potential, but not at the expense of freedom and singularity” (Mann, 2001, p. 7). Mann argues that technology in general creates an “undercurrent of unease”, although pinpointing the cause of this disquiet is difficult to express (2001, p. 52). I suggest that the *fear of the unknown* regarding the increasing technological future; the way technology seems to be created and controlled by mysterious specialists; the fact that it can potentially fundamentally alter human existence; and that it has the power to be dangerous and destructive, can all contribute to this shared unease and apprehension.

London-based multimedia artist Rokeby used a similar device to Mann’s WearComp – complete with global positioning system and brainwave monitor – in his 2003 interactive artwork *Memex: A Cyborg Pilgrimage in the Age of Amnesia*. Rokeby’s pilgrimage took the form of a 40-day journey around the streets of London, exploring issues of identity and spirituality in the digital age. Rokeby also records the electrical signals of his brain via the brainwave monitor, and then converts these collected signals into music, which he shares in cyberspace (Iniva, 2003). He presents an introduction of his journey on the popular video sharing internet site YouTube, under Rokeby CYBORG. Sonochromatic cyborg artist and composer Neil Harbisson also uses technology to literally alter the way he views the everyday world. Harbisson was born completely colour-blind and has worn an ‘eyeborg’ since 2004, which is a device that enables him to *hear* colours in order to create his works (Harbisson, n.d.).

Christos Magganas, a celebrated Greek multimedia artist, has created *Hermes*, shown here, in order to explore wireless telematic ideas. *Hermes* was created as a “God of communication” (email questionnaire, 2007, q. 1). He is a representational cyberspace creature, pointing to the promises of technology which are dynamically compared with the limitations of the material body (Magganas, email questionnaire, 2007). *Hermes* in Greek mythology was a messenger to the gods (Barnard, 2001), and he is here transformed into a posthuman cyborg messenger, receiving and sending the plethora of globally transmitted messages which exist today.



Image 60. *Hermes* (1997).
Digital Art Illustration.
Artist: Christos Magganas.

The spikes situated along *Hermes*' back appear to be interfaced with his spine, perhaps serving as a metaphor for how the global equidistant internet is often seen as

an external nervous system today, where multiple bodies and persons separated by geography can be electronically connected. Ascott identifies that “The individual user of networks is always potentially involved in a global net, and the world is always potentially in a state of interaction with the individual” (2003, p. 232). Magganas has also depicted *Hermes*’ lower torso dissolving into pure energy or communication waves, which is the quintessential cyborg’s state, while the divine cherubs are shown morphed into the ubiquitous iconic computer screen.

I asked the interview participants to offer their views on *Hermes*; 17 responded, and two key themes emerged from the discussions. Most of the participants felt that *Hermes* explores and evokes television or radio waves, wireless communication links and/or the receiving and sending of messages. As Emmanuel commented, “...you’ve got these items of very structured communication of the background, and these ideas here of wireless communications flowing around, almost being sent out of the essence of him”. David simply stated, “...with these sorts of radio waves, must be talking about communication”. These responses address Magganas’ artistic focus of exploring increasing communication links and wireless connectivity. Magganas also explores ideas of “management by remote control” in *Hermes*, and how technology alters the way we carry out our daily tasks (email questionnaire, 2007, q. 1).

Some interviewees also felt that *Hermes* centred on the merger of old and new or mythology interfaced with advanced technology. Marie mentioned that *Hermes* represents “...Greek mythology...to me it seems to transfer from the mythology through to maybe computing, maybe the future”. Nick commented:

Interesting. It’s entitled *Hermes*, which is the messenger God, Greek or Roman.../... you’ve got these little flappy things, which is very like the little email icon type with the little wings...So I would say it is kind of like this is *Hermes* as he would be now, an electronic messenger.

Magganas is indeed interested in the links between ancient and contemporary worlds. He explores the role of the body and embodiment in the digital era, cyborgs, Greek mythology, and the “‘shrinking’ of the world through communications technology” (Magganas, n.d., para. 3). Randall Packer and Ken Jordan contend that “From the

telegraph to the telephone to television to satellite communications, modern telecommunications has eradicated geographical borders, and made speed a central factor in modern life” (2001, p. xxvi). Nico provided a compelling response to *Hermes*, suggesting that as a metaphorical figure, he alludes to the way technology can negatively impact on relationships and communication practices. He stated, “We are using these sort of little screens to communicate now instead of walking to talk to people.../...people [are] now using internet and email to visit people”. Nico’s comment centres on the way many of us are increasingly using technology as a substitute for face-to-face interaction and contact. Lesley shared her concerns regarding this issue in Chapter Five in relation to the text-based phone communication practices of youth in Western society today (see p. 143).

Hermes is shown as a lone warrior tackling the multitude of communication channels in existence today. Yet as discussed, these virtual realms are increasingly becoming collective networked global thinking systems, with no one person controlling the links. Individuality as a concept is not perceived to be under threat because of these links, as this connectivity is deemed to encourage individual thinking and creativity. This is due to people feeling freer and more supported to think creatively and to share their ideas with others. Ascott (2003) has developed two terms which relate to this new collective ontology: *Telenoia*, which celebrates the shared consciousness existing in the cognisphere as an enriched state, replacing the undercurrent of fearfulness, alienation and secretiveness which is a part of recent (and current) hierarchical industrial society, and *Telemadic*, which describes the way our minds traverse the global networks of technology and consciousness. Virtuality is an integral aspect of this new connectivity; the way virtual environments (VEs) or virtual reality (VR) have the scope to enhance human experiences and assist people’s lives via simulation technologies (Grau, 2003; Heim, 1993). Artists also celebrate VR as being able to extend the energies of painting and film into a three-dimensional space (Grau, 2003). Graham contends that virtual reality, and many other advanced technologies, signal “a ‘post-human’ future in which the boundaries between humanity, technology and nature have become ever more malleable” (2001, p. 238).

Virtuality

Virtual reality is a telematic three-dimensional simulated zone, referred to as the electronic horizon of the new millennium (Kroker & Weinstein, 1994). VR is the name given to the systems able to transport users or immersants into artificial worlds. VR is a screen-based, image-based human-technology interface which is redefining the meaning of being human, as it creates and signals a new form of immersive human experience (Burnett, 2004; Krueger, 1993). VR apparatus generally consists of a head-mounted display (HMD) and hand-held controls connected to a base computer system. This system allows an immersant to experience the environments developed by the designer or artist, and to co-create aspects of these artificial worlds themselves. Most VR artists focus on what a user sees when they are immersed within virtual or artificial environments. However, Andrew Kincaid, an American character artist, draws on the dangers of actually being a telematic avatar in his artwork *Cyborg* (Image 61), shown on the following page. Kincaid does not focus on what is experienced while immersed in the virtual realm; rather the terror is the interface itself. Where Fox's *Fembot* embodies a utopian telematic state and Magganas' *Hermes* evokes a utopian aesthetic, Kincaid's *Cyborg* is represented as a dystopian virtual reality steampunk, or 'retro-futuristic' (Branwyn, 2007) nightmare.

Kincaid's *Cyborg* has become a prisoner of communication and VR systems, and is thus a projection, manifestation and reflection of the anxieties and fears many people have of VR taking over actual/real human experiences. Kincaid represents telematic technology as flooding a person's life and body in a similar manner to the way Ben Cooper (Image 22, p. 150) and Rua Pick (Image 23, p. 152) explore television as having this effect. *Cyborg* vividly shows a telematic penetration as his head has many interface points connecting directly into his cranial region. Moreover, extensive audio devices with tubes and pipes cover his ears, and large metal goggles cover his eyes. Oliver Grau predicts that in the future "Our physical skin, our protective sheath from the world, will be breached, and at the same time as the telematic body is extended, we shall see it penetrated by an amalgam of technologies..." (2003, p. 291).

Cyborg is a human being swamped with telematic devices, where inputs and outputs exist over and above his corporeal being. He has been transformed into a living, breathing node in a network. *Cyborg* has become a dystopian telematic entity solely living and existing in the realm of virtual worlds and communication links, where the boundary between the human and technology – the interface – “relocates the human, in fact *redefines* the human as part of a cybernetic system of information circulation and management” (Bukatman, 2000, p. 152; emphasis in original).



Image 61. *Cyborg* (2007).
Nimba Creations Concept.
Character/Model Art.
Artist: Andrew Kincaid.

There are two key ways VR immersants are represented in art; either as disembodied cyborgs (Muri, 2003), or embodied cyborgs. The former are depicted as motionless

and disengaged from both the real world and the virtual experience. Terms used to refer to this disconnected incorporeal state include the body-split or “mind-space” (Robins, 1996, p. 49). Conversely, embodied cyborgs are depicted as having both their body and mind fully engaged with the virtual experience; what Mark Hansen calls the “body-brain” state (2004, p. 166). *Cyborg* is a representation of the disembodied cyborg, as he experiences his interface via his mind and not his body. His mind is projected into the machine as a ‘terminal identity’ (Bukatman, 2000), existing only in the virtual realm. *Cyborg* is stationary and sedate; his corporeality has been left behind in the real world, while his mind is exported into fantasy worlds. His body is shown as merely a vessel to house the telematic devices, and his lack of life-blood colouring enhances this empty ‘mind-less’ material state.

Michael Heim (1993, p. 142) believes that “The very notion of human presence is on the line” regarding advancing VR technologies, as these devices change humanity and communication fundamentally, in addition to altering the concept of reality and cognition. As Ron Burnett affirms, “Technology is as much about cognitive change as it is about invention and the creation of physical devices” (2004, p. 102). Yet, VR is popular as it is thought to be able to satisfy and gratify human psychological desires, as users can have full control over their viewing experience (de Kerckhove, 1997). VR offers physical safety with fantasy thrills (Robins, 1996), while immersants transgress male/female, human/machine, and time/space boundaries.

Stelarc, Stahl Stenslie, Marcel.lí Antúnez Roca, and Eduardo Kac are four of the most well-known artists focusing on telematics in their performance art. These artists literally explore the ontological shift brought about by increasing telematic immersion. They tangibly demonstrate issues of remote communication by exploring bodily experience within the telematic and virtual realm. I introduce Stenslie’s, Antúnez Roca’s, and Kac’s performance works in the final part of this Telematics section, and examine how their prefigurative art intimately focuses on issues of connectivity, control and involuntary mobility. These artists also manifestly identify Ascott’s (2003) premise that telematic art is primarily interactive.

Interactivity

Paintings and sculptures are not always adequate for exploring and illustrating media-based art, as communication cannot be visually represented due to the largely static nature of these art mediums (van Toorn, 2006). Conversely, performance art is able to use the key elements of telematics – connectivity, immersion, interaction, emergence and transformation – and express them in unique ways in real-time (Ascott, 2003). Viewer input is a key feature of many telematic performance artworks. Artists aim to provide ample avenues for viewers to become users of the devices, and experience for themselves the telematic exchange. For instance, Stahl Stenslie's and Kirk Woolford's interactive performance *CyberSM* (Image 62), presented on the next page, allows observers the opportunity to create their own remote sexual exchange. Image 62 is a digitally enhanced photograph of a female participant wearing the sensory suit required to experience the remote anonymous sexual encounter. The background of the image is presented in electrifying reds and yellows, alluding to the energy charge needed in order to experience 'electric' remote sexual pleasure.

Stenslie is a Norwegian multimedia artist and Woolford is an American media artist and computer programmer. Together they created *CyberSM*, which utilises computer technology and ISDN (Integrated Services Digital Network) lines to transmit remote sexual sensations or 'touch' from one user to another. *CyberSM* blends audio, visual and tactile communication together, enabling remote 'tele-tactile' exchange (Stenslie, 1994). The stimulator-sensoric suit worn by the participants create the multisensory full-bodied experience of "the technologically enhanced telematic body" (Stenslie, 1994, para. 1). Rubber and latex are used in the construction of the suits, and stimulators or effectors are mounted on the inside and outside of the garments and placed on the erogenous zones of the body, such as the breasts and genitals. Stimulation is provided in the form of electric shocks, mechanical vibrators, and heat and pressure. *CyberSM* was designed to be an experiment into fetishism, where "the ambient sensation of pleasure and pain" exists within remote telematic sadomasochistic role play (Stenslie, n.d., para. 7).



Image 62. *CyberSM* (1993-1994).
Computer Interactive Art.
Model unknown.
Photograph by Stahl Stenslie.
Artist: Stahl Stenslie (co-developed
with Kirk Woolford).

CyberSM premiered in 1993, connecting a participant in Paris, France, with another participant in Cologne, Germany (Stenslie & Woolford, n.d.). Each participant could select a three-dimensional fetish fantasy body from a database, which was displayed on screen during the tele-erotic encounter. The selected virtual body could be genderless or dual-gendered, and could be manipulated, enlarged and rotated, depending on the desire of the user. When the user selected an area of the virtual screen body they wished to stimulate, the ISDN lines transmitted the signal to the remote sexual partner, and translated the screen touch into a tele-tactile touch via the stimulators on the sensoric suit (Woolford, n.d.). Participants therefore experienced first-hand what Tai van Toorn refers to as a “cyborgian sexual liaison” (2006, p. 4).

Over 100 participants had experienced *CyberSM* within several months of operation, and overall many felt that it was interesting, but on the whole sexually unfulfilling, although some users did feel stimulus to the point of orgasm (Stenslie, n.d.). Stuart Meloy, an American surgeon delves even further into the concept of technologically-enhanced sexual sensation with invasive body-technology fusion (Cohen, 2003). He created the Orgasmatron, which is a device consisting of electrodes inserted into the lower spine of a female recipient, enabling her enhanced sexual sensations and the ability to achieve an orgasm. Meloy inadvertently discovered this unexpected side effect while treating a woman with chronic back pain (Cohen, 2003).

CyberSM is an exploration into the acceptance of virtual sex and the reactions people may have acting out their fantasies with real and anonymous individuals. Issues of remote relationships, virtual sexual fulfilment, and sexual role play are key themes explored. I asked the interview participants to comment on *CyberSM* after they were provided with a brief background on the interactive artwork. Seventeen responded to questions, their candid and revealing comments addressing three main themes. A number of participants felt that *CyberSM* centred on new ideas pertaining to the concept of virtual or technology-based sex, in particular, the unusualness and uniqueness of Stenslie's concept. Phil stated, "...yes intriguing, you're exploring elements of how much and what kind of data you can transmit". Demelza responded, "It's really interesting...it makes you wonder about the potential of the whole situation", while Blair mentioned, "It seems strange that an artist would come up with this when you'd think a scientist would..." Blair is suggesting that a scientist may be more likely to create and develop such an idea. Stephen Wilson addresses this issue directly in his extensive art volume *Information Arts* (2002). He includes a quiz at the beginning of his book which asks the reader to guess which researcher created the idea or device described; whether it was an artist, a technologist or a scientist. Wilson playfully and insightfully points to how artists are very much involved with both creating and examining advanced technologies. He tangibly shows that artists not only explore what technologists and scientists design or invent, but that they also generate ideas and devices themselves.

Several interview participants also felt negativity towards *CyberSM* and mentioned that they would not partake in the experience. As Matt stated, "...I wouldn't say it is for me. It's sort of like an elaborate form of masturbation". Matt's response centred on *CyberSM's* lack of shared physical sexual contact, which is discussed in more depth shortly. A few participants also felt that any type of sexual activity between consenting adults is acceptable. Darri replied, "...whatever turns people on, it's their choice". Some interviewees focused on the descriptive elements of Stenslie's photograph; the way it represented bondage or fetish aesthetics. Kayla commented, "She looks quite dominating 'cause she's all leathered-up and she looks quite harsh, she doesn't look happy or sort of relaxed..." Bukatman affirms that the snake-like wires, cables and cords attached to the human body when linked into a machine often creates a characteristic "high-tech bondage" aesthetic (2000, p. 149). Lastly, Javin and Steven were the only participants who had enthusiastic responses to *CyberSM*. Javin commented, "Kind of cool, yeah, its, wow, I never knew it existed...", while Steven stated, "Me, I think that's cool, I'll have to try it". Javin and Steven are reacting to *CyberSM's* explorative and adventurous elements. *CyberSM* was initially created to tangibly draw attention to the way cyber-erotics is fast becoming a new form of sexual play, in addition to surmounting the limits of sexual separation or physical isolation. William Bogard (1996) suggests that the obsession with virtual sex is due to the way it is often defined as clean, safe and controllable, whereas actual sex can seem 'dirty' and 'dangerous', and never completely controllable. The fear of contracting HIV has also pushed sexuality into the realm of simulation.

Fifteen interview participants also responded to a question asking whether they believed remote telematic sex could be a substitute for actual sex. Their comments centred on the way Stenslie's experimental sex cannot be a replacement for physical sex, and that human touch is unique and important. As Misty simply stated, "No, there's nothing like a human touch". Phil discussed how this type of sex could never replicate what can be experienced within the bonds of marriage. He commented:

...sex is an integral component of something which is substantially more than just sex; which is, the marriage unit, and that sex is only ever intended, designed to, I

guess, achieve its purpose if you will, the purpose of pleasure, like a union in [an] emotional and spiritual sense. So in that sense no, I don't see that it ever could, but it's interesting because you're dehumanising sex again.

Stenslie agrees that this form of cyber sexual activity cannot replace spiritual and/or sexual bonding or 'love', in or outside of the marital union. He readily admits that "Cyberotics is an alternative form for intimate and sensual communication and relations, not a replacement for love and care" (Stenslie, 1994, para. 7).

Stenslie also explores themes of telematic sexual control in *CyberSM*, as the participants have limited control over where their bodies are being touched and by whom. These 'tele-puppets' must submit to their remote partner's touch and vice versa. For this reason, Stenslie refers to *CyberSM* as a "fatal communication system" (n.d. para. 11). Antúnez Roca, Kac and Stelarc also explore the relinquishment of corporeal control in their performance-based artworks, allowing strangers to control their bodies during performances. Antúnez Roca, a celebrated Spanish performance artist, created his telematic artwork *Epizoo* (Image 63), included on the following page, a year after *CyberSM* premiered in France and Germany. *Epizoo* first performed in Mexico in 1994 and is regarded as a "mix of performance and installation" (Dutch Electronic Art Festival, 1995, para. 1). *Epizoo* is also described as a "living sculpture" (Dutch Electronic Art Festival, 1995, para. 2), and has, to date, performed in more than 50 cities globally (Antúnez Roca, 2005).

Image 63 shows Antúnez Roca performing on stage covered with pneumatic (air-pressured) cables which are attached to his head, torso and back. He stands rigid, almost naked, with his hands pressed tightly against the sides of his body. The background shows a distorted image of an eye and an animal such as a dog or a wolf. During *Epizoo*, Antúnez Roca allows the audience to control movements of his body such as his nose, buttocks, pectorals, mouth and ears, inducing either pain or pleasure via a mechatronic exoskeleton system (Antúnez Roca, 2005). Audience members control the system using a mouse and a computer connected to the exoskeleton. As such, they determine whether he feels gratification via the interface, or dehumanised.

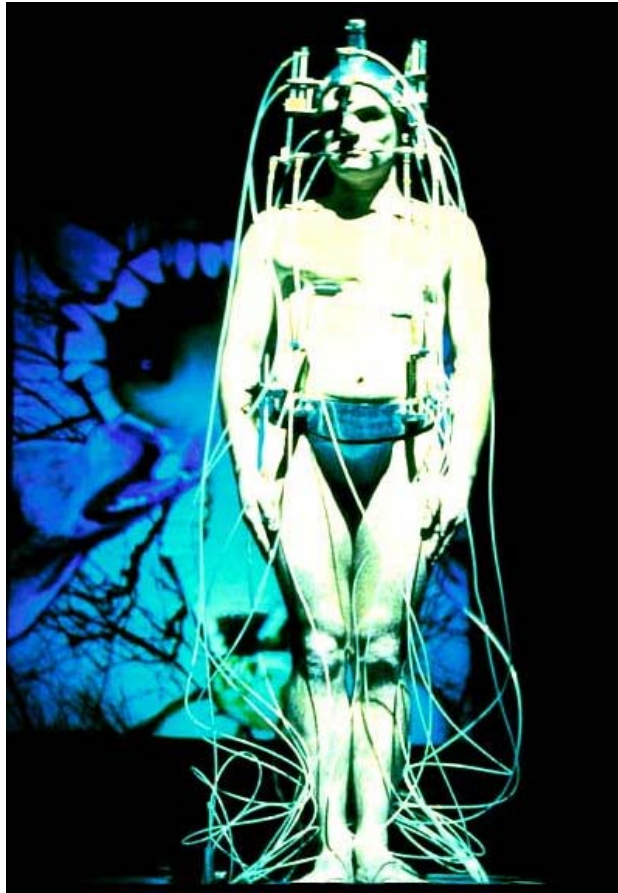


Image 63. *Epizoo* (1994).
Interactive Performance Art.
Artist: Marcel.lí Antúnez Roca.

Antúnez Roca creates a “delirious and frightening” image of a cyborg in *Epizoo*, whose body has limited autonomous mobility, and yet is “besieged” by commands which he cannot control (Kac, 2005, p. 92). Kac affirms that “the spectacle of cold and detached manipulation of hot and sweaty human flesh through a clean and dry digital interface” is what makes *Epizoo* so startling (2005, p. 94). Antúnez Roca offers his body to the public in the manner of an “interactive sacrifice ritual” (Jordà, 1998, para. 1). His art presents a literal and savage mechanisation of the helplessness of the dehumanised body, in order to show how human beings can electronically control and torture others from a distance (Dixon, 2004). Antúnez Roca aims to draw attention to the use of technology and computers as instruments of influence and

control. He also explores the depersonalisation of human relationships via technology, and the blurring of boundaries between sex and power (Antúnez Roca as cited in Dutch Electronic Art Festival, 1995, para. 3). Stelarc (1996) created a similarly themed work in 1996 with *Ping Body*, which enabled internet users logged on to his performance to control his muscle movements via ping hits. The amount of ping hits his body received determined how and where his body was manipulated.

Eduardo Kac (2005), the renowned Brazilian multimedia artist, has also created a performance artwork which explores the way technology affects, infiltrates, controls and envelopes the human body. The *Telepresence Garment* (Image 64), included on the next page, shows a teleborg sitting in profile, swathed in blue-black elasticised fabric. The transceiver hood of the garment blinds the host or teleborg, and the limbless body-sheath restricts the host's movements (Kac, 2005). The *Telepresence Garment* is an interactive artwork enabling a remote individual the chance to experience the surrounding environment of the teleborg. This is achieved by a camera which is placed over the left eye of the host who wears the *Telepresence Garment* (Kac, 2005). The remote human can also issue commands to the wearer via an audio receiver, and as part of the telematic experience and exchange, the wearer of the garment must relinquish control to the remote individual.

Telepresence is a term which describes the mediation with either virtual or remote environments; where a person can project themselves into a created fantasy world or a remote actual setting. Kac (2005) states that wearing the *Telepresence Garment* gave him a sense of spatial unawareness, a fear of self-harm, and of being harmed without forewarning. He confides that he felt fragile and invisible having a stranger commanding movements of his body. The *Telepresence Garment* transformed Kac, as a human subject, into a teleborg object, placed at the disposal of the remote human's whims. Ultimately, this garment draws attention to the antagonism within the local visible perceptual field, the surrounding environment, and what is not physically present but can still have tangible impacts (Kac, 2005).

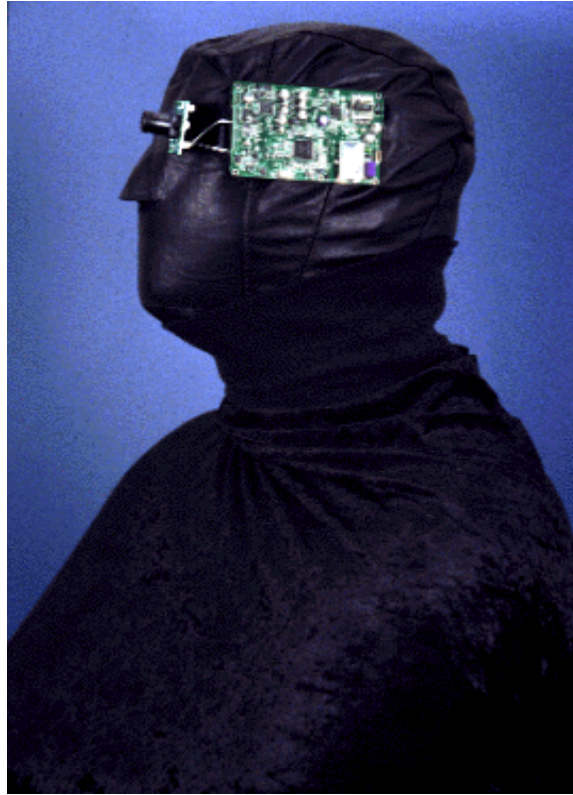


Image 64. *Telepresence Garment* (1995-1996).
Semi-elastic fabric and leather hood with sewn
circuit and audi receiver.
Performance/Interactive Art.
Photograph by Anna Yu.
Artist: Eduardo Kac.

Kac (2005) also explores the realm of genetics with his art practices, particularly transgenics, which describes the merger of DNA from two differing species. Artists working in the domain of sculpture, painting and digital and graphic art, eagerly explore transgenics as advanced technologies inspire the creation of new and novel techno-entities. However, Kac (2005) has also created an *actual* transgenic entity; *GFP Bunny* (2000). This artwork consists of a green-glowing rabbit named Alba, whose luminous quality is achieved by mixing rabbit and jellyfish DNA. Jellyfish contain GFP (Green Fluorescent Protein), which is a type of protein that glows when activated by ultraviolet light. As such, genetics is the technology which can have the most impact on organisms as their constitution is altered at a base (DNA) level.

Genetics

D. S. Halacy predicted the impact biotechnology would have on humanity in 1965, when he wrote, “DNA is a magical three-letter combination that may one day make all other work toward superman seem child’s play...” (1965, p. 44). Halacy’s prophetic words are increasingly being realised today, principally regarding The Human Genome Project, which is an extensive and costly venture that has deciphered the human genetic code (Genome, 2008). Advanced genetic engineering technologies are also continually being refined. Gray (2001, p. 118) states that “More than other cyborg technosciences, genetics foregrounds the issue of human versus posthuman”.

Humanity is now entering a second synthetic Genesis (Rifkin, 1999), where human “biology is no longer limited by the genetic codes of evolution” (Mann, 2001, p. 2). Biotechnologies are driven by private and public funding, in the hope of resolving physical and psychological human frailties, failings and even ordinariness. The quest for perfect humans, often referred to as the philosophy of eugenics, is argued to be the catalytic force behind most genetic research, transforming the human body into raw material for experimentation (Fukuyama, 2002; Gray, 2001; Kimbrell, 1997). Clark surmises that “Biotechnology is the art of manipulating living forms as though they were machines” (1994, p. 13). This is a contentious issue as genes signify who we are; they denote “the essence of the self” (Anker & Nelkin, 2004, p. 1).

One of the key social issues surrounding biotechnology’s products and discoveries is providing the public with sufficient related information or ‘facts’ concerning these inventions and services (Reynolds, 2004). As John Smith ardently contends:

Scientists must learn to communicate with the public, be willing to do so, and consider it a duty to do so! The most significant obstacles to the full creative resolution of new biotechnology are not expected to be scientific, economic or indeed environmental but, rather cultural! (2004, p. 253)

New Zealand organisations are taking steps to ensure that the public has access to this type of information. As an example, Futurewatch was established in 2005 by The

Ministry of Research, Science and Technology (MoRST) in order to provide early warnings on relevant issues. The aim of Futurewatch is “to help paint the big picture about how biotechnology may impact on our society in the future” (MoRST et al., 2005, p. 2). Futurewatch documents global trends relating to biotechnology, provides support for businesses, examines laws and changing legislation, and fosters public discussions on these issues, whilst also encouraging closer ties between Australian and New Zealand researchers and businesses. A current focus of the Futurewatch team centres on the “cultural, ethical and spiritual dimensions” of using animal organs to help treat and cure human diseases (MoRST et al., 2005, p. 1).

I sought to discover whether the interview participants felt sufficient information on biotechnology was readily available today. Sixteen participants responded to a question asking if they felt they were provided with adequate information relating to research which alters natural reproduction. Several of the interviewees responded that they did not feel they were provided with adequate information on this issue. Marie commented, “...you barely hear about things until they’re almost developed, like the human genome, we all knew everyone was working on it, but then all of a sudden it was just this real thing, and you talk about it afterwards”. Matt stated:

No, I don’t think so. I mean, what’s all this stuff with stem cells? Everyone can say, everyone is familiar with the term of stem cell, but what is a stem cell, and how are they using it and why are they using it.../...you’re kind of trusting these people in the know that they’re doing what they feel is good for humanity.

Matt’s discussion on stem cells is particularly relevant as scientists can now also grow human blood from stem cells (Burke, 2007). The participants’ responses were overall similar to the responses obtained in the surveys discussed in Chapter Two, in particular, Melissa Harsant’s and Emanuel Kalafatelis’ 2001 survey (see p. 69), which found that 43 percent of their respondents felt uninformed about Genetic Modification (GM). Many of the respondents (80 percent) also stated that they wanted more information on this topic (Network Communications, 2002).

Some of my interviewees felt that information is available on biotechnology, but interest in the topic, and access to and knowledge of the topic are also necessary. As

Malcolm replied, “You’ve got to have a huge interest in it. And I think especially in this part of the world there’s not a great interest in it”. Kayla’s discussion centred on the way this type of information seems to be hidden from the public. She stated:

I think it’s kind of, it seems to be quite shunned away, like no one really wants you to know about it; they kind of want to turn a blind eye. But I think if people tried very hard to access it they might be able to.

These participants felt that even if information was readily available, curiosity about biotechnology and the ability to access data was important. The issue of access is a crucial concern, particularly relating to indigenous cultures. For example, in New Zealand, Māori have substantially less access to computers and the internet than Caucasian New Zealanders (Statistics New Zealand, 2004), and as mentioned in the previous chapter, this is a concern which is prevalent to other countries. Gómez-Peña (2000) mentions that – regarding Mexican peoples – access to knowledge using technology, far outweighs a lack of interest relating to technology in general.

Findings from a similar question regarding information on biotechnologies, which I included in the hand-distributed questionnaire, showed support for the responses sourced via the interviews. I asked the respondents whether they felt they were given adequate information on biotechnologies linked to the body, such as artificial organs, cloning or genetic engineering (Question 13, Appendix H, p. 457). All sixty-five respondents answered this question, with 35 selecting the option *No*; 21 selecting *Yes*; and nine selecting *Not sure*. Therefore, just over half the respondents did not feel they were given adequate information on these issues. This is a social concern as any technology which has the potential to alter the constitution of the human body should be known about by all members of society, in order for “informed decisions” to be made (if given the opportunity), based on informed knowledge (Smith, 2004, p. 253).

Kac (2005) does not have significant concerns over genetic engineering, as long as it is deployed with ethical care and investigative caution. He disputes the notion that changes brought about by genetic modification will create ontological instability for humanity. He suggests that “To be human will mean that the human genome is not a

limitation, but our starting point” (Kac, 2005, p. 244). Kac feels that the applications of biotechnology marks a new beginning for humanity, although he admits that removing species barriers will radically alter the concept of humanity. The human, technology and animal spheres of existence are reconfigured in the biotech century, creating a whole host of imaginative creatures which artists explore with relish. I suggest – and discuss in the following closing sections – that transgenic, triadic and quadratic entities are increasingly artistically created in order to allude to the common ontology which exists within all organic and inorganic domains.

Transgenics

Entities which are both human and animal or differing species of animal are not new ideas; many cultures have explored species mixing in the past, including the Chimera, Griffin, Centaur, Pan, Faun, Satyr, the Hindu Garuda and the Egyptian Sphinx (Kimbrell, 1997). However, what is new is that the entities created in art or narratives are now more often drawn from the realms of science and technology, as opposed to myth, superstition, and human, animal or religious worship. Anker and Nelkin centre their analysis specifically on ‘art in the genetic age’. They rightly surmise that the research field of genetics provides “a source of multiple metaphors” and inspires a range of “provocative visual images” (Anker & Nelkin, 2004, p. 1). Finn Bowring (2003) suggests that artworks which represent ideas pertaining to genetic engineering visually articulate both the aims and concerns of revolutionary biotechnology.

The concept of using recombinant DNA techniques to create transgenic animals is one of the most controversial developments of technoscience, and one of the most widespread (Bowring, 2003; Williams & Bendelow, 1998). Recombinant DNA techniques can take three forms: synthetic genes can be transferred to an organism; an organism’s own genes can be mutated; or natural genetic material can be transferred from one species to another (Kac, 2005). The Geep, which is a goat-sheep hybrid with the horns and face of a goat and the body of a sheep, is one of the more common

actual transgenic animal-to-animal entities in existence today (Rifkin, 1999). Another more unusual example is the merger of spider genes with goat DNA; the subsequent transgenic goat is able to produce a type of silk-milk, which is a super strong biosteel material used in the production of bullet-proof vests (Best & Kellner, 2001).

Multibillion dollar companies such as Monsanto (an agricultural company), DuPont (a multi-national chemicals company), and Novartis (a pharmaceutical company), have already patented thousands of transgenic bacteria, viruses, plants, animals, and human tissue. DuPont's OncoMouse™ (1992) was the world's first living patented animal. It carries a transplanted human gene with a propensity to develop breast cancer. The mouse is thus used as a tool for medical research in this field (Haraway, 1997). Companies were able to legally pursue these developments from the time the American Supreme Court ruling, in 1980, declared that genetically altered life-forms were legitimate 'inventions', which can subsequently be purchased, owned and sold (Best & Kellner, 2001). Yet Kroker (2004, p. 29) warns that the human species may 'suicide' in the face of genetic modification. He uses terminology such as *transgenic determinism* to identify our globally dominant go forward cultural politics of species and technology merger, and to identify the way all genetic matter is available to be manipulated, coded, classified and harvested for monetary reward. Kroker's unease is linked to Heidegger's (1977) concerns regarding technology's negative influence overall. Best and Kellner (2001) claim that technoscience in general is littered with a Frankenstein syndrome ethos, where control over nature is centred on pursuing knowledge for its own sake, and not for the common good of humanity.

In 2003, Alannah Currie, the founder of the New Zealand-based anti-GE group MAdGE (Mothers Against Genetic Engineering in Food and the Environment), created a billboard to draw attention to the concerns of genetic research and the way large corporations are involved with developments in this area. The MAdGE billboard, included in the Future Visions section (see p. 398), depicts a genetically altered woman with four breasts and milking cups attached to each breast, being milked in the manner of a cow. The billboard was created as a backlash to New

Zealand's largest milk company, Fonterra, purchasing the patent rights to sections of human DNA from an Australian genetics company. The billboard was placed on busy Auckland city street intersections; however, it was removed within a few days of being erected due to the vocal public outcry over its imagery (Scoop, 2003).

Celebrated Australian artist and sculptor Patricia Piccinini and renowned American photographic artist Daniel Lee, are two well-known artists who explore and represent transgenics in their contemporary artworks, in order to draw attention to human-animal genetic experimentation today. Their artworks point to the ethical, moral and social dilemmas embedded within transgenic experimentation. These types of works evoke transgenic research and development, showing what may be possible with this new technology (Reichle, 2004-2005). Piccinini created *The Young Family*, shown below, between 2002 and 2003, and Lee created *Shepherd I* (Image 66, p. 302) a year later in 2004. *The Young Family* centres on a half human and half dog creature, who is feeding her young. The mother's hands, limbs, feet, lips and eyes are human-like, yet her ears, nose, and body formation are animal-like. Her offspring are hairless entities with human hands, feet and genitals. An infant female is lying on her back in the manner of a human baby, while three others are feeding in the manner of puppies.



Image 65. *The Young Family* (2002-2003).
Silicone, acrylic, human hair, leather, and wood.
80.0 x 150.0 x 110.0 cm. (irregular).
Photograph by Graham Baring.
Artist: Patricia Piccinini.

Piccinini's aesthetics focus on the question of care and the responsibility that comes with genetic tampering. For this reason she has created the mother and her offspring as "disturbingly sympathetic" (Walker, 2004, p. 48). The look emanating from the mother's eyes transmits calmness, vulnerability and resignation. She is a non-threatening 'other', a creature created as an experiment, easily dispensed with or used for further testing in the name of science and progression. Piccinini (2002) focuses on transgenic art in order to visually depict the possible outcomes of 'advances' relating to genetic research. *The Young Family* ultimately forces us to ask whether this is a creature we may or may not be able to nurture and love (Walker, 2004).

Haraway writes that she recognises in Piccinini "a sister in technoculture, a co-worker committed to taking 'naturecultures' seriously without the soporific seductions of a return to Eden or the palpitating frisson of a jeremiad warning of the coming technological Apocalypse" (2007, para. 1). Haraway thus sees Piccinini as an explorer and an examiner of technoculture; an artist who refrains from taking sides in the technoscience debate, choosing instead to focus on showing us versions and visions of the interface in ground-breaking and thought-provoking ways. Piccinini ultimately feels that both technology and nature are constructs which are too immense to be considered either 'good' or 'bad'. Therefore, her aim with artworks such as *The Young Family* is to chart the possible effects of nature and technology fusion and to "create a place to reflect on them" (Piccinini, 2002, p. 202).

Daniel Lee also draws on the ethical concerns surrounding transgenic technologies as inspiration for his artworks. *Shepherd I* (Image 66), shown on the following page, is a digitally created photographic illustration which shows a clothed part goat and part human entity who is watching over three transgenic 'kids'. The young creatures sit amongst hay in a futuristic silver-gray walled enclosure. Lee evokes the vulnerability of the young creatures in this image, and the seriousness of care-giving and parenthood (email questionnaire, 2007). He uses the portrayal of *Shepherd I* to induce emotion and empathy in the viewer, by presenting the transgenic shepherd as calm and knowing, and the young in need of care and nurturing.



Image 66. *Shepherd I* (2004).
Harvest Series: 24 x 34 inches.
Digital C-print Limited Edition: 1/7.
Photographic Art.
Artist: Daniel Lee.

Shepherd I is an image from Lee's Harvest series, and was developed by taking actual photographs of livestock while visiting an animal farm. Lee uses his photographic creations to make a comment on stem cell research, genetic engineering, and xenotransplantation (Ferry, 2005). Lee draws attention to the double-edged sword of transgenic experimentation; the benefits to humankind, and the torment of the animals. Theorists agree that this is one of the most inauspicious aspects of transgenic and recombinant DNA practices. Animal-to-animal transgenic creatures have historically had high mortality rates, and are often born deformed, with missing organs, stomach tumours and metabolic disorders (Best & Kellner, 2001; Haraway, 1997; Harris, 1992). As such, Lee surmises that the products of technological innovation are "both a blessing to the medical field and a burden on the victims,

which are animals” (email questionnaire, 2007, q. 2). *Shepherd I* identifies how “brilliant technology and science can be...and yet how selfish and damaging to the planet and nature it can be” (Lee, email questionnaire, 2007, q. 6). Once again the utopian duality of technoscience – its paradoxical dimension of being both detrimental and beneficial – is addressed.

Two of Lee’s earlier art series centred on similar themes. ‘Manimals’ (1993) presents a collection of human bodies with animal facial features in the form of 12 animal signs from the ancient Chinese zodiac, while ‘Origins’ (1999-2003) explores the notion of animal to human evolution (Lee, 2007), which Dave McKean’s surrealist artwork *Feeding the Machine* (Image 69, p. 314) also evokes. Lee merges drawing, fine art, computer technology and photography to create his eerie visions, and he constructs a sense of realism that is both shocking and riveting. Helen Ferry surmises that Lee’s “blended human and animal compositions, spun from his imagination and digital expertise, never fail to excite while challenging our preconceptions and beliefs; teasing to the surface our innermost fears and desires” (2005, para. 1).

Kac ultimately suggests that “transgenic art calls for a dialogical relationship among artist, creature, and those who come in contact with it” (2005, p. 237). I asked the interview participants whether they felt artworks such as *The Young Family* and *Shepherd I* may have the potential to increase awareness of animal-human hybrid gene research, in order to gauge whether they believed a dialogical relationship could exist between the artwork and the observer that could be beneficial to society. Twenty-seven participants responded to this question with insightful comments. Several felt that these kinds of artworks could serve as a catalyst to ignite discussion on related ideas. Kirsty stated, “I think it could, if I don’t think it’s off-putting it would get people looking, you look at it and you’d think what’s behind that kind of thing...I think it’d definitely get people talking”. Nicholas responded, “Well it is painting a possibility. I suppose in the end it is raising awareness”, while Cherie replied, “Oh definitely. I think even if it’s on a subconscious level, a lot of people would be perhaps terrified by it”. Demelza also responded with the comment:

...it would definitely send a message because it's quite shocking. I think it would sort of make people think a little bit harder if they were interested enough to do so, but that doesn't necessarily mean that all people would absorb something like that.

These responses indicate that transgenic artworks such as *The Young Family* and *Shepherd I* may have the potential to increase discussion on, and public awareness of, genetics research. However, this is predominantly in relation to igniting conversation on the topic due to the unsettling nature of the imagery; just to get "people talking" as Kirsty stated, rather than to be enlightening or informative in any way.

Some interview participants also did not believe that these types of transgenic artworks could increase awareness of hybrid gene research, deeming these artworks too abstract to be of any social value in this regard. As Laurie commented, "No, I think it's a bit too abstract for them to make any sense out of it". In addition, a few interviewees felt that Piccinini's sculpture *The Young Family* would only provoke fear. Donovan stated, "No, I think the majority of this country would look at that and freak out". I suggest that the 'freakishness' and 'transgressiveness' often presented in artworks such as many of the works included in this study, can be considered a limitation of viewing this form of cyborg art as having critical potential. This is addressed in the following concluding analysis chapter.

Nevertheless, whether artworks with transgenic themes offend, baffle, or excite observers, transgenic creatures can overall be thought of as indicator species or 'canaries in gold mines', enabling us to visually see what can be created (Haraway, 1997). This allows us at the very least to discuss the effects, rather than simply choosing to remain ignorant. Haraway surmises that these visible test subjects expressively address changing ideologies and human ontology for our benefit. Graham (2002) adds that these 'monsters' not only show the fault lines of experimentation, but also signal the fragility of the borders between human, animal and technological spheres. She states that "The monstrous, the fantastic, the mythical and the almost-human serve as important bench-marks of the contest to determine whose versions of what it means to be human will prevail" (Graham, 2002, p. 17).

Haraway (1997) also contends that monsters in art and imagery point to what people find acceptable and unacceptable, in addition to alluding to who actually gets to say what is acceptable and what is not. This is an important sociological concern relating to biotechnological usage and implementation; who makes the decisions on what can be 'invented' (Beck, 1997; Feenberg, 1995; Gray, 2001). I asked the interview participants who they thought made most of the key decisions concerning research into human-animal genetic merger, in order to obtain their views on this issue. Twenty-two participants responded to this question, their comments addressing four key factions of society. Several felt that private business or commercial enterprise made most of the decisions on human-animal genetic research. Paul mentioned, "The big chemical companies, Monsanto, DuPont...they are the ones spending billions on research. They are patenting everything". Some interviewees also felt that the government was responsible for most of the decisions made. Steven stated, "Still comes down to government. The university can put the idea [forward] and the government can say no we'll put this aside". A few participants also felt that scientists had most of the power. Blair commented, "The scientists who were actually doing it, they'd know or they should know what limits they've got and how far they should go, and if they want to push the bounds just to see what'll happen". Lastly, Emmanuel and Maree were the only participants who felt that the public had the final say in key decisions made. Maree responded:

I know that with organic and non-organic and that kind of thing, generally the public is involved...they say we want to do this, and then it goes through a process, and then generally a select committee. I think at the end they call for public opinion.

These responses reveal that most of the interview participants felt that the corporate sector had the power to make final decisions over what technologies and techniques are eventually created and developed. I note that this perspective is supported by theorists and critics of technoscience, as they argue that developments are most often created to generate profit for the businesses involved (Best & Kellner, 2001; Bowring, 2003; Feenberg, 1999; Gray, 2001). Bio-entrepreneurs, technologists, scientists, the military, corporate elites and bureaucrats have most of the knowledge

regarding this form of technology and consequently control over what is invented or discovered, and also what processes and mechanisms are projected for the future (Best & Kellner, 2001; Feenberg, 1995). Paul's comment relating to patenting is fitting, as the patenting of human and animal genetic material has become an intense topic of debate and discussion, leading to concerns over the debasement and commercialisation of life (Kimbrell, 1997). Life patents destabilise core human beliefs and values relating to the very nature of existence. These patents show that life can be bought and sold (Brate, 2002). As Kimbrell states, "We turn the common heritage of life into corporately owned commodities" (1997, p. viii). Interview participants' responses which were not shared included Nick's, who felt that Ethics committees for the most part had the final say in what is developed, while Javin felt that Medical Councils have the most decision-making authority.

The varied responses provided by the interviewees on the topic of decision-making power were similar to the responses obtained by the New Zealand-based *Constructive Conversations* (2005) research team, introduced in Chapter Two (pp. 70-71). One of the questions the participants who contributed to their study were asked is whom they identified as key decision makers regarding genetic testing and biobanking. Ten differing possible groups or factions within society were mentioned in the responses. These included government representatives and agencies, genetic services, corporate enterprise, families/whānau, and individuals with a genetic disorder (*Constructive Conversations*, 2005). Overall, the diversity of responses obtained in the *Constructive Conversations* risk assessment and public awareness project, and the present study, indicates an element of uncertainty surrounding the issue of decision-making in relation to genetics research and the services biotech developments can provide.

Ultimately, transgenic art is created to foster new philosophical, political and ethical models with which to deal with increasing technological usage and design (Kac, 2005). Kac's living/breathing luminous rabbit, Piccinini's stirring sculpture, and Lee's eerie photograph, contribute to the growing array of transgenic artworks which exist in society today. Yet, triadic and quadratic artworks are also being created,

although these artworks have not been acknowledged within scholarly discussion to date. Artists are now delving beyond human-animal or human-machine hybrid configurations and exploring post-hybrid aesthetics. These entities are timely and critically important, as it is now possible for an individual to have a triadic constitution of some form. Best and Kellner affirm that “‘human beings’ today can easily be part human, part animal and part machine” (2001, p. 161). For instance, a person may have a prosthetic limb which can be controlled via thought-processes, an inserted biotelematic implant or pig valve, and is able to drink cow’s milk with human proteins. As such, emerging tribrid visions are not as radical as they may first appear; instead eminently opportune, contributing to the exploration of how the concept of humanity is profoundly changing.

Tribrids

‘Techumanic tribrids’ are fantastical, metaphorical, and figural amalgams of human, animal and technological components. The term *techumanic* is a neologism which I have created using the first three letters of the words *technology*, *human* and *animal*, to address the triadic merger of these realms. Wiener (1961), who coined the term cybernetics in the late 1940s, was the first to suggest that animals, humans and machines all had similar cybernetic systems of control and communication. Increasingly artists, writers and theorists such as Haraway, Kac, Wilding, McKeich, Hitchcock, Luetke, and Koen are showing their interest in the common ontology that exists within these spheres, and the far-reaching ideological implications this evokes.

Triadic entities are more contentious than their hybrid counterparts as they challenge to an even greater extent the modernist notion that there should be distinct divisions between elements in the world, such as organic versus artificial, animal versus machine, mind versus body, and science versus art. Postmodernism has ruptured these binary perspectives; as such, tribrids epitomise postmodern sensibilities by further exploring the realm of convergence, paradox and fusion. For this reason, these

types of representations are often more profoundly disturbing. Moreover, artists such as Viktor Koen, the creator of *Plug*, shown here, and Joachim Luetke, the creator of *Dark Karma* (Image 68, p. 310), further intensify the visual impact of their triadic artworks, as they both use babies as their central characters.



Image 67. *Plug* (2000).
Digital Print on Canvas.
44 in. x 60 in.
Artist: Viktor Koen.

Koen's artwork *Plug* depicts a triadic merger of an infant human, an insect and electrical technology. *Plug* has an upper torso, head, arms, and hands which are human, and a lower torso which is a light bulb and socket, which he can control with his thoughts (Koen, email questionnaire, 2007). *Plug*'s corporeality consists of

dragonfly or moth wings which are delicately veined, and hair which is a profusion of leads. He also wears large round protective goggles in the manner of Giger's cyborg babies. Koen has used neutral, subtle shades and hues of grey, taupe, brown, beige, light blue and pink in this artwork; soft pastel colours in keeping with *Plug's* infancy.

Plug is the central character in Koen's 2004 book *Plug in the Quest for Mug* (authored by Melanie Wallace). The story of *Plug* is set in a post-apocalyptic world, where greed and tyranny prevail. *Plug* was originally created as the antithesis of the millennium bug phenomenon; a rousing "avatar for Silicon Alley" (Kakoulas, 2001, para. 1). He was designed to be inspirational, energetic and positive; not only to balance out and alleviate expected or unexpected problems at the dawn of the new millennium, and regarding the internet economy, but also to forestall the negativity associated with technoscience in general (Koen, email questionnaire, 2007). *Plug* is a utopian creature; disturbing yet arresting and deformed yet complete – a techno-mutant who battles against evil corporate giants. *Plug's* paradoxical imagery thus parallels the complexities of technoscience. Koen states that *Plug* is "a sign of our times and a little beyond. Flesh and machine are seamlessly fused on him or better interweaved with each other until they become one" (email questionnaire, 2007, q. 6). Koen places emphasis on the seamless merger between flesh and machine, which is a key characteristic of many artistic cyborgian visions, as shown.

Joachim Luetke's sculptural artwork *Dark Karma* (Image 68), presented on the following page, depicts another triadic entity or tribrid baby, although created in a much darker manner to *Plug*. *Dark Karma* centres on what appears to be a deformed or mutilated baby, with chicken legs as lower arms and hands. The three smaller identical triadic babies hanging from the wall in the artwork show that their lower torsos are interfaced with a television (Kellagher, 2000). Luetke has also used thin, raw-edged tea-stained muslin fabric on the babies' arms and across their neck and chest, giving them the appearance of "mummies from the future" (Kellagher, 2000, para. 1). The strips of fabric also resemble bandages, alluding to themes of medical

intervention and/or experimentation. *Dark Karma* may therefore present a forewarning of the possible risks of medical and genetic tampering.



Image 68. *Dark Karma* (1999).
Sculpture.
Artist: Joachim Luetke.

Luetke has given his artwork the title *Dark Karma* because these two elements, *dark* meaning sinister and foreboding and *karma* meaning fortune and destiny (Rahi, 1999), are in opposition. When these factions merge, they create a third element, a new dimension or perception for the viewer. The babies are therefore also utopian representations of aberrant and hopeful ideals. Their appearance as amalgams of discordant objects, over time, changes into sublime visions as a whole. Luetke created *Dark Karma* in order to evoke a “different level of perception” in the viewer (email questionnaire, 2007, q. 1). He states:

All the parts used with the sculpture were well known in everyday life. Nothing to draw ones attention to. But due to the amalgamation, the result is greater than the total of the parties, so to say. The viewer is forced to question the reliability of familiar perception/decoding-systems. The (at first glance) senseless combination of

elements evokes a kind of meta-perception, a certain synopsis, which inevitably leads to a more or less religious interpretation. (Luetke, email questionnaire, 2007, q. 1)

Luetke sees *Dark Karma* as a type of ‘Voodoo-art’ due to the amalgamated aesthetics (email questionnaire, 2007, q. 2). He melds the aesthetics of the machine, medicine, innocence, and spirituality together to create his visions, generating a beauty and stillness which goes beyond a specific time and place (Kellagher, 2000).

I asked the interview participants to offer their views and reflections of *Dark Karma*. Seventeen responded to questions; their comments addressing four key themes. Several participants felt that *Dark Karma* presented religious imagery, evoking Asian, Oriental, Eastern, Hindu or Buddhist elements. Examples include: “It looks Oriental in some way” (Lesley); “It’s very bizarre. It’s interesting; sort of [has] Buddhist elements to it” (David); and “These babies are all obviously kind of Eastern, kind of how they’re holding their hands” (Art). These responses indicate that the religious aesthetic within *Dark Karma* was considered a dominant feature. The circular backdrop positioned behind the head of the babies, and the way the babies are placed in a prayer-like pose, with their claws pressed together, undeniably generates a type of Eastern religious aesthetic. A number of interviewees also felt that *Dark Karma* expressed a dystopian warning of the consequences of genetic engineering and/or a populist notion of karma. Emmanuel commented, “...by accentuating these Eastern elements and even calling it Karma, I think he’s – it’s a dystopian warning on what will happen if we mess about too much with technology, and too much with biological and cybernetic technology”. Chris stated:

Dark karma, I like that. It almost looks like devolution. At a point, it looks like a really sick baby, and well *Dark Karma*...it is like punishment for spending all your time trying to improve humanity and that’s what you get.

These participants suggest that *Dark Karma* alludes to the way human beings are destroying themselves as a species through their search for ever-higher existence. I note that these fears are not uncommon, as biotechnology has the ability to radically transform us at a genetic level. Some interviewees also discussed the chicken legs/feet or ‘claw aesthetic’ of the babies. Nick responded, “And you’ve got these sort of little babies being bound around the neck and chest and have chicken feet for

hands”, while Maddy stated, “...the baby looks happy but then when you say *Dark Karma*, then you think kind of evil ’cause [of the] chicken claws”. Maddy felt that the claws alluded to sinister elements, despite the baby looking seemingly contented.

Lastly, a few interview participants commented that the babies in *Dark Karma* resembled supreme beings, a higher level of enlightenment, or that the babies had been educated for a higher purpose. As Cherie responded, “And it looks so cool, they’re babies but they look so wise.../[They] will have phenomenal brain power and they’re probably telepathic”. These participants’ comments centred on the way *Dark Karma* presented ideas of higher evolution as opposed to devolution. Luetke suggests that some observers may view *Dark Karma* as “the triumph of the spiritual world over the material world”, whereas “Others might decode it as a symbol of the human race laying in agony, slave and victim to the ‘machines’, tortured and fed by them at the same time” (email questionnaire, 2007, q. 8). Luetke emphasises that these perceptions are dependent on whether the viewer is for or against “human-machines”; either fearing the “upcoming evolution”, or seeing it as a new and exciting stage of human existence and development (email questionnaire, 2007, q. 8).

I also asked several interview participants why Luetke may have used a baby in *Dark Karma*. The comments offered centred on one key theme; the way that using imagery of babies within an artwork adds to the visual impact of the work because babies are seen as vulnerable and innocent. Gregg commented, “[It’s] going to grab your attention more, ’cause everyone seems to get offended more by babies”, while Nick replied, “I think to heighten the drama of it somewhat. Because a little baby – it is obviously not their choice and it makes it seem more disturbing really. Because an innocent little baby has been, as some would see it, mutilated”. David stated:

I guess babies represent sort of defencelessness in a way, and definitely innocence. I think that’s what makes the images particularly graphic ’cause we think of babies sort of being vulnerable. There’s a really strong sort of natural protective instinct and you see these images where they’ve got disfigured babies, and I guess it’s one graphic way to add to the impact of the imagery.

Gary Cross agrees that babies or newborns “symbolize today the purity of innocence” (2004, p. 5). For this reason when babies are presented as mutated or genetically altered, the imagery can be substantially more startling and shocking, as the interview participants contend. Babies are considered vulnerable as they cannot fend for themselves, communicate using language, nor contribute to the decisions made which affect them. Laurie provided a compelling idiosyncratic response to the question of why Luetke may have used a baby in *Dark Karma*. He stated, “Because that’s the highest form of life. The one that is most sacred”. Babies are revered as they signify the beginning of human life, immortality, and the passing of genetic information onto future generations via procreation. Babies also signify hope – that future generations will be better, wiser, and kinder than our own.

Dave McKean, Philip Hitchcock and Murray McKeich have also created artworks which represent triadic melding. However their tribrid entities are no longer babies, but grown adults. McKean, an award-winning English artist, is the creator of *Feeding the Machine* (Image 69), included on the next page. This artwork is the cover art selected for American guitarist James Murphy’s 1999 compact disc which shares the same title. McKean’s artwork shows a tribrid whose upper body and neck is covered with fur, and a human-machine head and face pushing through the mouth of a second face, perhaps symbolising our evolution from animal, to human, through to machine. McKean has presented each of these three dimensions in a similar hue – a golden reddish brown – as a way to unite the ontological and functional similarities within each sphere, which was Wiener’s (1961) mid-twentieth century thesis.

McKean’s tribrid is also shown devoid of vigour, passively awaiting ‘progress’, or ‘nourishment’, which cannot ultimately satisfy him. His two faces are split and cracked, the gaping metal on the emerging more human face adding to the impression that this tribrid’s body and spirit is broken. His eyes also stare forward, empty in their expression, and his mouth is shown open more in the sense that this is what is required rather than what is desired. *Feeding the Machine* alludes to Lewis Mumford’s (1960) concerns that our increasing integration with technology will

'anesthetise us', destroying our creativity and empathy. This artwork can also be read as a metaphorical representation of Heidegger's (1977) warning of the negative effects of our increased reliance on, and usage of, technology. Specifically, the way this dependence will slowly destroy our capacity for thinking in any way other than one that is based on operational processes and ultimately machinic.



Image 69. *Feeding the Machine* (1999).
Surrealist Graphic Art.
Artist: Dave McKean.

I asked the interview participants to share their thoughts on *Feeding the Machine*, and 17 responded; three key themes emerged from the discussions. Several participants felt that McKean's artwork evoked human and technology hierarchy, and/or themes of human progression and evolution. Donovan simply stated, "...it's like evolution, it's never-ending. I like that". Nico commented:

Well the guy is starting to get very machine-like. It looks like he's sort of transforming. Like he was human and he's starting to get these little machine bits forming over the skin.../...I would say that he's surprised by it, just the expression, he doesn't look too happy about it.

Some interviewees also felt that the aesthetic of 'feeding' was the most salient feature of the artwork. As Gregg responded, "Mouth open, there's another face up there too.../...*Feeding the Machine*. What with, knowledge?" Gregg sees the artwork as representing metaphorical ideas of a being perhaps in need of cognitive sustenance. A few participants also felt that the way the entity was depicted as shedding or losing his skin or shell was a key feature of the artwork. Maddy stated, "It's kind of like he is losing his shell...he's got his hard shell and then his fleshiness coming through now". The themes discussed by the interview participants are interrelated, as the aesthetics of 'shedding skin' and evolving into another being or state parallels ideas of evolution. Maddy added, "It kind of looks like an awakening; breaking free of technology..." Conversely, Morten stated, "...you can see the machine is feeding us; kind of like it's consuming us and it's breaking free and taking control". Both Maddy and Morten felt that *Feeding the Machine* pointed to ideas relating to the body-machine interface, however each from opposing viewpoints; Maddy, in terms of human awakening, and Morten in terms of machine awakening.

Hitchcock presents another version of a male tribrid in his provocative life-size sculpture *Overlord* (Image 70), shown on the following page. Hitchcock's tribrid is presented as strong and imposing. He is interfaced with headgear combining ram's horns and insect eyes, and his lower left arm shows his mechanical corporeality, where the skin has been opened to expose the circuitry within. His upper right arm is shown as genetically altered as it has the skin markings of an animal; possibly a tiger. *Overlord* is perhaps a metaphor for the way certain subcultures, groups, or

individuals may choose to relate to genetic engineering and manipulation, cloning, and other life-altering biotechnologies – by way of celebration. Certain people may relish the capacity to alter the foundations of humanity via genetic reinvention, as discussed in relation to body modification practices and biomechanical tattoos. Cyberpunk aesthetics centre on the way the body is available to be futuristically restyled, “beyond the limits of fashion, history, and culture” (Pitts, 2003, p. 153).



Image 70. *Overlord* (1997).
Sculpture: Life-size Torso Cast.
Gypsum, resins, circuits, and ram skull.
Artist: Philip Hitchcock.

Overlord has reinvented himself as a potent new entity by using powerful elements from previously distinct spheres to construct his whole. The ram horns provide physical and representational power; the insect eyes offer advanced sight; and the animal imprint grants *Overlord* his aesthetic power, as the yellow and black grouping

is one of the most powerful of all colour combinations, as mentioned in relation to *Wolverine's* aesthetics. Hitchcock states that the inspiration for his art is “the human tendency to use whatever is available to make oneself whole...” (email questionnaire, 2007, q. 2). For this reason, he uses the term ‘Survivor Art’ to refer to *Overlord* and many of his other sculptures, as they are inscribed with strength, dignity, reinvention, eroticism, power and imagination (Hitchcock, email questionnaire, 2007, q. 3). *Overlord* is a survivor; his configuration is a combination of powerful elements from the realms of technology and the animal kingdom, merged with his human cognition.

I have located ten artworks which depict techhumanic tribrids in various forms, and therefore sought to examine what the interview participants felt the inspiration for these artworks might be. I asked several interviewees why they thought an increasing number of artists may be creating artworks which combine human, animal and technological elements together. Their insightful comments centred on two key themes. A number of participants felt the reason why triadic interfaces may be depicted in art was to allude to the connections between the three spheres of animal, human and machine, and to show this visually. Examples include:

I think it's got to do with, well because gene splicing is becoming more prominent and at the same time so is cyborg technology, and at the same time prosthetics is becoming more prevalent...the same concerns apply for each most of the time.
(Nico)

...I suppose it's to cover all the elements because everything is very interconnected. Because before we had technology, before it was so dominant I suppose they did the human-animal thing...But you cannot ignore the technology anymore. But the animals do still play a part because it is part of the system of how things work.
(Nadz)

The divisions between human beings, animals and technology are rapidly dissolving. Artists who create imagery which depict these combinations do so to tangibly and metaphorically point to these dissolving boundaries; creating a place where the public can explore this ideological and ontological change. Haraway's (1991a) hope is that we can live in kinship with each other; humans, animals and machines – *and* nature/vegetation (discussed shortly).

Some interviewees also felt that artworks with triadic themes may be created in order to point to the limitlessness of technology, corporeal and genetic manipulation, and the future. As Matt stated, “Perhaps it is the exploration of possibilities in the future, what people can do and what people will do”. Matt discussed the potential of technology to change how we exist, and what our individual choices may be; a perspective *Overlord* dramatically alludes to. The responses overall indicated that a number of participants felt there was a strategic reason or inspiration as to why artists are merging the three spheres of human, animal and technology together in one artwork. Nicholas and Javin were the only interview participants who felt that artists were creating these types of artworks predominantly for aesthetic appeal alone.

Lastly, Murray McKeich has created a striking oceanic female tribrid (Image 71), shown on the next page. She is a ‘monstrous’ female, whose deathly stillness and beauty is sublime, eerie and unnerving. McKeich’s digital artwork shows the upper body of a woman in the form of a relic marble bust statue, which is an evocative convergence of human, fish and machinic or pre-digital technological components. The marble or stone is shown aged and weathered, adding to its antiquated aesthetics, yet the tribrid’s lips are shown ripe and glossy, creating a startling juxtaposition between old and new. The landscape of the female tribrid’s cranial region is the most elaborate aspect of McKeich’s artwork. Two fish are shown extending from each of the tribrid’s temples, and metal objects and devices form the area of her inner skull. The bridge of her nose is constructed from a type of scissor scaffolding, and her forehead consists of an intricate jigsaw of technology, with coiled ‘matter’ visible in her eye sockets. The fish are also wearing a type of fabric covering, which is attached to the bars forming the framework for the top of her exposed cranium.

McKeich (2007) combines layers of photo-media and scanned imagery together to create his surreal imagery, using both controlled and random processes. His interests lie in generative art, which uses computer software algorithms to generate new convergences. McKeich has created an image using these digital processes which is simultaneously macabre and amusing, suggestive of the peculiarities of actual

biotechnological experimentation and species DNA melding; such as goats providing milk with spider filaments, and rabbits glowing by way of jellyfish proteins. McKeich's oceanic tribrid is a fairy-tale creature created in a modern time, with postmodern bricolage sensibilities. She is a merger of historical aesthetics intertwined with contemporary interface ideas and changing ontological ideologies – an incongruent critical and playful representation of a fantastical posthuman being.



Image 71. *Untitled* (1997).
Digital Art: McKeich digital art folio image.
Artist: Murray McKeich.

McKeich draws on mythical ocean-dwelling pre-hominids and pre-digital technologies to shatter the illusion that the realm beyond the human-machine hybrid or the human-animal transgenic state is a realm of progress. Gray affirms that

cyborgism in general “can be seen as a full-scale assault on traditional divisions (such as machine, human, animal) with an inevitable proliferation of cyborgs and other monsters” (2001, p. 84). The artistic blending or mapping of animal, human, and plant matter and machine is also being created to further evoke the far-reaching ideas which lie behind the blurring of species and human and machine borders.

Quadbrids

‘Thap quadbrids’ are rare entities created in response to a postmodern world where boundaries are collapsing between all organic species, such as bacteria, fish, plants, insects, animals and humans – and machines. The term thap is an acronym created using the first letter of the words *technology*, *human*, *animal* and *plant* together. Haraway was one of the first cultural theorists to draw attention to the connections which exist between humans, animals, plants, and technology. Haraway stated in her 2000 book *How Like a Leaf* that she encountered her cyborgness when she realised how much ‘like a leaf’ she really was. She emphasises that these links are about “sharing substance materially and semiotically”, and forming “evolutionary and ecological relationships” between all living matter (Haraway, D., personal communication, May 25, 2009). Haraway writes that the cyborg is an expression of the way “biotechnological apparatuses, cells, molecules” and people are “all knotted together (cyborg) in the powerful study of membrane systems in cellular biochemistry in organelles like mitochondria and plastids”. She adds that “The plant/animal tie in all its materialsemiotic richness does not depend on trans-feats of biotechnology, although those are in play now too” (Haraway, D., personal communication, May 25, 2009). Edmund Russell affirms that biotechnology has an enormous part to play in the blurring of boundaries between the animal and plant realms. He states, “Now that we can move genes across taxa, their origins in plants or animals matter far less. Tobacco plants that glow in the dark, thanks to a firefly gene, exemplify the kingdom-spanning potential of microbiotechnology” (2004, p. 12).

Haraway (2003) increasingly elects to use the term ‘companion species’ in place of cyborg in a bid to further acknowledge that all living matter has common origins and bonds, and that through the use of technology formerly separate spheres of existence are both redefined and combined. She deploys the term companion species most often in relation to lived realities between differing species, particularly human and animal (dog). Haraway also believes that the terms cyborg and posthuman are, in some respects, linked to the expectations and pursuit of ever-higher evolutionary progress, whereas the phrase companion species does not have these connotations (Hayles, 2006). Rather, the term denotes more a coalition and alliance with multiple organisms rather than a pre-determined hierarchy. This is a vision which sits more easily with postmodern ideology and sensibility (Haraway as cited in Gane, 2006).

Venus Envy (Image 72), included on the following page, is created by Heidi Taillefer, an artist who visually explores the combination of human, animal and technological components, and plant matter in a unique way. *Venus Envy* depicts a new millennium quadratic entity, a fusion of Kac’s interspecies creations *plantimals* (plant and animal genetic mix), and *animans* (animal and human genetic mix) (2005, p. 243). Taillefer’s quadbrid is an evocative metaphorical representation of the way human beings are genetically linked to animals and plant-life. Researchers have found that we share approximately 35 percent of the same genes with daffodils (Rose, 2001b), even sharing genes with sea urchins and fish (Pennisi, 2006), in addition to animals – in particular chimpanzees, who share 98 percent of human genes (Marks, 2002).

In *Venus Envy*, human flesh and form covers internal technology/machinery; snakes are represented as hair in the manner of Medusa, and fruit, flowers and plants are intimately incorporated within the quadbrid’s corporeality. In addition, mechanical pipes are shown filling the artificial breasts with milk, ready for the growing human baby floating in the fluid of the transparent artificial womb sack. Tiny swimming fish and large eggs are also included within the ‘womb’, alluding to the integration of mammalian and non-mammalian gestation. Taillefer has also positioned her thap cyborg in a classical Ingres-like pose. She is lying on her side with her head tilted,

exposing metal coils, which resemble the neck rings worn by Burmese and Kayan women to signify female and cultural identity, and female unity (Kvint, 2008).



Image 72. *Venus Envy* (1999-2000).
Painting: Oil on Canvas.
44 in. x 60 in.
Artist: Heidi Taillefer.

I asked the interview participants to offer their thoughts on *Venus Envy*, which is the final artwork discussed in this study. Seventeen responded to questions, their candid and insightful comments addressing three themes. Several participants felt that *Venus Envy* was, to some extent, a confounding painting; due to the way Taillefer merges many symbols and ideas together within one image. Nicholas stated, “I kind of like it, it’s a bit too jumbled, but I don’t know, it’s interesting”, while Kayla mentioned:

I find it hard to understand...Just because it’s so complicated I can’t pick different – it’s quite hard to tell what they’re trying to do as well. Some of them you can see what they’re trying to do but there you could have heaps of different meanings.

Venus Envy is multifaceted and mixed, epitomising the postmodern principle of bricolage. Taillefer uses symbolism which draws on Christian religion, Greek and Roman mythology, the female body/form, fecundity, fertility, nature, technology, pre-industrialisation, and posthumanism, to present a radical and complex juxtaposition of ancient and futuristic imagery merged together to form a whole. The way many postmodern artists merge an array of imagery and symbolism together can cause confusion for the viewer, which I suggest can be a limitation of cyborg art's critical potential, discussed shortly. Boundary transgression is an enticing concept; however, it is a form of expression which can generate visual (and social) turmoil.

A number of participants also felt that *Venus Envy* evokes themes of fertility, the creation of new life, and femininity. Margaret commented, "It's a pretty feminine idea, obviously with the babe, the foetus in the womb. And more the functionality of the breasts rather than the sexual appeal of the breasts". Paul felt that *Venus Envy* presented "Sort of femininity, life-cycles and the human, yeah the productive cycle; life and death..." Taillefer does indeed poignantly and brazenly explore "the sensuality of pregnancy" and the gift of being a "carrier of new life" (2008b, para. 1). I note that gestation and babies transformed and merged with technology is avidly explored by artists; because babies signify hope and species/human continuation. Some interviewees also commented that the woman depicted in *Venus Envy* resembles a Greek goddess, and/or evokes imagery of Medusa because of her hair. As Javin responded, "A pregnant woman with snakes for hair. Apples for shoulder joints.../...It's made up of organic things, nature.../...it looks like a Greek goddess to an extent. A mixed up goddess". Medusa was a gorgon, a type of 'monster' within Greek mythology, who was able to turn those that looked upon her into stone (Pantheon, 2007). The bitten apple – with reference to the Christian doctrine – may symbolise the 'biting from the Tree of Knowledge' and the 'giving in to temptation', which are both related to female weakness and sin.

Blair provided an idiosyncratic response to *Venus Envy*. He felt that the artwork depicts both positive and negative elements within its aesthetics simultaneously. Blair

stated, “It’s like a double-edged sword. Good things and bad things in there, flowers, fruits, that’s pretty cheerful and snakes”. *Venus Envy* undeniably evokes a type of utopian aesthetic, revealing an entity that presents socially defined empowering and disempowering elements of womanhood and technological interface combined. Her links to the Greek Medusa symbolise danger and her ties to the Christian Eve denote rebellion and sin. Yet her links to nature, beauty and reproduction symbolise splendour, power and virtue. Overall, *Venus Envy* represents the paradoxes often felt towards technoscience, alluding to the miracles and monstrosities created today, and the ideological struggle over the distinction and disparity between the natural and fascination with the artificial (Benesch, 2002; Fortunati, Katz, & Riccini, 2003).

Matt, Jason and Margaret also mentioned that the organic base of the artwork was attention-grabbing; that the plant life depicted was unusual and striking. I agree with their views. As stated, *Venus Envy* was the only artwork I found which merges plant matter with animal, human and technology themes. The fruit, flowers and grasses intermingling with the thap quadbrid’s corporeality are compelling as they symbolise nature, growth and renewal. They do not signify a *return* to Eden, but a reverence *for* Eden/nature. Taillefer’s cyborg is also depicted as beautiful; represented with a defined face, lean limbs, and curvaceous hips. With reference to the title, *Venus* within mythology was not only the Roman goddess of love and beauty, she was also the goddess of vegetation and patron of gardens and vineyards (Pantheon, 2007). Moreover, by following the word *Venus* with *Envy* in the title, Taillefer explores a play on Sigmund Freud’s concept of Penis Envy. Freud (1933) suggested in the early twentieth century that women have anxieties over not having a penis, and that these feelings of loss begin during their early psychosexual development. Taillefer (2008b) rejects this perspective by showing a prideful and irreverent female entity in full bloom of womanhood and content with her ‘monstrous’ body. Anne Scott rightly contends that “The feminist cyborg is a monster, it is abject. And that is the point” (2001, p. 370). Scott (2001) is alluding to the way monstrous female cyborgs are created in order to pollute and dissolve boundaries/divisions and binaries, and to rupture male-defined ideas on womanhood and the symbolic patriarchal order.

I have demonstrated in this chapter and the previous chapters that cyborg art is a compelling and relevant postmodern art focus, as the cyborg and posthuman body can increasingly be seen in transition, passing “through a series of gateways that seem now without end” (Murphie & Potts, 2003, p. 115). I have shown how cyborg art calls attention to the way technology and science contribute to the forming and refashioning of new ‘humans’ and new ‘selves’. As Best and Kellner aptly surmise:

With the eruption of new forms of media culture, the Internet and cyberspace, transgenic species, cloning, frozen embryos, *in vitro* fertilization, and nanomachines built from atoms, the reality principle of modernity and all Western culture has been irrevocably altered. Together, science and technology are undermining firm boundaries between reality/unreality, natural/artificial, organic/inorganic, biology/technology, human/machine, and the born/the made. In a world of virtual reality, biotechnology, surrogate mothering, neural implants, and artificial intelligence and life, reality “just ain’t what it used to be”. We’re becoming cyborgs and techno-bodies, while our machines are becoming “smart” and more human-like. (2001, p. 151)

Boundaries are increasingly collapsing between species, the body/brain, and the machine as a result of our biotechnological capabilities and knowledge. Ascott (2000) affirms that silicon, molecules, pixels, bits, atoms, neurons and genes are all converging. He therefore suggests that a new interspatial ‘moist domain’ exists between the ‘dry world’ of technology and the ‘wet world’ of biology. Cyborg art resides in this moist domain. Artists are evoking numerous interface configurations in an attempt to explore in-depth how technology is, and will continue to, impact on us. The following chapter provides a concluding meta-analysis of cyborg art in order to fully examine its symbolic function, critical potential and thus social value. The research participants’ responses obtained via the interviews and questionnaires, and the artworks discussed in the second section of Chapter Four and within Chapters Five, Six and Seven, are interwoven with theorists’ premises on changing human ontology and corporeality, in order to facilitate this concluding analysis.

Chapter Eight

Composite Analysis of Cyborg Art, and Concluding Evaluation of the Research Design

This final chapter presents a consolidated analysis of the cyborg artworks and the interview/questionnaire data, which are used to develop a theory of cyborg art. Four key dimensions of cyborg art are addressed in order to demonstrate the critical application and relevance of this artistic focus. These are: the facility of cyborg art to constitute a critical postmodern art genre; the symbolic function of cyborg art as able to represent key sociological and ontological dimensions of body and technology convergence; the critical potential of cyborg art to serve as a catalyst for increasing public awareness regarding the encroaching interface; and the limitations inherent within cyborg art, which reduce its functionality and social impact. The artworks referred to in this meta-analysis were created from the 1960s onwards, as this is around the time the cyborg concept and postmodernism transpired. In addition, I present a concluding evaluation of the research project in this chapter, addressing its overall focus, trajectory, methodology and perspectives. The key strengths and weaknesses of the project are also discussed, in order to provide a clear understanding of what I deem to be the core issues relating to cyborg art's potential to be considered theoretically useful and socially relevant. The ultimate goal of this final section is to demonstrate the manner in which this study was able to carry out its key objectives.

A Theory of Cyborg Art

This section weaves together theory, sourced empirical data, and key themes which the artworks address, in order to demonstrate the potential significance of viewing cyborg art as a genre, and to support the premise that cyborg art can have theoretical application. As shown in this study, one of cyborg art's greatest strengths is that it

does not reinforce traditional ideals, but rather shows us new ways of looking at the present world and possible future worlds. Art's resounding gift is its ability to generate questions which leads to new discoveries. Art has this power because "images plunge us into the depth of experience itself" whereas "words represent an artificially imposed intellectual system removed from primal feeling" (Barry, 1997, p. 75). Art is a unique vehicle for communicating human ontology as it is not subsumed within the ruling principles of a society's structures (Luhmann, 2000). As Patricia Piccinini proclaims, "Something that makes art valuable is that it can create a new thing or experience that exists outside of the rules" (2002, p. 202). Gray contends that "Art should inspire us, breathe into us the energy to make a better world" (2005, p. 119), and this premise has formed the foundation for this research project.

Two key interview/questionnaire findings relating to art in general form a base for the following cyborg art analysis, and they also contribute to the concluding evaluation of this study. The first is that the majority of interview participants responded that they felt positive towards art, with only two mentioning they were not overly interested in art, and only three stating they felt somewhat negative towards art. Secondly, most of the interviewees felt that art had impacted on their lives in the past, with only three making statements to the contrary. However, it is to be noted that the sample was self-selecting; therefore the participants may have had an inherent interest in art, imagery and representation from the onset. Nonetheless, these findings support the results obtained from the public opinion surveys carried out in New Zealand by Colmar Brunton in 2005, and the North American survey conducted in the same year, as discussed in Chapter Two (see pp. 67-68). Both surveys found high levels of support for art, regarding both personal interest and community importance.

Furthermore, the empirical data I obtained relating to the potential effectiveness of cyborg art supports the view that this artistic focus has symbolic value and social relevance. However, once again, I acknowledge that these findings may be considered biased due to the self-selecting nature of the sample used. Nevertheless, I found that 79 percent of the interview participants felt that cyborg art can or may be

able to increase people's awareness of the interconnections between the body and technology. Ten of the 11 artists who contributed to this study also mentioned various ways cyborg art could increase society's overall awareness of human and technology links. In addition, several interviewees felt that artworks such as *The Young Family* and *Shepherd I* could increase awareness of biotechnologies in existence today, although more in terms of 'stimulating conversation' rather than being didactic in any way. Over three-quarters of the interviewees who responded to a question relating to artistic intent also felt that art is created both with messages and without (over half the interviewees), or that art primarily contains some form of message (a quarter of the interviewees). Lastly, all but one of the artists indicated that their artworks were created with some form of conceptual or social concern, idea or message in mind.

Cyborg Art Genre

The premise that cyborg art constitutes a specific art genre sits alongside my proposed theory of cyborg art. I centre my argument on a critical postmodern version or perspective of the term genre as meaning more a collection of artworks which have the same overall characteristics, focus and goals, rather than sharing a particular feature, style or technique (Rose, 2001a). Marjorie Perloff (1988), Isabel Pinedo (1997), Ralph Cohen (1998) and others note that the term "postmodern genre" can be considered inappropriate, invalid or 'oxymoronic' (Pinedo, 1997, p. 14). Nonetheless, these theorists reject the doubtful stance directed towards the concept of a postmodern genre, and I share this perspective. Viewers remain an integral aspect of art today; they have not simply vanished as a result of art becoming more difficult to label (Pinedo, 1997). I suggest that the concept of genre has merely developed in parallel with postmodernism, relating more to an open set of characteristics rather than strict adherence to style rules (Cohen, 1998).

Postmodernism transgresses, blurs, and pulls apart the art-defined structures set out under modernism. Yet, there are overlaps between classical (modern) and

contemporary (postmodern) artistic representation and expression, as the reality of a ‘clean break’ existing between these two theorised paradigms is untenable (Pinedo, 1997, p. 14). I note in Chapter Two that critical postmodern theory supports this overlap, as it exists as a mid-way perspective between modern and postmodern ideals. Critical postmodern art draws on the manner in which modernism sought to encourage individualism, social criticism, and the betterment of society, and the way postmodernism encourages a recourse and redress of hierarchical ideologies, whilst promoting the value of fluidity and kinships. The theoretical premise of cyborg art existing as a critical postmodern genre therefore centres on its conveyance of social, ethical and political messages which have the potential to raise the level of public attention directed towards body-technology convergence – features of a modernist premise – within an image-based and body-boundary rupturing postmodern realm.

Critical postmodern art explores developments of the present epoch and visions of possible future worlds which cannot easily be explored in text or explained by rational means. A system-shattering sublime postmodern aesthetic often “seeks to express the inexpressible” (Choi, 2004, p. 20). González agrees that this is a key strength inherent within cyborg imagery, surmising that the cyborg “represents that which cannot otherwise be represented” (1995, p. 268). Cyborg art draws attention to the weaknesses which exist within current political, economic and social structures, thereby testing and provoking these systems, offering new modes of resistance for viewer contemplation, thereby opening up avenues for debate. Gray (2002) affirms that cyborg art should not be judged by standards of beauty, but rather looked upon as a major source of political, social and ideological insight into our cyborg society. This is the perspective underpinning critical postmodern theory. This theoretical premise “recognizes the need for an ethical examination of the material condition, and social well being of a postmodern world” (Koscianski, 2003, p. 4).

However, cyborg art is not recognised as a specific art genre today. I suggest this creates an analytical fissure in art and body-technology debates, as this artistic focus is one of the most relevant in terms of addressing key issues facing society and

humanity today. Moreover, the number of cyborg artworks created in recent years is gaining momentum, spurred on by the speed at which technology advances. Cyborg art is increasingly featured on posters, and on magazine and CD covers, and even in art galleries. This interest in cyborg art is indicative of our current “infatuation with the cyborg” (Bowring, 2003, p. 265). A key example of this is Harper’s and Conte’s 2008 *Cyberdine* exhibition, held at the Last Rites Gallery in New York.

Artifact (2008) lists 200 known art genres, including Abstract, Art Nouveau, Bauhaus, Baroque, Renaissance, and Romanticism. The focus of many of these art genres is on style, colour, shapes, and techniques, which is a modernist focus. In addition, artworks which fall into these genres are often subjected to evaluation and judgment relating to their style (Davey, 1999; Stern, 2004). This lessens their potential to be considered message-bearing or utilitarian. Cyborg art does not so much share commonalities in terms of style, techniques or materials used; rather, cyborg art shares a focus on the human body altered through its connections with technology. Cyborg art does, however, share two main aesthetic features: (1) the use of human contours to foster viewer connection with the artworks and to draw attention to the various ways technology is fusing with, and impacting on, the body; and (2) the convergence of flesh and metal, or the conjoining of organic and inorganic spheres, in order to explore the effects of these mergers via a visual medium.

I note that the artists whose works contribute to this study originate from 25 different countries, demonstrating that interest in the cyborg concept and aesthetic can be considered a growing global phenomenon. This diversity generates a greater mix of ideas, as the themes gathered are derived from diverging cultural perspectives and experiences. The artworks I selected are for the most part created by internationally recognised artists; however, I have also included artworks created by less well-known artists such as Rua Pick, Anders Sandberg, Bob Thawley, Ben Cooper, Brice Vandemoortele and Seongjin Kim. I support a critical postmodernism perspective of rejecting a focus on the centre or on experts’ views and ideas, thereby enabling lesser-known, young or indigenous artists the opportunity to share their artistic vernacular.

The Symbolic Functions, Critical Potential, and Limitations of Cyborg Art

I have developed 20 key symbolic functions and 20 interlocking critical potential principles of cyborg art, which form the foundation and infrastructure for this consolidated theory-building section. These are presented under six headings, as shown below in Figure 7, *Theorising Cyborg Art*. This table presents a summarisation of the ideas discussed in this section. The symbolic functions of cyborg art centres on the way this artistic focus has relevance and purpose in terms of being able to increase public awareness of, and interest in, corporeal human-technology interface. The critical potential of each of the key symbolic functions centres on the potency of cyborg art – its ability to realise its symbolic value. I also include key weaknesses associated with each of these tenets discussed, in order to draw attention to the limitations aligned with viewing cyborg art a critical sphere of inquiry into cyborgisation. Ultimately, this meta-analysis weaves art, cyborg and cultural theory together with the empirical findings to develop a theory of cyborg art. Discussions of the artworks are accompanied by their allocated image number and the page number where they feature, in order to allow for prompt viewing of the artworks if desired.

Cyborg Art		
Summarisation of Analysis and Theoretical Development		
	<i>Symbolic function of cyborg art: Value</i>	<i>Critical potential of cyborg art: Potency</i>
1. The relationship between humanity & technology, & the scope of technology (p. 335)		
i	<i>Relationship.</i> A symptom and evidence of the increasing relationship human beings have with technology	Interrogates and explores the meaning of cyborgisation, revealing the tensions aligned with this process
ii	<i>Scope.</i> Depicts the types of technologies in existence today, and their entrenchment in Western society	Identifies the extent to which technologies can infiltrate our bodies and lives, thus filling a ‘conceptual gap’

2. Dissolving physical/bodily, socio-cultural & ideological boundaries & barriers (p. 339)		
i	<i>Combinations</i> . Serves as a mediation between organic and inorganic realms	Acts as a visual messenger fostering awareness of this increasing melding
ii	<i>Permeable Skin</i> . Exposes skin as no longer a barrier to inner corporeality	Signifies the ways in which human viscera is now technologically accessible
iii	<i>Dissolving Binaries</i> . Shows rupturing dualisms and increasing transgressions of (modernist) ideologies	Encourages a rethinking and re-evaluation of conventional norms, thereby presenting humanity with new alternatives
iv	<i>Confronting Taboos</i> . Challenges and breaks down socio-cultural taboos	Reconceptualises socialisation; offering freedom of bodily expression
3. Dystopian, utopian, figural & literal interface aesthetics & body resurgence (p. 346)		
i	<i>Warnings</i> . Dystopian cyborgs serve as warnings regarding our increasing integration with technology	Provides potential to readdress and reappraise projects and projections which are in developmental stages
ii	<i>Enrichment</i> . Utopian cyborgs identify the potential of advanced technologies	Promotes an awareness of how technology can benefit humanity and the human body
iii	<i>Fictional</i> . Offers figural, futuristic or visionary ideas of increasing body-technology integration and fusion	Serves as an indicator or antenna for the future, providing a space for the contemplation of new body formations
iv	<i>Actual</i> . Identifies literal techno-body configurations in order to show tangibly which interfaces exist	Explores actual technologies and enables viewers an experience of the interface; via participation and co-creation
v	<i>Body Resurgence</i> . Promotes an interest in the body as a key facet of human identity today	Recognises the importance of the body in terms of 'being' and expression; identity, fluidity, malleability and connectivity
4. Politics, ethics & sociological issues of increasing body-technology merger (p. 355)		
i	<i>Interface Politics/Ethics</i> . Highlights quandaries and incongruence associated with body-technology links	Establishes the need to take responsibility regarding technology and to evoke or develop a new cyborg-ethics
ii	<i>Sociological Overtones</i> . Depicts social dilemmas linked with increasing body-technology merger	Alludes to divisions and inequalities associated with advanced technologies, and fosters the will to defeat them

iii	<i>Social Forces</i> . Exposes hidden forces embedded within mounting human body and technology integration and makes the 'invisible' visible	Provides a visual medium with which to articulate veiled social forces in a manner which differs from text-based dialogue
iv	<i>Praxis</i> . Indicative of praxis, as theory relating to body-technology links is transformed into visual aesthetics	Theory plus action creates narratives of identity as a strategy for resistance and as a means of evoking new life strategies
v	<i>Paradox and Dual-positioning</i> . Utopian cyborgs focus on the paradoxes of the interface; the fears/desires, marvels/monsters and the politics which address this duality	Represents body-technology merger as simultaneously positive and negative, thus promoting a negotiation-based political approach to technological changes

5. Changing epochal perceptions & aspirations, & human adaptation (p. 364)

i	<i>Postmodern Themes</i> . Visually expresses the ideologies of the postmodern epoch, and the principles of critical postmodern theory	Provides an artistic space or place to explore our current plural and interfaced corporeal configurations and increasingly technologically-driven lives
ii	<i>Changing Perceptions</i> . Shows the way perceptions relating to and practices adopted regarding body-technology merger continually change	Identifies that humanity can no longer have a technophobic or dismissive stance towards advancing technologies; that we must all be part of the debate
iii	<i>Human Adaptation</i> . Signifies that human beings adapt to an ever-changing technological existence	Addresses the value of being open to body-technology synthesis and shows how human beings adjust to change

6. Historical record of corporeal human-technology integration (p. 370)

	<i>Historical Record</i> . Visually illustrates a historical trajectory of the interface	Shows the way bodies have been seen as intertwined with technology for 100 years
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Cyborg Art Theory

Cyborg art visually represents altering human corporeality and changing human ontology, and is therefore a critical, utilitarian and relevant new postmodern art genre, with the potential to encourage and enhance public awareness of increasing corporeal human-technology convergence

Figure 7. *Theorising Cyborg Art*. The symbolic functions and critical potential of cyborg art, demonstrating the theoretical significance of this artistic focus.

1. The Relationship Between Humanity and Technology, and the Scope of Technology

i. *Relationship*. One of the most compelling characteristics of cyborg art is that it symbolically functions as a manifestation or symptom of the increasing relationship human beings have with technology and machinery. Cyborgs “always function as evidence” of our links to technology and technological systems (González, 1995, p. 272). Cyborg art is also symbolic of the process of cyborgisation (Gray, 2001); the journey humanity takes in becoming “borged” (Brasher, 1996, p. 816). Doležálek’s sphinx-like statue (19, p. 141) evocatively symbolises our increasing connections with technology, as the human face and head are interfaced with mechanical devices in the form of a stone effigy. Yet the human part of the statue is the lesser part; the cylinders, cogs, devices, leads and pipes cover a more substantial portion of the image, alluding to the way artificial components may one day constitute a significant or greater part of our lives and formation. In addition, Giaccon’s artwork *Cyborg Jesus* (29, p. 160) hints at the increasing influence of technology; the way technological and scientific pursuits can, at times, be seen to overshadow and overrule religious and spiritual quests. McKean’s artwork *Feeding the Machine* (69, p. 314) provides another example. This surrealist artwork is suggestive of human evolution. The key theme discussed during the interviews regarding this artwork was human and technology hierarchy and human progression or evolution, indicating that ideas of progression and past and future links between humans/animals and technological worlds were considered the most salient features of this artwork.

The critical potential of cyborg art as a symptom of our increasing synthesis with technology is that it interrogates and explores the meaning of cyborgisation, thus revealing the tensions associated with this process. Cyborgs are themselves meanings, as they expressively signify differing theoretical approaches and conceptual frameworks relating to technological usage and fusion. Gadamer contends that “The symbolic does not simply point toward a meaning, but rather allows that meaning to present itself. The symbolic represents meaning” (1986, p. 34). *Feeding the Machine*

symbolises the negative implications of human ‘progression’; imagery which not only alludes to Mumford’s (1960) concerns over our diminishing creativity, but also to Heidegger’s (1977) fears regarding our projected operational mode of thinking. Cyborg art symbolically illustrates the meanings attached to technology; what we find necessary, intolerable, exciting or mundane. This ultimately impacts on the meanings ascribed to humanity as a broad concept, and as a state of personal being.

The major factor limiting the potential of cyborg art to reveal the increasing relationship which exists between humanity and technology relates to levels of viewer engagement with the artworks. Art which does not represent something tangible for a viewer can often not be given viewing time and effort, as the viewer does not recognise elements within the artwork that are relevant to his or her life (Freeland, 2001; Novitz, 1992; Wittkower, 1977). This is because symbols are anchored to the reality of human experience (Barry, 1997). My empirical findings indicate that the cyborg concept may still be too far removed from everyday life to be considered relevant and representational. For instance, not one of the questionnaire respondents stated that they would refer to themselves as a cyborg, and only 11 percent stated that they had been ‘technologically altered’ in some way. Additionally, just under two-thirds of the interview participants felt that the cyborg was more a symbol of progress or the future rather than the present, and 58 percent of the questionnaire respondents stated that they were unsure regarding, or disagreed with, the statement that the cyborg was a symbol of contemporary society. These findings show that for many people, the cyborg concept remains in a conceptual terrain as opposed to existing in a literal domain; as a future vision, not a contemporary reality.

Certain cyborg artworks therefore run the risk of being considered extreme, overly-provocative, complex, fictitious or too divorced from people’s lived realities to be empowering or catalytic in any way. As an example, the main theme discussed during the interviews regarding Doležálek’s totemic artwork *Bůh Závitu: Screw God* (27, p. 160), was indigenous cultures, including South American, Māori, or Mexican, and the key theme to emerge from the discussion of Luetke’s sculpture *Dark Karma* (68, p.

310) was the representation of religion, such as Eastern religion, Hindu, or Buddhism. As such, the interview participants focused on what was culturally recognisable and familiar – ethnicity and religion respectively – as these are fundamental social dimensions known to most people. Many of the interfaces which cyborg art represents are not familiar body configurations for most viewers.

ii. *Scope*. Cyborg art also functions as a symbol for the scope of technologies in existence today, and their entrenchment in Western society. Artists are situating body-technology interface ideas in a variety of conceptual and cultural realms and tangible/actual research fields. These artworks explore an array of attachments, devices, gadgets, connections, networks, systems, techniques and by-products. For instance, Stenslie's interactive cyber-erotic work *CyberSM* (62, p. 288), explores a high-tech version of sexual enhancement of the body via telematics, while Stelarc's artwork *Handwriting – Third Hand: Evolution* (Image 51, p. 256), shows how technological extension of an already fully functioning body can be perceived. Cyborg art presents all manner of developments to the public visually, offering viewers a chance to examine these technologies without actually having to be recipients. The most popular option the questionnaire respondents selected regarding which technologies they thought would have the most impact on human bodies in the near future was *All of the above equally*, relating to prosthetics, communication technologies and biotechnologies. This indicates an awareness that these technologies are all continuing to advance as we head deeper into the twenty-first century.

The critical potential of cyborg artworks which represent the scope of technologies today is that they fill a conceptual gap in public awareness of how these technologies may impact on us. Stelarc's Third Hand performance alludes to the way the body can be augmented by technology; not just technologically reconstructed, while Van Winkle's illustration *Wireframe Torso* (26, p. 156) metaphorically signifies the gradually changing composition of the human body's essence. This artwork symbolically points to the encroachment of technology onto the body and the way our genome (our genetic material) is being mapped today and transformed into code.

The key limitation of cyborg art as a medium for showing the scope of technoscience is that the sheer extent and complexity of the figurative, metaphorical and literal artworks created today can cause confusion for the viewer; not only regarding which technologies are actually being developed and experimented with, but also which technologies the public has access to. Moreover, cyborg-inspired artists often merge fictitious and actual technologies together. This causes additional uncertainty over which technologies and devices actually exist, and which are merely fantasy. This merger of fiction with reality also creates doubt over what a cyborg actually is, thus limiting the cyborg's potential to serve as an exploratory emblem for changing humanity. Many of the research participants surveyed in this study were aware that a cyborg was a human being adapted by or interfaced with technology; however, several also believed that the cyborg could be both a human being and a robot. A number of research participants also believed the cyborg to be solely an android or a robot. In addition, the fact that *The Terminator* was the cyborg which the majority of the questionnaire respondents were most familiar with shows the impact popular culture has had on public understandings of the cyborg concept. This potentially outweighs its historical and theoretical legacy as a human being augmented by technology in order to withstand the harsh elements of extraterrestrial environments.

Another pertinent limitation is that technology is becoming increasingly microminiaturised, less mechanical, and often wireless. Therefore, cyborg artworks which incorporate aesthetically lavish devices may begin to appear out-of-date. The challenge for artists is therefore how to continue to project corporeal interface ideas which remain bold and compelling, when the technology itself is becoming increasingly smaller. Mann's WearComp, which he continued to develop over three decades, provides an example of this dilemma. This device progressed from a large helmet with an abundance of gadgetry and even an antenna in the early 1980s, to now being simply a normal-looking pair of glasses. Yet the 1980s/1990s bulky headgear generated more public responses, and impacted on Mann's life in more ways than his glasses. Therefore, the bulkier prototype in fact offered considerably more avenues for raising public awareness and debate. Mann (2001) feels that while the physical

burdens on humans are alleviated as technology becomes miniaturised; the metaphorical burdens intensify, as these devices more often reside within our bodies.

2. Dissolving Physical/Bodily, Socio-cultural and Ideological Boundaries and Barriers

i. *Combinations*. One of cyborg art's key symbolic functions is that it symbolises the mediation between organic and artificial realms. Bukatman affirms that "Technology and the human are no longer so dichotomous" (1993, p. 5). Cyborg art visually represents, intercedes and conciliates this state. Cyborg art alludes to the common functioning systems – input and output feedback loops of information, communication and control – which exist between organic humans and inorganic machines, and therefore their common ontology. This is most evident in the research field of neuroprosthesis, where living neurons and electrical circuitry are mounted on silicon board together, enabling communication to occur between these two previously distinct terrains (Naam, 2005). One of the most visual examples of this conjoining in an artistic sense is Koen's illustration *Medical Breakthroughs* (14, p. 122), which depicts the human brain converging with a computer circuit board. Combining soft, malleable and fragile organics with hard and inflexible metal is an overriding focus in cyborg art, as artists are constantly finding ways to meld the warmth of the human body with the coldness of the machine. Warwick rightly surmises that today "From a cybernetics viewpoint, the boundaries between humans and machines become almost inconsequential" (2003, p. 131). Eighty-six percent of the questionnaire respondents (56 out of 65) agreed that human bodies and technology were increasingly interconnected overall.

The critical potential of cyborg art presenting numerous organic-inorganic convergences is the way these artworks serve as visual messengers fostering awareness of this merger. Cyborg art is a visual and often interactive medium, which has the ability to impact on many more people than text-based discussion. This is due

to vision being one of the more powerful of the human senses (Childers & Houston, 1984; Grady, McIntosh, Rajah, & Craik, 1998; Lovejoy, 2004). Empirical studies have shown that including an image adjacent to words, for example, in a request for donations to a charity organisation, generates over double the response due to people rapidly being able to identify with the image (Stapp, Thielman, & Gorst, 1990). Richard Howells (2003) adds that the saying ‘a picture is worth a thousands words’ is well-worn but remains accurate, as images can extend a concept when words are not enough. Surrealist artist Judson Huss agrees with Howell’s sentiments, stating that “Words and the use of them are important tools but they don’t stretch far enough to encompass the breadth of a vision” (1996, p. 58).

Pictures or images are also often encoded into memory more effectively than words due to their distinctiveness and novelty. This is because they induce more associative and elaborate encoding mechanisms, which create stronger memory traces (Grady, McIntosh, Rajah, & Craik, 1998). This is known as the picture-superiority effect (Childers & Houston, 1984). Visual imagery can be far more compelling than written text, particularly at the outset, yet incorporating both text and visual material together can often be the most useful (Stapp, Thielman, & Gorst, 1990). I therefore suggest that cyborg art should be acknowledged and viewed as complementary to theoretical and laboratory-based research focusing on human body and technology integration, which I discuss in the Future Visions section.

The main limitation of viewing cyborg art as a key medium for visually articulating body-technology fusion is that most two-dimensional cyborg artworks created today are conceptual. For instance, I have not located any artworks which focus on Kevin Warwick’s (2003) ground-breaking neural-electrical conjoining, or Jesse Sullivan’s and Claudia Mitchell’s bionic limbs. Cyborg art also does not readily focus on individuals who have devices incorporated into their bodies to assist functioning, such as those with cochlear implants in order to aid hearing, or those with devices which reduce and/or stop the tremours associated with Parkinson’s disease (Naam, 2005; Perkwitz, 2004). Kothari depicts a mechanical heart in his photographic

artwork *Digital* (55, p. 269), however this image reflects a stylistic and metaphorical approach, as opposed to a realistic one. González affirms that “The cyborg body is that which is already inhabited and through which the interface to a contemporary world is already made” (1995, p. 267). Yet cyborg art tends to focus on metaphorical and figurative forms of representation, denying individuals more opportunity to see for themselves the kinds of interfaces that actually exist today.

ii. *Permeable Skin*. One of the main ways cyborg art depicts the dissolution of boundaries evident under postmodernism and the biotech age is how skin is shown to no longer serve as a barrier to human viscera; the way human bodies are increasingly “porous or penetrated” by technology (Graham, 2002, p. 22). Cyborg artworks such as Kothari’s plugged-in man (21, p. 147), Harper’s painting *Gear Head* (56, p. 271), and Shirow’s illustration *Major Kusanagi* (57, p. 273), evocatively show the skin being penetrating by attachments – linking the biomechanical body to the machine. Furthermore, artworks such as *Self-surveilling Embryo* (30, p. 187) and *Digital* (55, p. 269) metaphorically symbolise how skin no longer exists as an opaque wall or barrier, but rather as a transparent window as a result of visualisation technologies. Wilding’s artwork *Self-surveilling Embryo* illustrates how we can increasingly see into the womb, via the permeative gaze of technoscience. The two main themes addressed by the interview participants in relation to *Digital* centred on a mechanical heart or pacemaker, and the replacement of human parts or a type of cyborg aesthetic. This identifies that artworks such as *Digital* can signify and foster discussions on embodied technologies, despite their stylistic imagery.

The critical potential of cyborg artworks which depict the skin as being penetrable by technology is that they visually show not only the way the interior of the human body can now fuse with technology, but also how the inner body is increasingly accessible. Western culture no longer views internal corporeality as sacred, but rather as a place to contain technology, in most instances in order to assist natural body functioning. Stelarc’s and Hatoum’s performance works *Stomach Sculpture* (1993) and *Corps Étranger* (1994), respectively, are literal examples of this. Stelarc’s stomach acts as a

‘host’ to the artwork which consists of a capsule with an endoscopic camera attached (Stelarc, 2004b). The capsule is a literal embodied artwork, not only transforming the boundaries of the inner corporeal realm as a formerly private space, but also showing how technology and the inner body can coexist.

However, one of the problems with artworks that reflect either invasive or visual skin penetration is that they are often presented using dystopian imagery, thus illustrating the negative aspects of the interface. For example, McKeich’s masked female (20, p. 146) metaphorically represents the sinister aspects of technology and its effects, while *Happiness in Slavery* (17, p. 137) denotes machine-mind interface where the skin is used as an intermediary and the cyborg becomes a biomechanical slave. Wilding’s artwork *Self-surveilling Embryo* (30, p. 187) shows the growing and gestating foetus deformed; fused with various visualisation technologies. Optimistic or utopian representations of skin penetrations are less often explored denying viewers the opportunity to observe how more positive portrayals may appear.

iii. *Dissolving Binaries*. Another key symbolic function of cyborg art is that it visually demonstrates dissolving (and rupturing) binaries and increasing transgressions associated with Western society’s ideologies, as these divisions are gradually deemed to be “fraught with cracks” (Dery, 1996, p. 244). Dissolving borders and binaries include between the physical and non-physical realms (Haraway, 1991a), and between “Nature/culture, female/male, primitive/civilized, body/mind, emotion/reason, sacred/secular, as well as human/technological” (Graham, 2001, p. 242). These binaries have existed as organised frameworks of thought under modernism for centuries, but are now increasingly challenged and tested.

Artworks such as *Bionic* (41, p. 220) point to the dissolving dualism which has previously existed between male and female genders; *Introspection* (31, p. 191) ruptures the dichotomies between born and made; *Cyborg Jesus* (29, p. 160) dissolves the divisions between the sacred and secular, while *Posthuman Meeting* (15, p. 124) splinters the separation between the corporeal and incorporeal, or the physical and

virtual realms. In addition, tribrids such as Hitchcock's *Overlord* (70, p. 316) transgress ideological boundaries between the human, technology and animal spheres, while Taillefer's quadratic entity *Venus Envy* (72, p. 322) transgresses traditional boundaries even further, pointing to the way in which all 'matter' is interrelated. Springer contends that "Transgressed boundaries, in fact, define the cyborg, making it the consummate postmodern concept" (1998, p. 486). The ideological implications of this are vast, as many cultures and religions such as Christianity retain a belief in humanity as unique and at the pinnacle of evolution. Cyborg art therefore persuades viewers to confront their assumed human 'uniqueness' and 'naturalness', encouraging deeper contemplation into whether technological components meshed with the human body would destroy the concept of humanness, or merely transform it.

The critical potential of transgressive, boundary-breaking cyborg artworks is that they promote a rethinking of conventional norms and mores; offering us exciting and stimulating alternatives. They present an opportunity to develop a new kind of framework for society which is not based on difference, dominion, opposition, discrimination, hierarchy and control. Rather, as Hayles states, a framework can be developed where "A dynamic partnership between humans and intelligent machines replaces the liberal humanist subject's manifest destiny to dominate and control nature" (1999, p. 288). Haraway (1991a) suggests that the cyborg image provides a way to escape the destructive dualisms which human beings have created. Terms such as miscegenation and its associated ideologies fade within the configuration of the cyborg. The ontology of amalgamation becomes a new ontology of humanity, one that centres on kinship with nature and technology, and affinity with each other.

The drawbacks of cyborg art which focuses on dissolving traditional dualisms and escalating transgressions is that the cyborg body often appears unstable and dysfunctional (Fuchs, 1995), and too disorientated, ambiguous and semantically open to be functional in terms of presenting critical socio-cultural themes (Short, 2005). The cyborg exists on the cusp of ideological dualisms and binaries, therefore it can be looked upon as belonging to neither realm, reduced to floating in a sea of impartiality,

or oscillating between both sides of the divide – existing in a permanent state of identity confusion (Volkart, 2004-2005b). The cyborg’s contradictory and ambiguous subjectivity is related to Jacques Derrida’s concept of ‘undecidability’, which reveals how so-called binary oppositions are rarely situated in a dichotomous relation to each other, and that there is more ‘a play of meaning’ under postmodernism, where meanings are not fixed or final (Reynolds, 2006). The main theme discussed during the interviews regarding Taillefer’s painting *Venus Envy* (72, p. 322), was that the artwork evoked complicated imagery and a confusion of ideas, which provides an example of the uncertainty which can be caused by the cyborg’s transgressive aesthetics. Many of the interviewees stated that they were unsure what the artwork really meant due to its complex, converging and multifaceted imagery.

Artworks such as *Venus Envy* (72, p. 322), *If I Had My Gloves On I’d Pick It Up* (38, p. 214) and *Armed Hermaphrodite* (42, p. 223), which represent multilayered transgressive imagery, can also depict the human body as mutated or contaminated, whereby the body’s ontological hygiene is viewed as tainted (Graham, 2002). This can make the artwork itself appear more objectionable and abject thereby discouraging deeper investigation into what is being represented. The key themes discussed by the participants in relation to *Armed Hermaphrodite*, were ideas linked to transgenderism and hermaphroditism. The descriptive and transgressive elements of the image were more often discussed rather than any deeper ideas associated with the technologies shown, or their potentially dehumanising and invasive tendencies. Moreover, five interviewees found this artwork disagreeable, and four stated it appeared jumbled. Radically transgressive cyborg art can therefore be off-putting to viewers, particularly those who live by a code of set (modernist) ideals.

iv. *Confronting Taboos*. Cyborg art also provides a symbolic function for society by challenging and breaking down socio-cultural taboos. For instance, von Hagens’ anatomical artworks such as *Soccer Player* (36, p. 206) help to overcome taboos associated with human corpses, by providing avenues for reconceptualising the very notion of death as decay or incineration. In relation to gender, *Armed Hermaphrodite*

(42, p. 223) challenges and subverts notions of bodily dichotomous sex, while *Asian Cyborg* (40, p. 218), *Bionic* (41, p. 220), and *Jass* (44, p. 228) defy notions of genderness and stereotype with their androgynous imagery. These artworks shatter the cultural taboos aligned with defined codes of femininity and masculinity.

Furthermore, McKenna's artwork *Cyborg* (9, p. 109), and Kim's painting *Tears* (10, p. 110), break down taboos associated with male emotional expression. These artists represent their cyborgs as despondent and contemplative, as opposed to aggressive competitors. Cyborg artworks such as *Plug* (67, p. 308) also rupture ideas of organic wholeness and human distinctiveness, breaking down taboos associated with purity of species. Cyborgs are border crossers (Murphie & Potts, 2003), transgressive figures (Kunzru, 1997), and posthuman operatives; being both assembled and born. Cyborg-inspired artworks and the artists creating them also challenge cultural ideologies associated with ethnicity. For example, Gómez-Peña, as *El Mexterminator* (49, p. 244), re-represents discriminatory feelings shown towards men and women of colour back to the very people who offered these views via his performances. He shatters the notion that people of colour cannot comprehend their own status in the Western world, or throw prejudice attitudes back, via humour, art and technological means.

Cyborg artworks which break down socio-cultural taboos have critical potential as they not only encourage viewers to reconceptualise ideas associated with taboo subjects, they also promote freedom of bodily expression. For instance, Stelarc's performance artwork *Third Hand: Evolution* (51, p. 256) challenges the ideology that the organic human body is complete (and whole) in itself, and that two hands are 'sufficient'. The main theme to emerge from the interview discussions on Stelarc's performance art was that he showed a desire for, an exploration of, and the usefulness of technological augmentation. This suggests that many of the interviewees were receptive to Stelarc's ideas. Cyborg artworks which depict themes of augmentation can encourage acceptance of corporeal expansion, and can also show that it is an individual's right to alter his or her body as they choose (Mann, 2001).

However, there are noted limitations to taboo-breaking cyborg artworks. The most prominent being that viewers may be culturally, religiously or personally opposed to the ideas which they represent. This in turn discourages acceptance of these ideas. I note that one interview participant was resistant to discussing Giger's artwork *Birth Machine Baby* (33, p. 197) due to its imagery, as this artwork shatters taboos relating to pregnancy, gestation and the perceived sacredness of the human foetus. The representation of ectogenesis also challenges the patriarchal ideology that women were created to bear children and that they should be mothers. Yet artworks which depict the foetus in an explicit manner also rebuff traditional notions that pregnancy should be hidden and removed from the public gaze (Crawley, Foley, & Shehan, 2008), and that gestation can and should only exist in the body of an organic female. Nonetheless, these are strong human beliefs; therefore cyborg art risks being rejected if the taboo-breaking imagery is deemed too confrontational. I note that this occurred publicly in New Zealand in 2003, when an anti-GE MAdGE billboard (p. 398) was swiftly removed due to vocal public condemnation over its transgenic imagery.

3. Dystopian, Utopian, Figural and Literal Interface Aesthetics and Body Resurgence

i. *Warnings*. Dystopian cyborg artworks serve a symbolic function as they are often presented as warnings, drawing attention to what may happen if technology becomes increasingly interfaced with human bodies, and continues to develop in an unchecked manner. As Clark drolly states, "The grass isn't always greener on the cyborg side of the street" (2003, p. 167). Key dystopic themes depicted in art include a loss of independence; a loss of a unique human essence and the ability to feel; a renouncing of spirituality; dehumanisation in terms of relentless dependency on machines and being controlled by machines; monitoring, testing and surveillance of the body; and defencelessness and exposure. Fortunati, Katz and Riccini affirm that "As technology progresses, some fear that the body will become at best a mere appendix to the machine, at worst the machine's obliterated victim" (2003, p. 2).

Giger's artwork *Death Machine I* (7, p. 105) provides a fitting example of dystopian aesthetics as this artwork shows a woman completely controlled by machinery during the birthing process. Giger's dark artwork alludes to what may happen if humanity continues to test/monitor and control 'natural' human functions to such an extent that the human being becomes an exploitable object rather than a living subject. Moreover, Luetke's digital artwork *Kreator: Enemy Of God* (34, p. 200) shows external wombs with growing human foetuses connected to human-machine hybrid corpses, thus demonstrating metaphorically that human beings may eventually begin to *feel* dead if they relinquish the ability to *give* life. *Happiness in Slavery* (17, p. 137) presents the hopelessness implicit with technological encroachment on the human body, which is another key dystopian theme; that the might and power of technology may well be a force that is too great for humanity to withstand. Other key dystopic themes presented in cyborg art include bodily abuse, mutation, and hyper-aggression. However, the theme of increased dependence on technology was one of the most widely discussed during the interview process; and when asked directly, 71 percent of the interview participants believed that humanity was becoming increasingly over-reliant on technology. Additionally, all but three of the 65 questionnaire respondents (95 percent) felt that we are becoming increasingly dependent on technology today.

The critical potential of cyborg art's penchant for dystopian aesthetics is that these artworks offer an arena to readdress and reappraise body-technology integration; ideas, concepts and projects before they become a reality. For instance, the two key themes discussed in relation to Kothari's artwork showing his plugged-in man (21, p. 147) was abject/abusive imagery, and control and dependency or the 'Matrix idea'. Comments pertaining to the first theme included ideas such as pain, torture, decay, unnaturalness, and machines taking over humans, while comments contributing to the second theme included ideas relating to physical and emotional control-over a person, a loss of control over biological functions, presenting a warning for the future, and resembling the ideas explored in the film *The Matrix* (1999). This artwork therefore provided an avenue to reflect on issues of dependency and loss of body-autonomy.

The key theme discussed during the interviews in relation to the topic of control was the use of technology to control others, by way of influence, surveillance and power. These are significant concerns and linked to the imbalances of power in society. Theorists such as Heidegger and Mann also believe that technology is becoming increasingly *uncontrollable*. Heidegger argued that the desire to fully master technology becomes “all the more urgent the more technology threatens to slip from human control” (1977, p. 5). Mann contends that “We are used and controlled by our technologies at least as much as we use and control these same technologies” (2001, p. 80). Heidegger also suggested in the mid-twentieth century that human beings were already blinded by the enormity of technology’s power. Gray agrees that the seductive power of technology can be “overwhelming” (as cited in Armitage, 2006, p. 241). These theorists rightly acknowledge the lure and might of technology.

The most significant drawback regarding dystopian-themed cyborg art, in terms of having symbolic function and thus critical potential, is that the artworks can often appear to be fictitious and excessive, falling into a liminal zone between ‘entertainment’ and ‘art’. Dystopian imagery is for the most part futuristic and figural, therefore it may be deemed unable to address everyday concerns. Another limitation has already been mentioned, and concerns the way radical abject imagery can be distasteful and disconcerting to some viewers, thereby effectively precluding any intellectual-interpretive engagement. A delicate line exists between art which is stimulating and art which is repellent. Cyborg art must constantly negotiate this line in order to effectively present relevant social ideas via its chosen aesthetics.

A noted gap within the dystopian cyborg art focus is the lack of imagery addressing the control and hyper-surveillance aspects of private or public telematic technologies, such as spyware, email and phone tracking. What is also noticeably absent is an exploration of the way human beings have exchanged manual labour for simulated labour, such as data operators, which Bogard (1996) defines as cyborg work. To date, I have found few artistic representations of individuals interfaced with a keyboard or computer screen, aside from Randolph’s artwork *Cyborg* (45, p. 231), which explores

optimistic cyborgian themes and only hints at a body-keyboard interface. Pick's painting *Media and Child* (23, p. 152) is also one of the only cyborg artworks I have found which depicts surveillance imagery. The two key themes to emerge from the discussion on *Media and Child* were the negative impacts of television viewing and/or the baby being raised by the television, and the symbolism evoked by the cutting of the cord to the television. The participants' responses therefore supported Pick's artistic intent of showing television viewing as both hypnotic and destructive. Pick uses *Media and Child* and the metaphorical merger of the body and technology to draw attention to the invasiveness of technology regarding the human mind.

ii. *Enrichment*. Cyborg art also focuses on utopian themes, alluding to the positive aspects of human body and technology fusion. These artworks are symbolic of our desire for augmentation, beauty, connectivity, longevity, and immortality. They point to our longing to use technology in order to enhance our bodies and our life trajectories, and to overcome (supposed) human failings. Koen's *Nutritionman* (18, p. 137) is a representation of the entire body enhanced via the technological interface, while Fox's artwork *Fembot* (59, p. 279) represents the pleasure of being telematically connected. Gordon's performance project *The Psymbiote* (16 & 16a, p. 134) and Stelarc's performance artwork *Third Hand: Evolution* (51, p. 256) literally show the human body (or specifically the human 'hand') in optimistic extension.

The strength of utopian-inspired cyborg artworks is that they encourage viewers to see human-technology interface as a synthesis and a symbiotic union. These artworks symbolise the enormous gifts and benefits potentially bestowed on us by technology, such as increased mental and physical competency, strength, vitality, agility and interactivity. This art focus also provides viewers with the ability to visualise ways that technology can enhance the body (and the mind), without the loss of the human spirit/identity. Utopian cyborg artworks therefore provide a space (and place) to applaud the developments of technoscience. They also demonstrate that human beings can be co-contributors in their life trajectories – working with technology rather than being at the whim of technology, or working against technology.

Nonetheless, there are two key limitations inherent within utopian-themed cyborg art. The first is the way these artworks are often unable to visually project the ethical complexities as well as the ontological and social implications of the techno-body. The focus is instead on showing technology as advantageous and problem-free. This weakens the potential for cyborg art to have an input into everyday concerns, including issues surrounding the lived reality of the human body as opposed to what technology can do to enhance a body, or keep a body alive for longer. The overriding theme to emerge in response to an interview question centring on the prolonging of human life was the importance of the quality of life and not its duration. This identifies that how a life is lived far outweighs how long a person may live, no matter how augmented that person may be. Secondly, we have a propensity to be intrigued with the dire, bizarre or violent aspects of humanity (Short, 2005). For this reason utopian artworks are less likely to solicit the same level of interest and intrigue as dystopian artworks. As such, there are far more artworks created with dystopian or negative themes than with utopian or positive ideas. I asked the interview participants whether they also thought this was the case, and just over half mentioned that imagery depicting dystopian cyborgs/themes appeared to be more common overall.

iii. *Fictional*. Cyborg art also focuses on metaphorical and figural visions of cyborgs as a way to symbolise body-technology synthesis in novel ways, and to present concepts which are not in existence today, but which may become a reality in the future. These depictions allow us to visualise a future world before we arrive there, in order to gauge whether we like what we see (Best & Kellner, 2001). As an example, Murakami's sculpture *Second Mission Project Ko²* (52 & 52a, p. 259) is a metaphorical representation of a human body augmented to such an extent that the transformed human-cyborg has the ability to fly. The key theme discussed by the interviewees regarding this sculpture was the way it was perceived as being similar to Transformers or Gundam Wing characters; how the girl represented in the sculpture could transform into an aeroplane and fly. Transformers toys are considered educational and an important learning tool today as they provide children with certain skills needed for living in the transforming transhuman era (Dewdney, 1998).

The strength of futuristic cyborg visions centres on the way extreme interfaces can be viewed without actual biotechnological experimentation (Wilson, 2002). The way these artworks also serve as ‘antennas’ for society is also important, as they help us to gauge our own stance towards the fictional ideas represented. Longo (2003) believes that rational and logical predictions of the future are untenable today, as technology, humanity and the world environment are all changing too fast to keep pace with the changes. Art therefore fills the theoretical and explorative gap produced by this impasse. Furthermore, Gordon Graham rightly asserts that ‘imagination’ is not a whim but rather a “deliberative act of the mind” (2005, p. 63), which has developed within a cultural space in order to address themes pertaining to that environment.

The limitations of cyborg artworks which focus on fictitious interface aesthetics centres on the way the cyborg concept remains subsumed within the science fiction realm. The cyborg can therefore more often be deemed a fantasy character and concept for ‘trivial’ entertainment, as opposed to a character and concept which has symbolic function, societal value and critical potential. As an example, only one questionnaire respondent, out of 65, was aware of Steve Mann, the WearComp designer, opposed to 44 who were aware of *The Terminator*. I suggest that the focus on fictitious cyborgs in art and imagery reduces the potential for the cyborg concept to escape its fantasy realm, and to be recognised as a literal and relevant concept. However, it is to be noted that just over half the interview participants surveyed felt that science fiction cyborgs depicted in television shows, films, books and comics had increased their understanding of the links between humanity and technology. This suggests that cyborg imagery in any realm can have an impact on viewers.

iv. *Actual*. As shown in this study, ‘actual’ cyborg artists exist today, as do many types of ‘real’ interfaces. Literal artist-cyborgs provide a symbolic function for society by enabling viewers to fully conceptualise the technologies currently being developed, and for viewers to experience these technologies first-hand. Most cyborg-inspired literal artworks reside in the performance art realms, and several are also interactive, enabling audience members the chance to co-create aspects of the

performance and experience many of the themes which are explored. This heightens the likelihood of a combined spiritual, intellectual and aesthetic engagement with the concepts addressed (Wilson, 2002). Antúnez Roca (63, p. 292) and Kac (64, p. 294) focus on issues of external and anonymous control-over, and manipulation of, the body, while Gómez-Peña (49, p. 244) draws attention to the links between culture, ethnicity, race and technology. Gómez-Peña (2000) not only presents his stage shows in front of the art world's elite, but also in warehouses in front of migrant workers. Gordon tours universities with *The Psymbiote* (16 & 16a, p. 134) in order to show her titanium glove directly to the public, stimulating debate on cyborgisation.

The critical potential of many of these literal artworks centres on the way they are able to show how existing advanced technologies actually function, and how they can be adapted to create a whole host of real-life experiences. These artworks are also prefigurative as they are living embodiments of real technologies which can impact on people today, and in the future. Gray, Mentor and Figueroa-Sarriera emphasise that "It's not just Robocop, it is our grandmother with a pacemaker" who is interfaced with technology (1995, p. 2). Actual/literal cyborg artists pre-engage with a potential future by actually living the interface for a certain period of time, thereby serving as an antecedent for approaching possibilities (Gray, 2002).

Furthermore, 'actual' cyborg artworks point to fissures and concerns regarding increasing body and technology convergence, that are not often openly discussed (Garoian & Gaudelius, 2001). For example, Stenslie centres on remote sexual connections in his interactive artwork *CyberSM* (62, p. 288). This artwork opens up dialogue on relevant issues associated with virtual sex in contemporary society, including debates that centre on sex as opposed to love, safe sex, sexual fulfilment, sexual fantasies and role play, anonymous sexual experiences, and sexual fetishism. The main theme to emerge during the interviews in relation to Stenslie's performance art was the tangible concept of technology-based sex and the implications of this form of sexual activity. This suggests that many of the participants understood Stenslie's artistic intent. Several also found his artwork interesting and novel, which indicates

that cyborg art explores and presents human-technology/computer interface ideas that are rarely experienced by people in general. Stenslie also allows the public to actually experience for themselves his ground-breaking tele-tactile interactive art.

The main limitation of actual/literal cyborg artworks having critical potential centres on the way these works are often not widely known about. There are also limited performance artists working in the interface realm today. While these artists' works can be found online and in books and articles they are not widely advertised or circulated within mainstream media, with the exception of von Hagens' anatomical artworks, which have featured on television and in film. In addition, literal prosthetic limbs such as those worn by Cornel Winiata (50, p. 246) and Aimee Mullins (54, p. 265) are infrequently discussed culturally. The focus is more often on loss and function. This denies public insight into the way these prosthetic additions can be viewed in this regard. To date, Marquard Smith's and Joanne Morra's 2006 book *The Prosthetic Impulse: From a Posthuman Present to a Biocultural Future* is one of the only in-depth studies I have found which focuses on the concept of prostheses from a cultural view, rather than primarily historical, medical, or descriptive.

v. *Body Resurgence*. Cyborg art also symbolises a renewed interest in the body as a key dimension of human identity. This focus has transpired in the past few decades aligned with postmodernism. The body within this paradigm is increasingly deemed malleable, flexible and fluid; a site for experimentation, where different versions of ourselves can be trialled (Shilling, 2003). The body is increasingly taken seriously as more than a container or vehicle for being, and more than just flesh; but as the basis of existence. Maldonado surmises that "A human body is not an abstraction, but the concrete, everyday body that each of us occupies in a given historical moment" (2003, p. 18). The dead body is also being reconsidered with interest, as the success of von Hagens' Body Worlds exhibitions show. The interview participants' responses to von Hagens' artwork *Soccer Player* (36, p. 206) paralleled his exhibition survey findings. The key theme discussed by my participants was the way von Hagens' anatomical art was interesting, fascinating and bizarre and allowed viewing of the

body's interior realm. Furthermore, two-thirds of the interviewees felt that plastination was an acceptable art form if donors gave their consent. They felt that people have the right to do as they wish with their own bodies, regardless of what cultural issues may exist, and how others may feel about the decisions made.

The critical potential of cyborg art as a tool for refocusing attention onto the body centres on the way it awards the body a pivotal place in the debate over advancing technologies. As Kunzru contends, "The cyborg forces us to situate thought in the body, and in turn to situate bodies in networks which contain elements of biology, politics, desire and technology" (1997, p. 6). I note that Moravec (1988) and others believe that humanity will eventually surpass the need for a corporeal body, but for now the body exists as the focus of our scrutiny regarding technology. Hayles confirms that "The specificities of embodiment matter" (1999, p. 246). Cyborg art's focus *is* the body, thereby helping humanity to navigate changing human corporeality. Cyborg art provides a place for viewers to examine their desires for, and fears regarding, techno-augmentation regarding both the live and dead body.

The constraints associated with cyborg art refocusing interest onto the human body centre on the way the ideas, meanings and concepts represented have to be read through the selected aesthetics in order to have an impact. The viewer must therefore be open not only to novel concepts such as plastination, ectogenesis, post-genderism and transgenics, but also to metaphor, as this is the cyborg artist's main strategy for addressing key interface technologies and the issues surrounding their development. The cyborg body must therefore serve as a mediator between the deeper themes which are alluded to, and the technologies and interface ideas which the viewer actually sees before them. This places a burden on artists, as what is required is an inherent capacity to transmit ideas that go beyond the actual physical convergence of flesh and metal or organic and inorganic melding, in a way that does not exploit the cyborg body (Zylinska, 2002). In order for cyborg art to be critical in this regard, it must avoid reducing the techno-body to a fetishised object (Volkart, 2004-2005a), but rather focus on promoting the cyborg as a thought-provoking subject.

4. Politics, Ethics and Sociological Issues of Increasing Body-Technology Merger

i. *Interface Politics/Ethics*. Cyborg art also symbolises the political and ethical quandaries and incongruence associated with cyborgisation; the way our current societal frameworks do not match or relate to the advanced technologies which are being created at an escalating pace (Gray, 2001; Mann, 2001; Murphie & Potts, 2003). For instance, Giger's artwork *Birth Machine* (6, p. 104), and Luetke's artworks *Dream On* (32, p. 193) and *Kreator: Enemy Of God* (34, p. 200), depict production line babies growing artificially, alluding to the ethical concerns around gestating humans mechanically. *The Young Family* (65, p. 300) and *Shepherd I* (66, p. 302) both point to ethical dilemmas surrounding the creation of transgenic entities; inventions which may be too monstrous to be loved. These artworks draw attention to the limited ethical and political foundations in place in order to deal with these types of developments. As Kimbrell emphasises, "We are in ethical free-fall" (1997, p. x).

The critical potential of cyborg art which projects political and ethical concerns and conflicts, centres on the way it can highlight the urgency of developing new ethical principles, in order to address the changes brought on by human and technology interactions. Developing ethical guidelines which take into account new body technologies is pertinent in order to protect individuals and the environment from possible abuses (Gray, 2001). Cyborg art encourages increased levels of attention to be given to the concept of cyborgisation, which can boost input into the ethical concerns body technologies generate, whilst also potentially increasing democratic responsibility felt towards these advancing technologies. However, there is a significant social concern which needs to be addressed before members of the public can be more involved with debating the ethics of techno-body developments; the insufficient amounts/types of information which is given to the public today. Nearly two-thirds of the interview participants indicated that they were lacking in information on body technologies, and just over half the questionnaire respondents felt that they were not given adequate information on biotechnologies.

Furthermore, the majority of interview participants felt that corporate enterprise made most of the key decisions regarding which technologies are eventually developed, and almost two-thirds of both the interview participants and the questionnaire respondents felt that they were not easily able to contribute to decisions made concerning technological developments. Gray feels that these are key concerns and that cyborg art can help address these issues. In an interview with John Armitage, Gray stated:

How cyborgization will shape us in the future is part of the larger political question, which is always THE question, who gets to decide? If we don't decide to foster political systems that leave the most important individual decisions (of consciousness, of life and death) up to individuals then someone else will decide and cyborgization will be about power-over...If cyborgian innovations are basically driven by military and profit-making priorities, then a certain type of human future will be engineered for us. Technological momentum flows towards resources, toward power: material (military), institutional, financial, and intellectual. Our individual choices can make a difference; when we act collectively it can make more of a difference. Cyborg art and cyborg citizenship are part of this. (2006, pp. 239-240)

Cyborg art can encourage ethical responsibility to the world as the cyborg anchors us to the changes which we initiate (Brasher, 1996). Haraway suggests that "Cyborg ethics is about the manner in which we are responsible for these worlds" (2000, p. 146). She contends that "Politics rests on the possibility of a shared world...on the possibility of being accountable to each other..." (Haraway as cited in Penley & Ross, 1991, p. 4). Moreover, a few of my interviewees stated that public opinion has no influence on the choices people in power make. Gray agrees that this is a concern and suggests that "It is going to take some very discerning, and very active, cyborg citizens indeed" to become more proactive in addressing cyborgisation (as cited in Armitage, 2006, p. 241). Active and informed cyborg citizens are necessary in order to prevent detrimental ethical and political adversity and injunctions from occurring as a result of technologies being created without democratic debate and consideration.

The limitations of cyborg artworks which include political and ethical overtones as having effect, is that these concerns are frequently not deemed important or remarkable enough to incite action. This is because the benefits of technological

progression often overshadow the ethical problems which may develop as a result (Critical Art Ensemble, 1996). Gray emphasises that “Cyborgization is overdetermined because the military wants it, and prospective parents want it; because corporations want it, and transsexuals want it; because it is so powerful” (as cited in Armitage, 2006, p. 241). Furthermore, cyborg art is not powerful enough to help citizens or countries withstand the pull of wanted or needing to keep up with technoscientific exploration. The fear of being left behind compels nations to continue experimenting with technologies which have not been sanctioned by the people who will eventually be using them – either by choice or force (Brate, 2002; Stock, 2002). Placing limitations on technology can potentially position countries that make ethical choices behind countries that make economic choices; those who continue with developments with less concern over the ethical quandaries which may arise (Critical Art Ensemble, 1996; Zimmerman, 1990).

ii. *Sociological Overtones*. Cyborg art also symbolises the social dilemmas and implications embedded within advancing technologies, including inequalities relating to body augmentation, genetic screening of foetuses, and general communication links (often referred to as the digital divide) (Statistics New Zealand, 2004). For instance, Kothari’s subjugated man (21, p. 147) symbolises disempowerment, while Koen’s *Nutritionman* (18, p. 137) symbolises empowerment, and the affluence which is required regarding prosthetic augmentation, as these types of technologies will only be available to the techno-elite; out of reach to most ‘techno-peasants’ (Cook, 2004). Brenda Brasher affirms that “The design, production, cost, distribution, and access issues integral to new technologies are much more than market concerns; they are among the most important public policy issues that now confront us” (1996, pp. 825-826). The interview participants indicated agreement with this premise; as when asked directly, two-thirds felt that inequalities will continue to exist in a technological future. Discussions centred on the costs associated with ever-advancing technologies.

Cyborg art’s power to stimulate discussion of sociological issues centres on an artist’s desire to draw attention to pertinent concerns, and the manner in which they can

possibly be overcome. Artworks such as *Bionic* (41, p. 220) demonstrate a rejection of conventional female gendered aesthetics, helping to counter feminist claims that traditional representations of female cyborgs remain pervasive today. This form of imagery can encourage novel ways of viewing the techno-female body, by providing symbolism which presents women as powerful and non-sexualised. *Jass* (44, p. 228) also splinters norms associated with the techno-male. He is shown as soft-skinned, facially adorned, non-aggressive and yet physically powerful. Moreover, cyborg art addresses issues of ethnicity as a way to draw attention to non-white cultures, and the intolerances which still exist today. Gómez-Peña's ethno-cyborg characters (49, p. 244) present satirical imagery of new Mexican cyborg identities, and while Hitchcock's sculpture *The Black Knight* (48, p. 240) focuses on eroticism of the black male body, it does so without exploitation and extremity of representation. These artworks thus link the non-white male body to technology in provocative ways.

The overriding weakness of cyborg art which includes sociological overtones is that these artworks are few in number, and thus lack the scope to have substantial impact. Firstly, there is a significant lack of telematic-themed artworks created; artworks which address issues such as the digital divide or inequalities regarding cyberspace or gender and work distribution. The telematic cyborg art focus predominantly centres on being 'jacked in' or 'wired up' to virtual reality systems. Secondly, there are few cyborg artworks created which include or use non-European or non-Asian characters. I note that only two of the artworks included in this study show a cyborg character which is noticeably non-white and two where the actual performing artist or art subject is not of European or Asian origin. A number of interviewees agreed that there were more European cyborg characters created than any other ethnicity. Rich Buckler created *Deathlok* (43, p. 226) in the 1970s. During this time he also created a black comic book character for his publisher at the time, Skywald. However, they deemed his character to be too black and instructed the inker to lighten the face. Buckler confides that this was one of the main reasons he discontinued working on that particular book at the time (as cited in Best, 2004). I suggest that the focus on

European-featured cyborgs denies art the leverage to be more influential and to show greater diversity regarding cultural themes aligned with body and technology merger.

The main interview response theme discussed in relation to *Deathlok* (43, p. 226) was his hyper-aggressive, *Terminator* or ninja aesthetic. The key theme to emerge regarding Rinaldi's illustration *Cybergirl* (39, p. 216), was how she evoked a classic, fantasy-type sexy image of a female. These responses indicate that the stereotypical imagery shown was the most salient feature regarding both artworks. Even so, these types of works can still be empowering and have a purpose that surpasses their overt imagery. Two female interviewees stated that they enjoyed seeing a woman with powerful technological devices in relation to *Cybergirl's* imagery. Artists present stereotypes both for enjoyment and to stimulate reflection on how and why they exist. Buckler originally created *Deathlok* as a type of "Frankenstein meets Captain America" character ready to face those who controlled the world (as cited in Best, 2004, para. 25). He was created as a European character who married an African-American woman. He therefore had a son of mixed race. Buckler wanted to 'mix up' the racial aspect of *Deathlok's* identity because he "wanted him to be a universal man, I wanted him to be everybody" (as cited in Best, 2004, para. 28). *Deathlok* evolved into a black character due to the way he was re-represented by other artists.

iii. *Social Forces*. Cyborg art provides a further symbolic function by exposing social forces existent within society. We are often unaware of these forces as we live as part of a social and cultural system, seeing our lives largely from perspectives formed via the process of socialisation. Artists often aim "to make the invisible visible" (Ascott, 1999, p. 2), thereby providing opportunities to reflect on how our lives are being shaped. As an example, Piccinini's sculpture *The Young Family* (65, p. 300) exposes our unremitting desire for techno-experimentation, while Doležálek's artwork *Bůh Závitu* (27, p. 160) reveals the forces lying behind our propensity to elevate technology (and people) to a place of reverence. Kincaid's *Cyborg* (61, p. 285) explores the relentless Western consumer-driven need to be immersed in controlled environments, where entertainment-based experiences are always available.

The potency of cyborg artworks to serve as a vehicle for exposing social forces linked to increasing human and technological integration, centres once again on the way these types of artworks can articulate concepts with more innovation than words. Howells remarks in relation to the power of art in general that “If we could have just stood up and said it, we would not have had to have encoded it in visual form” (2003, p. 122). Artistic endeavour is often immersed in the desire to unconceal (bring to light or make visible) the concealed cultural currents and ideologies which determine our worlds (Ascott, 1999; Heidegger, 1978). Kac argues that “More than making visible the invisible, art needs to raise our awareness of what firmly remains beyond our visual reach but, nonetheless, affects us directly” (2005, p. 236).

The critical potential of cyborg art in this regard is however limited, as viewers must be receptive to, and be able to differentiate between, art which focuses on providing this function and artworks which have a different purpose. Cyborg art can also be created simply for visual effect and aesthetic appeal. In addition, there is an overabundance of imagery within contemporary Western society, therefore the challenge for viewers centres on their ability to rise above the “universal leveling process” regarding the plethora of images that are created (Gadamer, 1986, p. 36). Moreover, in order to be open to seeing social forces hidden from everyday view within art, viewers must often either feel dissatisfaction towards the concerns represented, or have access to an artist’s narrative regarding their intent, which is not always possible. Culture involves specialised systems of negotiations between people which need to be learned, and then assimilated into the psyche in order to be considered natural. Therefore, to see outside these systems is to see the world as it is without the long arms of culture, which is not a simple task (Tofts & McKeich, 1997).

iv. *Praxis*. Cyborg art is also indicative of praxis, as it transforms social and cultural theory into visual aesthetics for viewer contemplation via observation and/or participation. Cyborg artists convert theory into visual representations in order to explore our increasing links with technology in various ways. As Koscianski states:

The critical postmodern artist recognizes the need for art works which are not merely expensive status symbols, but which act as independent lenses onto a troubled world. In this praxis the critical postmodern artist recognizes the need for some form of ethics, integrity and aesthetics, without yearning for a contemporary version of the prepostmodern world. (2003, p. 5)

A cyborg artwork's symbolic function centres on the way it becomes a site in itself for theoretical contemplation. This is particularly relevant concerning performance artists' works, as these artists are able to implement theories regarding the interface in a time-based and often interactive arena. Williams and Bendelow argue that performance art "Suggests a form of embodied praxis, which not only challenges the distinction between experience and representation, but also blurs the boundary between art and social theory" (1998, p. 195). As an example, Stelarc's artwork *Third Hand: Evolution* (51, p. 256) centres on the limitations of the body, longevity, immortality and the constructs of birth and death as mere evolutionary strategies rather than evolutionary strongholds. Stelarc states, "For me it's inadequate simply to postulate or simply to theorize, or simply to write SF because...It sounds awfully Marxian in falling back to praxis as a grounding for theory, but for me the authenticity of an idea is made concrete by the constraints *and* unpredictable possibilities of practice" (as cited in Farnell, 2000, p. 136; emphasis in original).

The critical potential of cyborg art as praxis centres on the way artists can use the cyborg metaphor in order to create narratives as both a strategy of resistance and as a means through which new ideas, images and myths emerge and are disseminated. In doing this, the performance of the self as cyborg represents a political act (Garoian & Gaudelius, 2001). Stelarc emphasises that it is not enough to speak in metaphors or paradigm shifts. He believes in confronting tangibly the question of what it means to have a techno-body through performance, by pushing body-belief boundaries (Stelarc as cited in Farnell, 2000). Artistic endeavour/praxis is an adventure into uncharted realms as the artist's activities seek to realise a possible outcome which can only be realised once the artwork has found its final form (Vázquez, 1977). For Stelarc, ideas emerge in the actuality and veracity of artistic adventure. Art is a process and an activity; as such it is practical, in so far as it produces an end result (Williams, 2004).

Moreover, art is neither simply material production, nor is it purely a spiritual activity; it is the combination of production and philosophy. As such, it raises the level and capacity of humanity for self-expression (Vázquez, 1977). Cyborg art serves as a way of opening up the world to theory via a visual medium, and acts as a mediator between culture theory and research and development, thereby offsetting the lack of information given to the public concerning cyborgisation in general. Art can serve as a mediator as it is positioned outside the norms of society (Benesch, 2002; Piccinini, 2002). Cyborg art takes risks because the images are often disturbing and the performances are often unpredictable; but they have a purpose, which is to explore current convergences and to prefigure future configurations.

The inherent limitation of cyborg art as a form of praxis is the way the cyborg is most often regarded; with a lack of understanding of its historical and underpinning cybernetic constitution. The cyborg is known more as a fictional science fiction character rather than a theorised space explorer. Kunzru agrees that the “Rhetoric of flesh and metal [is] drawn more from pop-cultural cyborg iconography than political theory...” (1997, p. 7). Cyborg art is also a visual-based medium; as such it centres on illustrating aspects of the techno-body. Therefore, cyborg art must inspire viewers to create something tangible from the imagery; to give it another life – to transform the observed/experienced ideas into a type of action or self-actualisation.

v. *Paradox and Dual-positioning*. One of the most under-recognised concepts regarding cyborgology and cyborg art and imagery is the utopian cyborg. This aesthetic alludes to the ironic nature of the cyborg’s subjectivity, and the interlocking conflicts which are embedded within the cyborg concept. Doležálek’s sphinx-like statue (19, p. 141) depicts the encroachment of technology onto the human form in a way which is neither disempowering nor triumphant. Bul’s cyborgs in *Cyborg W1-W4* (13, p. 117) and Hitchcock’s *The Black Knight* (48, p. 240), also present utopian aesthetics as these entities are a mix of strength and sexualisation, beauty and abjection, and power and submission. The concepts of dichotomy and binary are human inventions, not cyborgian qualities. Graham affirms that “Cyborgs do not

share human hang-ups about fixed identities, exclusive communities or absolute truths: they are a paradoxical mixture of innocence and complicity...” (2001, p. 243).

Utopian cyborgs have critical potential for four key reasons: they represent the paradoxical feelings of desire and fear we have towards body-technology merger and increasing technological usage (as both awe-inspiring and unsettling); they present the progress and perils which may develop in an increasingly cyborg society; they allude to the miraculous and frightening configurations/creatures which can be created; and they symbolise that addressing societal and corporeal change from opposing political – technophobic or technophilic – standpoints is no longer tenable. Rather, utopian cyborgs signify that ever-increasing cyborgisation should be viewed from an in-between position in order to fully engage with the technologies which are created. Paradoxes of embodiment are widespread as humanity grapples with the desire to both merge with technology and to remain human (Braidotti, 1996).

The main interview responses provided with reference to questions concerning technology in general support the utopian premise. The two main themes to emerge were ‘technology as positive’; viewed as a useful tool or resource, and ‘technology as negative’; due to the way it creates dependency and incompetency. In addition, when asked directly, just over two-thirds of the interview participants felt that technology had both positive and negative attributes. Eighty-two percent of the questionnaire respondents agreed that technology had both positive and negative aspects. Technology has the power to both enhance and threaten human existence. Short agrees that “Technology is both liberating and oppressive, just as every human being has the capacity towards resistance or resignation, and it is in recognising this joint potential that the cyborg offers a new means of orientation” (2005, p. 54).

The major weakness of utopian cyborg aesthetics is the ambiguity and indistinctiveness which can be generated by dualist expressions combining fear and longing, beauty and abjection, and hope and hopelessness within one artwork. This forces the viewer to observe the artwork with more effort than when viewing an

artwork with a defined stance. The viewer must attempt to unravel the embedded positive and negative themes, which can require more attention than may be desired or possible. Overall, the experience of art is not an effortless exercise, as it requires input and energy which can be both intellectually and morally testing (Hauser, 1982). Viktor Koen agrees that artworks can require effort from observers. He states in relation to his artwork *Plug* (67, p. 308) that “My work belongs to a traditional school of social criticism and requires work from its viewers. It attempts to engage people to a dialogue, mostly personal” (Koen, email questionnaire, 2007, q. 8). Utopian artworks place an additional burden on the viewer as they require the viewer to position themselves on opposing sides of the technology debate simultaneously.

Another limitation centres on the way utopian cyborg art can be seen to signal a rejection of any political positioning. Some interviewees felt that Doležálek’s artwork (19, p. 141) presented both utopian and dystopian themes concurrently, but a few also felt that the image presented neither positive nor negative imagery – that it was in a sense ‘neutral’. This signifies that utopian artworks may appear to rebuff or deny a political standpoint, rendering them apolitical. However, Gray believes that a rejection of any political stance in an artwork is a political act in itself, as the act of deliberate repudiation signals that a given social system is not accepted uncritically. He claims that “If art refuses politics, than that refusal is political in itself” (Gray, 2002, p. 182). Artists may present interface aesthetics in a neutral way in order to create a zone for viewers to determine their own stance towards the interface shown.

5. Changing Epochal Perceptions and Aspirations, and Human Adaptation

i. *Postmodern Themes*. One of cyborg art’s key features is that it symbolises and evokes many of the transforming social currents of the postmodern epoch. Kuni emphasises that “Cyborg configurations of art do not solely negotiate the changing relation between human and technology, rather they also make reference to the social place in which this relation articulates itself” (2004-2005b, p. 7). For example, cyborg art often draws attention to the concept of bricolage, where historical aesthetics are

merged with contemporary ideas. *Bũh Závitu* (27, p. 160) melds symbolism of ancient totemic gods with industrial technologies; *The Annunciation of the Second Coming* (24, p. 156) merges Christian symbolism with computer technology; and *Hermes* (60, p. 281) and *Venus Envy* (72, p. 322) merge ancient mythology with themes relating to telematics and biomechanics, respectively.

Furthermore, Gómez-Peña's *El Mexterminator* (49, p. 244) is a merger of historical cultural/spiritual themes and futuristic ideas. The theme most often discussed by the interview participants with reference to Gómez-Peña's performance character was the way he showed a juxtaposition of, and discord between, past/primitive and modern/futuristic ideas. The convergence of 'old' and 'new' was therefore the most salient theme overall. Moreover, *El Mexterminator* illustrates irony and parody which are strategies frequently used within postmodern theorising and imagery (Jameson, 1998). Artworks such as *Armed Hermaphrodite* (42, p. 223) also evocatively symbolise the ambiguity of meaning existent within postmodern theory and society, particularly Ihab Hassan's (1971) concept of schizophrenia, which centres on semantic instability and the manifestation of extreme discordant aesthetics and ideas.

The critical potential of cyborg art as able to represent key postmodern themes and aesthetics centres on the way this artistic focus fosters a greater yearning to understand the complex and often intangible themes of this epoch. Postmodernism sanctions the multiplicities and contraventions represented by many cyborg artworks, thus providing an avenue for celebrating our increasingly polymorphous and non-dualistic societal framework. Postmodernism also provides an environment for people of many voices, colours and disabilities to express their perspectives on key issues facing society today. Overall, postmodernism promotes a shift from a focus on epistemology, which centres on determining a 'better' meaning of a singular reality, to one of ontology, which centres on how different realities may coexist (Harvey, 1992). Cyborg art represents a vast array of different types of convergences which encourage multiple and diverse interpretations; and as Koscianski emphasises, "with more perspectives, more understanding is possible" (2003, p. 4).

Cyborg art also symbolises many key principles of critical postmodern theory. As shown in this study, cyborg art is not disengaged from social, political and ethical issues, nor do the artworks solely focus on surface aesthetics or aesthetic appeal. Rather, many of the artworks can be considered unappealing or even monstrous, because the presentation of beauty or corporeal/social harmony is not their primary function. For instance, Harper's painting *If I Had My Gloves On I'd Pick It Up* (38, p. 214) shows a female cyborg who is mutilated; *Armed Hermaphrodite* (42, p. 223) presents a macabre, deformed cyborg sketched in harsh black and white; *The Young Family* (65, p. 300) depicts a hairless hybrid human-dog creature; and *Dark Karma* (68, p. 310) shows babies with chicken legs for arms whose torsos are fused with a television. These artworks are monstrous in many ways; however they metaphorically address the way technology has the potential to change our bodies and lives within the increasingly tangled reality of postmodern society.

The main constraint of cyborg art serving as a medium for critically addressing key issues of contemporary postmodern society is the way that some artworks may simultaneously yearn to be critical, accepted and transgressive. Koscianski affirms that the weak point of "critical postmodern art may be an attempt to have it both ways; to be socially critical and at the same time retreat to the safety of postmodern multiplicity, where everyone can be right" (2003, p. 5). I note that the semantic instability often presented in cyborg art can also cause uncertainty for many viewers, as they may not be able to extrapolate the artwork's key themes. This also applies to the use of satire, parody and irony noted within artworks such as *El Mexterminator* (49, p. 244) and *SMP Ko²* (52 & 52a, p. 259). Irony is a problematic tactic, particularly if there is a lack of prior understanding regarding the artist's concerns. Haraway uses irony throughout her *Cyborg Manifesto* combined with direct political insight, and this mix makes her work compelling, complex, and at times confounding. Moreover, a portion of cyborg artworks are at risk of falling into the abyss of the postmodern spectacle due to their focus on radical and lavish imagery (Volkart, 2004-2005a). The spectacle is a theoretical premise that suggests the transition from modernism to postmodernism has altered us from beings that are/exist, to beings that

have/own, through to emerging beings that only appear/resemble. The spectacle is manifested in vivid surface imagery which is seen as overtaking humanity's desire to seek spiritual and cultural depth (Baudrillard, 2005a, 2005b; Debord, 1995).

ii. *Changing Perceptions*. Another key symbolic function of cyborg art is that it visually identifies our continuously altering individual and social perceptions and aspirations. For example, artworks such as *Television Head* (22, p. 150), *Media and Child* (23, p. 152), and *Hermes* (60, p. 281) identify our increasing links to the screen. Fifty-nine percent of the interviewees confirmed that the screen was a dominant feature in their lives. Today, people can spend as much time in front of a screen talking to others as they do in face-to-face settings (Glaser, 2006; Stone, 2001). In addition, when asked directly, all but one interviewee felt that we are becoming increasingly globally connected overall. Theorists envisage a future society linked by electronic networks, where "a nomadic distribution of information will fluctuate around an immense deterritorialized semiotic plane" (Lévy, 2001, p. 339). Fittingly, the main interview themes to emerge regarding Magganas' art illustration *Hermes* (60, p. 281), were television or radio waves, wireless communication links and the receiving and sending of messages, identifying that Magganas' themes of remote communication were the most salient. Additional telematic-based artworks such as *Fembot* (59, p. 279), Kincaid's *Cyborg* (61, p. 285), and Kac's *Telepresence Garment* (64, p. 294), are also suggestive of the global connections many of us now have with remote individuals; where these links are overcoming physical borders.

The increasing depiction of fetuses and babies interfaced with technology is also indicative of our transforming perceptions, as they represent the beginning of life and an emerging new generation. Artworks which evoke ectogenetic themes can allude to complex ideas and changing ideologies relating to gestation and birth, and draw attention to research undertaken in these areas. The key theme discussed regarding Giger's sculpture *Birth Machine Baby* (33, p. 197) centred on the external gestation of a baby, or a type of machine baby. Responses included 'baby factory', post-gender reproduction, and *The Matrix* birthing system, indicating an awareness of Giger's

artistic meaning. Just over two-thirds of the participants also expressed negativity towards, or had reservations regarding, the concept of external wombs, indicating that ectogenesis can still be viewed as dangerous, unnecessary and unjustifiable today.

The use of babies in cyborg artworks has symbolic function for three key reasons. Firstly, babies are viewed as vulnerable and innocent (Cross, 2004). Several of the interviewees responded with similar comments when I asked why Luetke may have used a baby in his sculpture *Dark Karma* (68, p. 310). Secondly, babies represent hope and the future; they are therefore used in art to compel viewers to perhaps consider the presented ideas with more gravity. Thirdly, cyborg artworks show how women's bodies are interwoven with or excluded from reproduction technologies, thereby able to ignite interest in this form of technological design. Ultimately, artworks which use babies and themes of mothering promote a rethinking of ideologies regarding procreation. They also point to the issue of *who* has control over reproductive technologies, which in most cases is still men (Graham, 2002).

The strength of cyborg artworks which project changing ideological frameworks and aspirations is that they encourage humanity to face technology with courage and insight. They show that having a non-engaged stance towards technology is no longer appropriate or warranted. Haraway affirms that “We cannot go back ideologically or materially” to a time before technology was so invasive and prevailing (1991a, p. 162). We have created the technological world; therefore we must ensure that what is developed is done so with the approval of the majority. We must also not create technologies simply because we have the ability (Zimmerman, 1990).

The limitations of cyborg artworks which express our changing frameworks and perceptions (especially those with far-reaching ideas), is the way the ideas can often be perceived as too radical or contentious to be accepted as relevant topics for discussion. However, history has shown that perceptions are only temporal and can alter, particularly when a technology is experienced or used repeatedly successfully. For example, when *in vitro* fertilisation, blood transfusions, organ transplants, and

artificial insemination technologies were first implemented they were considered immoral and horrific by many. Yet public acceptance of these technologies increased as the techniques become more common and with noted continual successes (Simonstein, 2006). Therefore, the challenge for cyborg artists is to address advancing technologies by drawing closer links to actual innovations developed, without being so far-reaching as to be deemed fantastical, as opposed to possible. The purpose of cyborg art is not to condition the public to readily accept new technologies, but rather to increase awareness of, and interest in, these technologies in order to inspire more engagement with their design and intended implementation.

iii. *Human Adaptation.* Cyborg art also provides a symbolic function for society by identifying the need for human adaptation to an ever-transforming (post)human existence. Cyborg art explores a myriad of embodiments, interfaces, fusions and integrations within its aesthetics, exposing not only the corporeal limitations of the body, but also the limits of human acceptance towards bodily transformations. Nonetheless, technological experimentation is frequently deemed an innate part of our being (Clark, 2003). Therefore, learning the language of the cyborg is critical in order to navigate the interfaces successfully as a society (Gray, Mentor, & Figueroa-Sarriera, 1995). Kull emphasises that “Even if the image of [the] cyborg makes us nervous, we will have to learn to speak as cyborgs, to express the qualitatively and quantitatively different experiences of technology and nature” (2001, p. 53).

The critical potential of cyborg artworks which focus on human adaptation centres on the way these artworks can signify the importance of adopting a position of participatory adaption in a dynamic technological world, as opposed to forced adaptation to a world which has descended into chaos, as Huss’ painting *Bellum* (53, p. 262) represents. Cyborgs are the visual sign of change and adaptation; as Haraway poetically contends, “Cyborgs are the stem cells in the marrow of the technoscientific body...” (1997, p. 14). Cornel Winiata (50, p. 246) and Aimee Mullins (54, p. 265) are fitting examples of how human beings adapt their bodies to technology in order to enhance their day-to-day existence. Winiata has transformed a metallic, manual limb

into a work of art which represents his cultural and family ties, and reflects his ancestral links. Two main themes emerged from the discussion of Winiata's limb during the interviews; the way the limb showed elements of Māori culture, heritage and pride, and the way the limb was personalised via the koru design. These responses indicate an awareness of the reasons why someone may choose to adorn an artificial body adjunct in this way. Mullins uses technology not only to enhance her body in relation to athletics, but also regarding modelling and acting. She is enthusiastic about human adaptability and enjoys collaborating with designers who do not set themselves boundaries. She states, "I never grew up thinking of myself as disabled. I'm the bionic woman!" (Mullins as cited in Donnelly, 2008, para. 12).

The constraint on cyborg art's ability to illustrate human adaptation to technology centres on the way the adaptations are more often presented in a fictitious manner. The images of Cornel Winiata and Aimee Mullins are rare examples of actual artistically-inspired body-technology adaptations. In addition, figural cyborg artworks do not often focus on ubiquitous technologies interfaced with the human body, such as mobile phones and hand-held/portable computers. This is perhaps due to the speed with which these technologies are replaced, and also because they may be considered too banal or utilitarian for artistic exploration. Yet I suggest that the power of art could be utilised more to examine the interfaces which actually exist today in order to draw attention to their impacts on society, as the long-term consequences of many of these connections/interfaces and devices are not yet fully known (Brooks, 2002).

6. Historical Record of Corporeal Human-Technology Integration

Historical Record. Lastly, cyborg art serves a symbolic function by providing a visual trajectory of the history of body-technology interface. Artistic representations began in the early twentieth century when Umberto Boccioni (the Futurist), Jacob Epstein (who was allied with Vorticism), and Raoul Hausmann (the Dadaist) began creating artworks which depicted increasing body and technology or organic and inorganic melding, emphasising both cranial/mind and bodily integration. The cyborg body

therefore becomes a historical record of the changes noted within human perceptions and experiences (González, 1995). Brasher agrees that the cyborg image is suggestive of the changing human body situated within specific periods in time. She states:

Because it calls attention to the tremendous impact technology is having on us, the cyborg which conceptually debuted in the arts has become a key interpretive symbol for the human self. Like vassal, lord, citizen, and proletariat before it, the cyborg paints humanness in a historical context. (Brasher, 1996, p. 815)

The Futurists and Dadaists, and other artists, began producing interface artworks before the concept of cybernetics and the cyborg were developed, suggesting that art can at times precede scientific and scholarly investigation as Brasher suggests.

The potency of cyborg art as an art medium able to provide a historical record and trajectory of our ties to technology, lies in the way these artworks collectively demonstrate the extent to which we are changing or attempting to change ourselves, and how significant these changes have been over the past 100 years. In *The Spirit of Our Time* (3, p. 99), Hausmann places various wireless devices on a mannequin's head to allude to changing humanity in the year 1919, while Kincaid adorns *Cyborg* (61, p. 285) with an array of wired devices in 2007, in order to allude to changing humanity today. These artworks can be considered comparable due to the head and face shown, and because the technologies used are relatively rudimentary considering the time-period in which they were created. However, when juxtaposed, they show the acute differences which nearly a century can make regarding technological change. *The Spirit of Our Time* and *Cyborg* and many other artworks discussed, evocatively express Kroker's sentiment that "We are connected. We are distributed. We are circulated. We are wired. We are wireless. We are figured and reconfigured. Technicity is our subjectivity. That is our past, and our future" (2004, p. 37).

Yet, a limitation of the potential of cyborg art to present a record of our ever-evolving interface is that the historical artworks need to be viewed alongside the contemporary artworks in order to have a significant impact. Viewing an artwork in isolation will not evoke the sense of change which humanity is experiencing, as it is not until images are viewed in relation to one another that the implications of the changes are

fully appreciated. This is because our entrenchment within each epoch makes any facet of that particular era appear normal. For this reason, futuristic representations of cyborgs can seem unrealistic, as our social ideology has not yet ‘caught up’ with the technology presented. Problems arise when socio-political perspectives, ethics and values do not parallel the technology which is being developed and used. *In vitro* fertilisation and blood transfusions count as key examples as these technologies generated extensive public protests until they were used successfully and repeatedly, due to the ideological incongruence relating to these technologies.

Lastly, the issue of mounting human dependency on technology was most often mentioned by the interview participants as a key concern regarding current society, and a possible future world. The two main themes discussed during the interviews regarding *present* society included the way humanity was still in control of technology, and negative aspects of technology in terms of our increasing dependency. Two key themes to emerge regarding a *future* society centred on how humanity will become bodily integrating with technology and noted negative aspects of the human-technology relationship, including how we are becoming reliant and stupefied, and subjected to ‘information overload’. Cyborg art avidly explores these themes within its representations. *Epizoo* (63, p. 292) shows the control we can have over interface technology and people; Kothari’s plugged-in man (21, p. 147) alludes to human dependency on technology; *Nutritionman* (18, p. 137) evokes our human transformation into a machinic cyborg state; *Feeding the Machine* (69, p. 314) is suggestive of human stupefaction due to technology’s effects and influence; while Kincaid’s *Cyborg* (61, p. 285) signifies the hazards associated with rising levels of information attainment. I have argued and demonstrated in this theory-building section and in the previous chapters that *Cyborg art visually represents altering human corporeality and changing human ontology, and is therefore a critical, utilitarian and relevant new postmodern art genre, with the potential to encourage and enhance public awareness of increasing corporeal human-technology convergence* (*Theorising Cyborg Art*, Figure 7, p. 334). I end this section by reflecting on our transforming (cyborg) ontology.

Emerging (Cyborg) Ontology

The Cyborg Art meta-analysis has explored the scope of this artistic focus to exist as a valid medium for addressing key issues of, and concerns relating to, cyborgisation. The interlocking symbolic functions and potency of cyborg art reveal how this artistic focus illuminates the various ways human corporeality is changing, signalling an ontological shift into a new taxonomy of human beings (Terranova, 2000). Our bodies are changing and so is our ontology; our being-in-the-world. I argue, and have shown throughout this thesis, that cyborg art is one of the most compelling and diverse mediums through which this phenomenon can be depicted and shared.

Human beings are no longer viewed as permanent forms today, principally due to our ability to change life at a molecular level (Rifkin, 1999). For this reason our emerging “cyborgian ontology” (Rossini, 2003, p. 4) centres on themes of change, divergence, convergence, processes and polymorphous multiplicity. Cutler proclaims that “The ontology of the cyborg is permanently fractured, partial, and contingent on the cultural landscape in which it evolves” (2001, p. 191). Haraway surmises, “If the cyborg is anything at all, it is self-difference” (1991b, p. 22). This ontological ‘self-difference’ centres on the linkage of differing and various structures of meaning and bodily systems, where neither nature nor technology need fear being overridden by the other. As Scott rightly contends, the cyborg’s being or existence “is equally dependent on sustaining its differences; one aspect of its being *cannot* – indeed, *must not* – be subsumed into another” (2003, p. 304; emphasis in original). The cyborg exists as a symbiotic entity; a postmodern paradoxical and oscillating organic-inorganic reality in constant motion and transformation.

Postmodernism has been described “as a culture of ontological doubt” (Boyne, 1991, p. 281). However, I argue that this is only because our ontology can still be seen to represent a state of being, rather than a process of being. Our new ontology of amalgamation and transformation derived from, and established by, postmodernism and cyborgisation creates a world where fluidity of body morphology, dual-sided

political positioning and a globally connective telematic mind/body are increasingly recognised and necessary. It is not our *new* ontology which is in doubt, but rather the way it antagonises *old* modernist perceptions of humanity as essential, predetermined and unyielding. Haraway suggests that “The cyborg is our ontology; it gives us our politics” (1991a, p. 150). She alludes to the cyborg metaphor existing as a rapprochement for humanity, offering ways to link technological aspirations and transformation with social and political concerns. Joanna Zylińska contends that the cyborg has an “uncertain ontology” (2001, p. 129). However, again I suggest that the cyborg’s ontology only appears uncertain as we remain in the mid-way position between modernist ideals of *human* identity – semantic order and stability – and postmodern sentiments of *posthuman* identity, which is multidimensional and in flux.

Scott and Tipene-Matua (2004) point to the way body technologies such as genetic engineering are grounded in a reductionist ontology, which is based on the premise that living organisms are constructed from differing parts which are not necessarily interconnected. The concept of post-corporeality as defined by Moravec (1988) is a fitting example of this as he believes that human consciousness can exist as energy and software external to the human body. Reductionist ontology can be viewed as contrasting with the doctrine of Vitalism, as this perspective maintains that human life is composed of more than just bone, skin, viscera and consciousness – rather, comprising of a soul or a spiritual essence (Scott & Tipene-Matua, 2004). This is why cyborgisation and the reductionist model can potentially create social/cultural discord when aligned with indigenous cultures. As an example, Māori derive knowledge and understanding from both the ‘visible’ and ‘invisible’ worlds, which plays a role in their holistic and spiritual world-view. Māori culture is therefore based on a Vitalistic ontology and a relational epistemology (Scott & Tipene-Matua, 2004, p. 130).

Nevertheless, Cornel Winiata and his koru design limb (Image 50, p. 246) demonstrate that he – as a Māori – is willing to accept and even culturally embrace a corporeal convergence with technology. His artificial limb does not diminish his mana – which is a Māori term for status, dignity and authority (Reynolds, 2004) – but

rather enhances it, as he adorns the limb with his cultural history. In addition, recent research findings indicate that Māori do not altogether reject biotechnologies such as genetic testing. The research team heading the New Zealand risk assessment and public awareness project *Constructive Conversations* (2003-2008), discovered that many of their Māori focus group participants were willing to accept genetic testing, if it could assist the lives of their family members/whānau (Constructive Conversations, 2003-2004). However, Paul Reynolds (2004) found during his research that Māori also oppose certain biotechnologies, and he examines the way Māori can be viewed by political leaders because of their ‘dissentient’ views towards genetic engineering.

There will be divisions in any culture and society regarding cyborgisation. However, this identifies that we are all – and should be – part of the cyborg debate. Culture, knowledge, understanding, contribution, and interest in, awareness of, and a questioning of, technology, are all part of the contentious, exciting and contradictory matrix that forms our new global, multicultural, and technological epoch, and our new ontology of amalgamation and transformation. The reductionist ontological model forms the basis of cyborgisation, yet Cornel Winiata and my Māori interview participants indicate that their cultural ideological underpinnings will not deter them from using cyborg medicine, telematic devices and prosthetic extensions if so desired.

González concludes that the cyborg will “continue to provide a vision of new ontological exploration” in the future (1995, p. 278), as these artworks have done for nearly 100 years. As such, they will continue to facilitate understanding of the transforming concept of humanity, as cyborgs ultimately provide a place to reflect on and learn about cyborgisation. Short, however, believes that the cyborg is “Too loaded with the ideological baggage placed upon it, to survive as the perplexing and provocative figure it once was” (2005, p. 208). The research presented here has shown the fallacy of this claim regarding cyborg art. I have demonstrated right through this thesis that the cyborg continues to be a stimulating and credible emblem for a world merging with technology. The following final section of this chapter offers an evaluation of the Cyborg Art research design, and an appraisal of its aims.

Evaluation of the Research Design

Overall, the objectives for this study have been met; a large selection of artworks were sourced which met the criteria of addressing body-technology interface. Searching for these artworks posed a challenge as cyborg art is not widely known about; as such there exists no single cyborg art volume which showcases and explores this form of artistic expression. However, 12 months of concentrated searching and another three years of intermittent searching located approximately 100 artworks, of which 72 have been included here. I acknowledge that there will be artworks which have not been included in this study, either due to space constraints, or because they were simply not found, or were not located in time. Cyborg art is not a recognised art genre today, which limits the cohesion of this artistic focus. I address this issue extensively in the Future Visions section. The suggestions I make in this final section are designed to create stronger links between artists, theorists, and the public, and to help establish more defined meeting points for cyborg art.

One hundred and ten research participants contributed to this study, including members of the public, and artists who focus on, or delve into, the interface topic. A theory of cyborg art has been generated by analysing key themes presented in the artworks, which were merged with cyborg, art, and cultural theory, and research participants' contributions. Moreover, the history of cyborg art was discussed in order to provide a base for the study's focus, findings and trajectory, and to demonstrate how this artistic focus has paralleled technological expansion over the past 100 years.

Interviews

The recruitment process of the interviews, and the actual interviews, were overall successfully implemented. In fact, due to the larger than expected number of participants who agreed to be involved with the study, six more interviews were

conducted than originally planned. The recruitment pamphlets contributed to this success, as they were able to be taken away by prospective participants and used to contact me at a later date. Two interviews were also piloted in order to gauge how the interview guide would perform; one with a 23-year-old male participant, and another with a 59-year-old female participant. The focus of these pilot interviews centred on how the procedure would be viewed and approached by the interviewees; how the artworks would be received; how long the process would take; and the level of comfort the participants felt regarding the tape recordings. The pilot interviews were both successful; as such, they were included among the final 34. Overall, the average duration of the interviews was 90 minutes, which was the intended time-frame. The responses to the artworks were on the whole well-received and I note that only on one occasion did an interviewee not wish to discuss an artwork. Moreover, no participants opted to use a pseudonym, which indicated that they were comfortable at the start of the interview, and were willing to share their views openly.

I gained substantial insights while discussing the artworks with the interview participants. One of the most significant related to the concept of the udopian cyborg, which was developed, in part, from the interviewees' responses to Jan Doležálek's digital artwork (19, p. 141). I sought to discover whether the participants felt this artwork may potentially portray a positive or negative view of human and technology fusion, as I was unsure how to interpret this artwork in this regard. Initially, I believed that most cyborg artworks projected a defined stance towards the interface; either in support of the merger or showing its potential negative aspects. Yet, several participants saw this image as being both and/or neither a positive or negative portrayal of human-technology interface, and this encouraged me to explore further whether theorists also believed the cyborg could represent a dual expression. I therefore created the udopian premise to draw attention to this form of representation directly. Taylor and Bogdan affirm that "If you do not learn something that challenges your previously held beliefs when you do qualitative research, then you have probably done it in the wrong way" (1998, p. 161). In this case, the research

findings encouraged and challenged me to see cyborg art as representing imagery that I had not fully considered when planning this study.

Interview Guide

The interview guide for each of the two interview streams was successfully implemented overall. However, I was disappointed that I had not introduced each artwork by its title as I was not aware, when analysing the responses, which interview participants had read the title and which had not. This omission did not impact on the findings; nonetheless, it does create an unknown element in the research design which could easily have been avoided. Two questions were also added to the guide after a few interviews had been conducted, thereby potentially generating fewer responses. These were a question on social inequalities relating to technology, and a question asking whether we were becoming increasingly globally connected today.

Only four artworks included in the interview guide were not included in the final study: Duane Hoffman's *Cyborg: Hardware Enhanced Humans* (p. 422); Frida Kahlo's oil painting *The Broken Column* (p. 427); David Hopper's glass artwork *Nijjima Speciman* (p. 434); and Viktor Koen's digital print *Drone* (p. 439). These were omitted due to a minor refocusing of the chapter structures and a change of emphasis regarding certain themes explored. Furthermore, the images *MEMEX* (p. 422); *Viewing System* (p. 425); *MAdGE* (p. 428); *Robocop* (p. 432); *The Visible Female* (p. 436); and the photograph of Aimee Mullins wearing the Sprint-Flex III Foot (p. 438), were later also omitted from the study as I felt these images did not constitute cyborg art, but rather cyborg-inspired aesthetics. However, as mentioned, the MAdGE billboard is included in the Future Visions section of the Conclusion.

Although I am satisfied with the question types and focus presented in the semi-structured interview guide, there are five questions which, in hindsight, I would liked to have included. These are: a question relating to the desire to be interfaced with technology in some way, or 'to be a cyborg'; a question relating to the desire to

contribute to decisions made concerning which technologies are created and developed; a question directly relating to communication practices between people; and a question asking whether Heidegger's premise, that human beings are increasingly viewing each other within an operational framework, or as 'resources', was relevant today. I also regret not asking towards the end of each interview, which artwork was the most salient to the interviewee. This may have allowed me to discover which artwork was considered the most stimulating and memorable overall.

Justin Paton (2005) argues that artworks should be experienced and visually explored time and time again, and not solved like a puzzle and then abandoned. Jonathan Friday (2002) concurs, stating that unlike entertainment, art cannot be appreciated, understood or consumed in one session. This study therefore potentially constitutes an example of Paton's derisive 'solved and abandoned' mentality, as I presented the artworks for discussion in one sitting. However, the perspective of this study focuses on participants' initial reactions to the artworks, as opposed to responses after multiple viewings, and the analysis was carried out accordingly.

Transcribing

Developing the *Transcript Collation and Analysis Chart* (Appendix E, p. 445) while transcribing the interviews was a successful strategy, as it facilitated the way I worked with and dealt with the large amounts of data sourced. This chart describes the processes I used to analyse the data, and shows where the data was stored at various steps within the procedure. Using different fonts and colours for individual interviews was also a successful tracking mechanism whilst working with, and grouping the data. However, I made an error of judgment by not transcribing the 32 interviews directly after they were completed as was carried out with the two pilot interviews. This was due to my focus on consecutive interviewing. While I was transcribing the final approximately 15 interviews, I noticed that I was diverting from the interview guide more, and I had also become more talkative. I would have been

aware of this earlier if each interview had been transcribed directly following its completion, and I would have refined my interviewing style accordingly.

Questionnaires

The artists' email questionnaire was completed by just over a third of the artists. In addition, many artists sent accompanying drawings, internet site links, and articles written on their work with their returned email questionnaire, or as follow-up emails. As such, many artists gave me beyond what I asked for, signalling not only their generosity, but also their enthusiasm to be involved with, and support, this study. Creating the *Artists' Response Analysis Chart* (Appendix G, p. 451) while working with the data was also a successful strategy, as the processes I developed provided a structured format and guide for analysing the artists' contributions.

The hand-distributed postal-return questionnaire was successfully completed by 65 respondents. Ten questionnaires were piloted before the final 110 questionnaires were distributed. The pilot questionnaire respondents were asked to note any issues or queries they had with the information or with the questions presented in the margins of the questionnaire, and no concerns were raised. The 20 questions were successfully completed by the pilot study respondents. The pilot questionnaires were therefore included in the final 65. The 110 questionnaires were also successfully circulated to members of the general public; only on a few occasions did people, whom I approached, not accept a questionnaire to complete. Fifty percent were eventually returned, which is a satisfactory number for a postal-return survey (de Vaus, 2002).

After analysing all 65 questionnaires, I determined that there were two cyborg-related questions or findings derived from these questions, which were not suitable for inclusion in the thesis. The first is Question 4, which asked: *Where do you believe cyborgs are most often found?* (Appendix H, p. 454). I provided seven options in this question: Television, Film, Art, Communities, Laboratories, Universities, and

Corporations, in addition to the options Not sure and Other. However, I failed to include the option Books, which I believe is an oversight which renders the findings from this particular question problematic. Even though the option Other was included in the question for respondents to add their own ideas, I believe that the exclusion of the Books option creates findings which are questionable, and also not comparable to the interview findings. This is because I included the option ‘books’ in a question that I asked the interview participants. This question asks: *In general, have science fiction cyborgs (perhaps depicted in television shows, films, books and comics) increased your understanding of the links between humanity and technology?* (Appendix B, p. 421 & Appendix C, p. 431). The second question subsequently omitted from the questionnaire data analysis procedure was Question 8, which asks: *Do you think that cyborg art often involves a political message?* (Appendix H, p. 456). Just under two-thirds of the respondents selected the option *Not sure*, making the findings from this question unhelpful. In hindsight, I believe this question is too vague and laden with an unrealistic expectation of knowledge and experience.

Methodology, Perspectives and Research Fields

The methodology used in this study, multimethod research, was overall a successful choice for a study of this type. The three research methods – interviews and qualitative and quantitative questionnaires – worked well together. Using a secondary quantitative research method within a qualitative-based study was a key factor in providing deeper insights into the concepts discussed, as the findings from this method on the whole supported the interview data gathered. Obtaining contributions from members of the general public and artists was also a successful strategy, as this provided an added level of depth to the discussions, and showed how often the interviewees’ responses pertaining to an artwork supported an artist’s artistic intent.

Towards the end of each interview, I asked the participants whether their involvement with this project had increased their understanding of cyborgs. Just over two-thirds

stated that the artworks and discussions had increased their general understanding. Comments included that the study had heightened their interest in body technologies; expanded their horizons of what a cyborg may be; and provided new perspectives on the way technology and humanity were linked. In addition, just over two-thirds of the participants stated that their involvement with the study had ‘definitely’ or ‘possibly’ increased their appreciation for cyborg art. Responses included that cyborg art is creative and diverse; that selected artworks were interesting, intriguing and appealing; and that cyborg art provides an added awareness of what exists in the area of body and technology merger and art. These responses therefore indicate a measure of success regarding the study’s methodology and the selected research topic.

The perspectives adopted for this study – interpretive sociology, cognitivism, hermeneutics, critical postmodern theory, and cyberfeminism – were also successfully employed as these perspectives provided relevant foundations for the trajectory of the thesis, the discussion of the empirical findings, and the concluding analysis. The research fields drawn on in this study, technoscience and visual culture, were also constructive as foundations, as these fields provided a contextual grounding and cultural framework for both the cyborg artworks and analysis of the research participants’ responses. I do not suggest that all the artworks included in this study necessarily conform in their entirety to a critical postmodern perspective. However, I have shown that all the artworks discussed illustrate and explore relevant societal and bodily themes. To conclude, there were no noted concerns regarding the perspectives adopted or the research fields employed, as each corresponded well with the other, as shown in the *Changing Paradigms Table* included in Chapter Two (p. 48).

Concluding Strengths and Weaknesses of the Research Project

The strength of this study centres on the way it brings to light an art focus which has existed for approximately 100 years – and is rapidly growing – yet has not been discussed in depth to date. The value of this study is its inclusion of much needed

empirical data from laypersons' perspectives on technology, art, the cyborg and cyborg art. The way this data has been merged with interrelated ideas sourced from critical postmodern theory, visual culture, and art and cyborg theory, is another of the study's key strengths, as this has not been implemented to date. I also present a focused and concentrated exploration into visual artistic representations of body and technology convergence, building on Gray's 1998 essay *Cyborgs, Attention, and Aesthetics*. My concluding premise is that cyborg art can potentially encourage people to become more involved in interface-related discussions. This may be amongst friends and family, or in a broader sense regarding contributions to design and/or decision-making processes. Furthermore, this inquiry collated and examined cyborg art on a large scale, thereby demonstrating the necessary evidence to argue for the creation/acknowledgement of a new critical and relevant postmodern art genre.

Another key strength of this study is that it has introduced several new concepts to the cyborg debate, including the utopian concept, the permeative gaze of technoscience, and post-hybrid aesthetics (triadic and quadratic merger). This identifies that cyborg art remains an evocative and compelling area of research for the future. Moreover, the artists whose works are included in this study constitute both prominent and lesser-known artists, originating from many differing countries. This offers a range of cultural perspectives on the concept of body-technology integration overall. Finally, this inquiry included a meta-analysis of cyborg art in order to create a theoretical underpinning for this under-examined artistic focus. As such, this research lays the foundations for further investigations, as outlined in-depth in the Future Visions section of the Conclusion.

The underlying weakness of this project centres on two key challenges. The first is that there is inconclusive evidence to suggest that art can tangibly encourage a person to change their perspectives or actions, or even provide solutions to society's social, ethical and political problems. Studies have found that imagery can encourage people to pay more attention to topics presented, and that imagery can also be encoded into memory with more efficiency than words (Childers & Houston, 1984). However, the

premise that viewing art can make a significant change in a person's life lacks supporting data. Discussion more often centres on the power of art to express emotion or to impact on our emotions and feelings (Freedberg, 1989; Mitchell, 2005).

The majority of interview participants stated that art had impacted on their lives in various ways, but not altered their lives or their perceptions tangibly. I believe this is why art is often viewed with both scepticism and reverence (Mitchell, 2005; Novitz, 1992); because the power of art is more aligned with a shifting *undercurrent*, which cannot easily be defined. As Bryson poetically contends, "The power of the painting is there, in the thousands of gazes caught by its surface, and the resultant turning, and the shifting, the redirecting of the discursive flow" (1991, p. 71). Foster and Blau agree that in "general theoretical terms it is difficult to establish how art has a pervasive effect on society and its development" (1989, p. 344). They add that seeking data on the power and effects of art is therefore "a major task for future sociologists" (Foster & Blau, 1989, p. 344). This study marks a beginning of this task relating to cyborg art. I outline how the potential power of this artistic focus can be further examined in the Future Visions section. I suggest that a longitudinal study based on this project could be conducted (p. 403), as this type of research can more tangibly gauge long-term impacts of the (cyborg) art viewing experience.

The second weakness of this study is that evidence of the power of the cyborg to incite change is inconclusive (Kirkup, 2000). Short affirms that "The cyborg's ability to provide any solutions remains questionable" (2005, p. 189). This is due, in part, to the cyborg often being deemed solely artificial, which lessens its critical function and potential. The cyborg is also more often aligned with popular culture and science fiction realms, as opposed to academic and applied research. The potential for the cyborg to be perceived as a discursive tool for addressing and analysing cyborgisation and changing human ontology is therefore undermined. However, marrying the cyborg with art as I have done in this study fosters a reconceptualisation of the cyborg concept/image as being more than merely an agent of entertainment and fantasy, but also an agent of insight and change.

Conclusion and Future Visions for Cyborg Art

This thesis has examined the concept of cyborg art on a large scale; a phenomenon which has existed as an emerging art focus for a century. The cyborgian themes, ideas and visions presented in the artworks correspond to the escalating developments of technoscience, and symbolise the diverse ways our bodies are integrated with technology, and how we are ontologically changing. Yet, as this thesis has argued, this art focus is presently under-recognised and thus undervalued, only addressed by a few theorists to date. The under-examination of cyborg art has contributed to this artistic focus being, for the most part, an unknown concept and genre, as the findings from the postal-return questionnaire aptly show. Only six percent of the respondents answered that they had viewed cyborg art in the past. Many theorists and writers exploring the cyborg concept and cyborg theory also often seem unaware of the diversity and quality of artworks in existence today, choosing instead to centre their attention on images shown via science fiction films and television shows.

Therefore, one of the key aims of this study was to bring cyborg art out into the public arena, and to demonstrate how this art genre offers and encourages critical and relevant reflections on cyborgisation. I suggest that cyborg art is one of the primary ways that the developments of technoscience can be explored and shared. Gray affirms that “art contributes to both our understanding of cyborgization and to the process itself” (1998, para. 4). He emphasises that “We have the future of the human body to consider” (Gray, 2002, p. 189). Technologies alter our lives and perceptions and will continue to change us in the future. As Murphie and Potts contend, “The last decade of the twentieth century may have seen more change than the world has ever witnessed, but this may pale in comparison to the changes coming” (2003, p. 134).

In order to identify our evolution from the state of ‘natural’ *Homo sapiens*, the human being today has been variously referred to as *Homo cyborg* (Grassie, 1996), *Homo comboticus* (Mazlish, 1993), *Homo cyberneticus* (Graham, 2002), and *Homo*

technologicus (Longo, 2003). These terms signify that we now have the skills to transcend the current human form. Stock surmises that “In one century, we have moved from observing to understanding to engineering” (2002, p. 7). Human beings are now “seizing the reins of evolution” (Best & Kellner, 2001, p. 198), by actively partaking in their own evolution (Clynes & Kline, 1995; Gray, 2001; Halacy, 1965). This in turn affects our ontology, which is now based on the concept of a *technological being in process*. The permeative gaze of technoscience is an example of this, as this gaze tangibly shows that human bodies and technology are no longer separate, but rather interlocking at a corporeal level.

Understanding what it means to be human today is imperative in order for humanity to democratically determine the trajectories that are envisioned as a global community. I have argued that cyborg art, imagery and aesthetics can assist this process. This thesis has shown the extent to which artists are choosing to engage with, and focus on, a number of overlapping and interrelated ideas and concepts pertaining to culture, the body, and sociological, political and ethical dilemmas which arise as a result of the interface. The cyborg body depicted in art offers viewers relevant ideas, perspectives, and perhaps even strategies for intervention, regarding the dilemmas that our society faces today and in the future (Balsamo, 1996).

This thesis has demonstrated that cyborg art can be situated within the framework and perspective of cognitivism, as I suggest that cyborg art can facilitate understanding of the encroachment of technology on the body. Art reflects back to us our daily lives intertwined with technology, and exposes elements of the techno-human equation for personal and social deliberation. However, I acknowledge that many cyborg artworks are fictitious and can appear to be excessively transgressive. I have drawn attention to this characteristic of cyborg art in this thesis and discussed this prevalence as a limitation of its critical potential. Learning from fictitious artworks can be deemed untenable as they can only show us versions of a possible existence. Nonetheless, I have argued and shown that fantastical posthuman depictions can play an important role in illustrating how humanity is transforming and how we see ourselves changing.

Whilst fictional cyborgs can at times seem extreme, shocking, macabre, or abject, they can still incite some form of understanding, awareness or interest for the viewer as a result of the viewing experience. This is because imaginary works enable viewers the opportunity to visualise and *imagine* how they would react if they were part of or involved with the ideas and visions explored. I agree with Stelarc's view that "Art is a means of opening up the world, opening up to the world. It is not about closure, it is not about comfortable reassurance" (as cited in Zylinska & Hall, 2002, p. 124).

Fictitious cyborgs present visual stories about our changing world and can therefore encourage thinking and discussions on concepts which may or may not have been considered. They provide an opportunity to reflect on what is presented without the burden, concern or guilt of observing a character that is an actual/living being. Berys Gaut affirms that "Imagination has a particular importance in the way that art can teach us, for art guides our imaginings" (2007, p. 145). He adds that:

The terminology of 'teaching' should not, however, be taken to suggest that there is a classroom quality to one's relations with art: the claim is sometimes put in terms of works 'showing' us certain things, and this perhaps better captures the looser feel of one's encounters with art. (Gaut, 2007, p. 139)

I support Gaut's perspective that observers and readers can "confirm the implicit psychological or moral tenets advanced even by fictional artworks" in light of their own experiences, and then "successfully applying them to the world" (2007, p. 142).

Art can enthrall us, inciting devotion, reflection and questioning (Friday, 2002), whilst also igniting hostility and derision (Freedberg, 1989; Mitchell, 2005). Ultimately, art does more than "decorate our existence"; it influences our notions of reality (Novitz, 1992, p. 7). Ann Marie Barry adds that "Because vision developed before verbal language, images are a natural part of our primal sense of being and represent the deepest recesses of ourselves" (1997, p. 69). Art also illuminates what is important to us; our values and our hopes for the future (Schirato & Webb, 2004). Heidegger (1977) radically believed that art can help 'save' human beings from their technological fate. Gray emphasises that "Although it is hard to prove and difficult to

articulate how it happens, art changes us all the time, and so it changes the world” (2005, p. 119). I concede that cyborg art cannot provide viewers with information as such as it is not statement-bearing; rather, its strengths lie in the way it can stimulate attention and interest towards and awareness of our present epoch and changing corporeality/ontology. Art is born into and made within its surrounding culture and is thus a reflection of, and can evoke a resistance against, that culture, in order to create social narratives in ways that go beyond what can be expressed in words or text.

I note that there are detractors to the premise that art can have critical potential. Kuspit claims that “Social criticism is no doubt a noble cause, and changing the world for the better is no doubt a heroic enterprise, but it is far from clear that art is effective at both” (2004, p. 37). James Elkins contends that “Pictures are effectively and forever without meaning, and art history is the bruise that has grown up around that injury” (1999, p. 16). Baudrillard (1981) also argues against the critical function of art, believing that only depthless aesthetics exist today. He believes that images are merely simulations of reality which can have no real political effect, as they do not refer to anything other than themselves and other fabricated imagery. Phillipson (1995) argues that art will in the end be swamped by the commercialisation of technoscience. He suggests that “Art, as representation-in-and-for-difference, cannot, in its weakness, challenge technoscience; it can only represent itself as the offer of a mute gift, knowing it will be appropriated” (Phillipson, 1995, p. 215).

Throughout this thesis I have challenged the belief that art today has nothing concrete to offer society, bar its surface aesthetics. I have shown that cyborg art *can* have symbolic value and function, by analysing research participants’ responses relating to cyborg art. Most of the artists who contributed to the email questionnaire stated that they created their art with a certain message or theme in mind, and many also felt that cyborg art can increase awareness of body and technology links. As Lynn Randolph writes, “I think we (the artists) can issue warnings, point to contradictions, be open to the new, help analyze, and create skepticism to name a few ways in which we can increase awareness” (email questionnaire, 2007, q. 7). Several interview participants

also felt that art is often created both with messages and without, or largely has some form of inherent message. Overall, many felt positive towards art, stating that art had impacted on their lives in some way. Many also believed that cyborg art can increase awareness of body and technology links. Increased awareness has the potential to generate interest, leading to heightened clarity and enriched understanding, which is the underlying premise of hermeneutics (Bauman, 1978; Caputo, 1987). Ontological understanding or hermeneutics is complementary to the postmodern epoch as postmodernism involves paradigmatic shifts from: (1) epistemology to ontology; (2) knowledge to experience; (3) theorising to practice; and (4) a refocusing on the body (Boyne, 1991, p. 281). In relation to art specifically, understanding or interpretation, and a focus on the question of meaning, have gradually replaced criticism, judgment and evaluation (Davey, 1999; Stern, 2004).

Best and Kellner argue that the cyborg is a “postmodern cyborg” (2001, p. 187), due to the time-period in which it was created and what it represents. As shown right through this study, the cyborg and postmodernism are inseparable epochal partners. The cyborg is an exemplary postmodern figure with which to address technological changes and body-technology infusions due to its open and convergent constitution. Graham agrees that “the cyborg is a symbol, a metaphor – maybe even the prime representative – for post/human metamorphosis in a technoscientific age” (2002, p. 202). Yet as revealed, the cyborg can be seen to remain a part of the modernist paradigm due to the way it fosters engagement with the surrounding world and that it can be used as a discursive tool to incite change for the betterment of society. I have therefore made the suggestion that cyborg art can sit under the banner of critical postmodern theory/art due to the level of social and ethical engagement that many artists have regarding the issues surrounding cyborgisation. Cyborg art has social value because “the more we understand the better we can predict, or even change, the results of our society’s actions and fascinations” (Gray, Mentor, & Figueroa-Sarriera, 1995, p. 13). The cyborg is therefore a critical postmodern entity; a creature inscribed with the modernist sentiments of individuality, purpose and political and social critique and the postmodern perspectives of fluidity, convergence, play and affinity.

Nonetheless, Short questions “whether the cyborg can offer a genuinely new mode of orientation, and perhaps even unification...” (2005, p. 207). Her research suggests that the cyborg can “offer little more than the opportunity to reassess the foundations of contemporary discourse...” (Short, 2005, p. 207). This research has also found inconclusive evidence regarding the capacity for the cyborg as a symbol and an icon of postmodernism to *tangibly* affect change, and this is addressed further in the Future Visions section. Nevertheless, what this research has discovered via the empirical data is that the cyborg *is* deemed a symbol of the present and the future, and that cyborg art *is* considered a way in which ideas of body-technology integration can be brought to the public, and have an impact on people in general.

Sociology, Politics and Ethics

This thesis has also sourced empirical data relating to how laypeople feel about everyday and advanced technologies. One of the key findings was that many interview participants and questionnaire respondents felt they were not given adequate information on technologies. A number also did not believe they could easily contribute to decisions made concerning technology. Additionally, theorists (and several of the interviewees) suggest that currently the corporate sector makes most of the decisions surrounding which technologies are eventually developed. This creates a dilemma for Western democratic society as corporate giants such as Monsanto have substantial power and control. Discovering or inventing something is for the most part determined by profit-making, not solely for the benefit of humanity (Bowring, 2003; Short, 2005). Graham emphasises that “What is at stake, supremely, in the debate about the implications of digital, genetic, cybernetic and biomedical technologies is precisely what (and who) will define authoritative notions of normative, exemplary, desirable humanity into the twenty-first century” (2002, p. 11).

These concerns need to be addressed today as future successes depend on the decisions we make as a global society (Brate, 2002). The more we are involved, the

greater the consensus will be over what is eventually developed, and the greater people's general understanding will be concerning technologies and their beneficial or detrimental effects. This can be referred to as "active scientific citizenship" (Scott & Du Plessis, 2008, p. 106), and is built on the premise that a collective democratic approach will lead to risks being alleviated, cultural offences being diminished, and flawed judgments being avoided. Implementing a participatory democratic cultural approach is crucial in order to ensure society's members are able to articulate their desires, concerns and values, which in turn develops into policies and processes within a democratic political system (Feenberg, 1999; Gray, 2001). Cyborg art also promotes the need to develop a new cyborg ethics, as current social structures are incompatible with the technologies created. Kroker proclaims that "*The actual situation today may be that we are living in a culture of twenty third-century engineering and nineteenth-century ethics*" (2004, p. 209; emphasis in original). Stone is also concerned over what may happen "as human physical evolution falls further and further out of synchronization with human cultural evolution" (2001, p. 194). Technicians, scientists, politicians, artists, and sociologists, and those situated away from research on cyborgisation must work together to realign this disparity.

Carl Elliot (2005) suggests that ultimately the market creates the demand for technologies and produces them in order to satisfy demand. Gregory Stock claims that "Technology doesn't emerge magically; it depends on the existence of large numbers of people who want it" (2002, p. 151). However, we are systematically encouraged to buy products and services via sophisticated advertising campaigns that are created to exploit our individual desires, fears and shared cultural expectations. Kull identifies that "The cyborgian nightmare could be a vision that could be not only patented, sold, and possessed but fundamentally reconstituted in response, purely and simply, to market pressures, thus making cyborg society the terminal and purest form of capitalism" (2001, p. 53). As an example, genetic testing is increasingly marketed online. Shirlene Badger affirms that access to these tests "has moved rapidly from the laboratory to the Internet" (2004, p. 154). Cordbanking, the storing of a newborn baby's umbilical cord blood (which contains stem cells) is also increasingly promoted

online. One of Cordbank New Zealand's catchphrases is "By registering with Cordbank you too can help protect your baby's future health. It could be the best decision you ever make. And saving your baby's cord blood costs less than a cup of coffee a day" (Cordbank, 2009). Therefore, the argument concerning whether developments meet the market or fuel the market is an ongoing debate. I suggest that it is a combination of both. Producers and consumers are both responsible for each other's commercial and personal wants and needs. As such, we must be accountable to *each other* regarding the technologies which are developed.

People living in Western society are also increasingly being defined – and defining themselves – by the machines they own (Short, 2005). For this reason there is concern over what will become of individuals who do not own costly technological gadgetry and computers, or even a mobile phone. Pitts suggests that overall "Technologies create privileges and constraints, and access to and control of technology are highly political matters" (2003, p. 160). Several interview participants also believed that inequalities will continue to exist in future societies. Jencks (1992) believes that since knowledge is power, and knowledge today is centred on computer information attainment, this form of communication should be safe-guarded and free, in order to allow more individuals more opportunity to be informed and educated. I agree with this perspective, as the computer is the most effective way people can access information in their own time and at their own speed.

Moreover, even though there are pertinent fears and problems pertaining to cyborgisation, there are also substantial rewards and benefits. Gray confirms that "The great appeal of cyborgization is that it often works" (2001, p. 88). Kevin Warwick's (2003) reaction to his prefigurative experience of being a literal cyborg is also a prime example of how an individual can gain enjoyment and fulfilment via the interface. He commented that "If I had to draw one conclusion from my experience it would be that when linked with technology inside my body, it is no longer a separate piece of technology" (Warwick, 2003, p. 134). Warwick admits that experiencing life as a cyborg was good fun, and "immensely powerful" (2002, p. 296). He felt that the

experience went substantially beyond the restricted concept of humanity as it is now. Warwick (2003) believes that we will increasingly view technology as a natural part of us. As such, when the transponder chip which was inserted into his arm was extracted, he felt like he was losing a part of his body or undergoing an amputation. Conversely, as discussed in Chapter Seven, Steve Mann (2001) has experienced his cyborg state with more trepidation and concern, admitting that he often felt isolated and disorientated whilst wearing the WearComp. Mann affirms that “These are strange days for humanity. Extending the mind and body with computer prostheses is not something one does without a sense of risk and confusion” (2001, p. 2).

The paradoxical dimension of technology forms the basis of the utopian concept; where the intrinsic positive and negative aspects of its constitution and capabilities generate contradictions. Many people are both attracted to, and repelled by, body-technology interface. Wilson agrees that “It is possible both to yearn for technological amplification and to feel disgust at the prospect” (1995, p. 244). The majority of the interview participants and questionnaire respondents also felt that technology had both inherently negative and positive aspects. Ultimately, utopian cyborgs illustrate that an in-between political positioning is advantageous in order to deal with the changes brought about by cyborgisation, rather than addressing technology from a defined perspective. This fosters and enables greater understanding overall. Haraway was one of the first theorists to discuss this contradictory and pluralistic identity and standpoint. She claims that “The split and contradictory self is the one who can interrogate positionings and be accountable, the one who can construct and join rational conversations and fantastic imaginings that change history” (1991b, p. 22). Graham agrees, adding that in order to generate and maintain a flourishing community we need to “express new forms of relationality that embody affinity and difference but not dominion” (2002, p. 229). The utopian cyborg symbolises that a coexistence with ‘non-humans’ based on shared kinships rather than hierarchy is necessary today. Mann rightly asserts that “The astonishing speed with which the cyborg has gone from imaginary utopian space traveller to earthbound entity fraught

with the contradictions of everyday life testifies to the urgent need to address what lies between enthusiasm and skepticism, totalitarianism and anarchy” (2001, p. 54).

Furthermore, I have demonstrated in this thesis how artists address and represent the links between race and technology. Nonetheless, this study has also tangibly shown that the cyborg is overall “a manifestly Western signifier” (Short, 2005, p. 6). Whilst cyborg art can be considered a growing global phenomenon today, due to the way many artworks are created by artists from diverse cultural backgrounds, few cyborg artworks actually depict indigenous or black characters, and few are created by indigenous or black artists. I have suggested that this imbalance needs to be addressed before cyborg art can be considered a universal critical sphere of inquiry. Thomas Foster agrees, surmising that “The figure of the cyborg gains the critical value Haraway famously attributed to it only when it is articulated within racial as well as gendered and sexual frameworks” (2005, p. 57). Short also affirms that “The socially conscious cyborg [is] too male and too white to seem like a universal icon” (2005, p. 196). Gómez-Peña (2000) found via his viewer feedback mechanisms that Mexicans are overall viewed as political revolutionists, orators, artists, poets and ‘manual beings’, but not scientists or technologists. I propose that the lack of artworks which show non-Caucasian and non-Asian bodies with links to, and linked with, technology, exacerbates these types of perspectives.

Lastly, I have shown in this study that gender portrayals within cyborg imagery do not solely centre on binary divisions. Dewdney (1998), Dixon (2003), Volkart (2004-2005b) and others suggest that gender is one of the most important dimensions of the interface, due to its impacts on the body and power stratification. Theorists suggest that the reason why gender as an ideology is “vigilantly guarded” (Balsamo, 1995, p. 217), or “guarded ferociously” (Cook, 2004, p. 5) is that gendered and stereotypical representations maintain the system of patriarchy (Kirkup, 2000). Samantha Holland claims that “The central fear seems to be that in a possible cyborg future, biological gender would disappear, rendering patriarchy’s centrally constituting hierarchy of masculine over feminine untenable” (1995, p. 167). Yet as shown, cyborg art also

signals a rejection of traditional binaries, shattering the links and power relations which have existed – for the most part, and within most cultures – for centuries. Whether these artworks are presented in conjunction with dystopian, utopian or utopian aesthetics, the boundary-rupturing imagery encourages a rethinking of gender as a stronghold of the Western cultural episteme.

Overall, cyborg art offers orientation, navigation and anchorage in the escalating technological millennium; a central point of reference and exploration in an epoch where the concepts of life, birth and death are irretrievably altered. The concept of ectogenesis in particular challenges and transforms the notion of ‘natural’ humanity; evoking debates on the differences between born and made. Cyborg artworks demonstrate visually the way “Dramatic shifts in science and technology force us to rethink conceptions of ourselves, humanistic philosophies, and the very nature of reality” (Best & Kellner, 2001, p. 151). Cyborgs are compelling because they visually represent the cultural fears and desires which run deep within the human psyche. They signify technology as life-enhancing or life-threatening and represent an unfamiliar otherness which challenges the constructed and prescribed stability of human identity (Balsamo, 2000). The fact that actual cyborgs exist in society today also ensures that prophetic visions of cyborgs remain enthralling, unlike aliens or ogres, which are creatures of myth and fantasy (Pitts, 2003). Warwick affirms that “The era of the cyborg is now upon us” (2003, p. 131).

Gary Downey, Joseph Dumit, and Sarah Williams (1995, p. 344) argue that one of their aims within anthropological discourse is to “grant membership to the cyborg image in theorizing...” in order to address technology’s impacts culturally. I argue that the cyborg image in art should be granted membership within the realm of sociological theorising. Gordon Fyfe and John Law believe that ‘the visual’ has been “marginalised in sociology” (1988, p. 3), rarely used as part of the “tool-kit of most sociologists” (1988, p. 4). They call for sociologists to take the visual realm seriously as a relevant and explorative tool. Tony Fitzpatrick (1999) also argues for an increased awareness of the sociology of the cyborg body and its relevance. I note that

the body is being examined today. Williams and Bendelow affirm that “The body, rather than being marginalised as an extrinsic biological factor/external constraint, is for the first time being taken seriously within sociological discourse” (1998, p. 1). Chris Shilling concurs, believing that “the sociology of the body” is increasingly emerging as a “distinct area of study” (2003, p. 1). This thesis has given precedence to the cyborg body in art, promoting its value as a sociological and ontological tool.

To conclude, I have argued in this study for the need to consider cyborg art a specific critical postmodern art genre, and collected a substantial number of artworks to support my premise. I grouped 72 metaphorical, figural and literal artworks into 12 key sections, within five headings, to make my claim. These are: (1) *Historical* – Early to mid-twentieth century; (2) *Conceptual* – Science Fiction, Feminism, and Posthumanism; (3) *Emblematical* – Symbolism (and Iconism); (4) *Biological-Cultural* – Birth, Death, Gender, and Ethnicity; and (5) *Corporeal-Technological* – Prosthetics, Telematics, and Genetics. I developed 20 symbolic functions and related critical potential principles of cyborg art, in order to identify how key themes relating to the interface and technoscience are addressed in a variety of artworks. These 20 interlocking tenets of cyborg art were grouped under six headings within the concluding composite analysis chapter. These are: (1) Our relationship to technology and its scope; (2) Dissolving boundaries and barriers; (3) Interface aesthetics and body resurgence; (4) The politics and ethics of cyborgisation; (5) Altering perceptions and human adaptation; and (6) A historical record of human transformation. I demonstrated how this meta-analysis contributed to my grounded theory of cyborg art, which suggests that cyborg art can visually represent altering human corporeality and ontology within its diverse aesthetics, and this in turn can increase awareness of these changes, and body and technology links in general. Overall, I advocate greater recognition of this artistic focus as a valid research tool relevant to postmodern society. I include several suggestions and ideas in the following final section of this thesis in order to facilitate cyborg art’s critical potential.

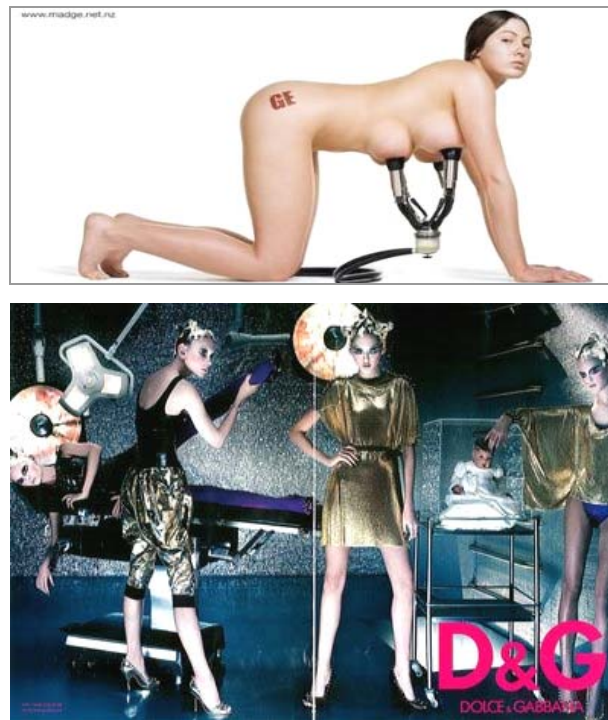
Future Visions

The suggestions included here are ideas which could further enhance knowledge of, and interest in, the connections between the human body and technology. These ideas developed during the course of conducting this research and are intended to show a level of engagement with cyborg art that extends beyond this research project. The ideas discussed address the spheres of Academia, Government, and Business, as well as Artists. A number of the suggestions are able to sit under more than one of these headings as collaborative projects or joint ventures between individuals, groups or institutions. I mention 25 suggestions in total; some are more pragmatic while others could perhaps belong to a cyborg art ‘wish list’. Nonetheless, I present a variety of future visions here, as my initial aim in this study was not only to explore cyborg art and to gain an understanding of how others view cyborg art, but also to develop tangible ways to foster closer links between cyborg art and members of the public.

Academia

1. I propose that a study could be developed which centres specifically on commercial-based imagery exploring the links between the body and technology, such as advertisements shown via magazines, television, and on billboards. The aim of this study could focus on examining how businesses and organisations use the cyborg or posthuman concept to promote their products, services or perspectives in today’s market. Understanding how companies view these concepts and how viewers in turn respond to the images would be key goals. The promotional images shown on the next page are examples of what types of images could be examined, as they both centre on motherhood and technology links. The first image is the 2003 billboard created by MAdGE, featuring a transgenic human-animal entity being milked in the manner of a cow. The second image is an advertisement created for the

well-known Italian fashion label Dolce & Gabbana (2007). This image shows a group of young women in a futuristic setting. One woman is lying on a birthing bed with her leg raised, while a baby is sitting in an enclosed glass incubator/box. This image therefore alludes to technology-assisted birthing practice and ‘a questioning’ of natural birthing procedures.



2. The creation of a New Zealand-based conference or seminar series which focuses on the interface as shown via art and imagery. Scholars from various research spheres would be encouraged to attend, such as political scientists, ethics researchers, cultural and visual culture theorists, sociologists, art historians, screen and media commentators, anthropologists, and graphic and fashion designers. The Australian Somatechnics Research Centre and its yearly conferences could serve as inspiration for this proposed event. In particular, their most recent Fifth International Somatechnics Conference: *The Technologisation of Bodies and Selves* (Somatechnics, 2009). A New Zealand-based conference or lecture/seminar series would draw together local

researchers interested in and/or involved with body-technology imagery, providing an avenue for sharing knowledge and ideas on art and social responsibility, and the social application of art.

3. An increased New Zealand academic focus on the interfaced body and how it is changing could be more closely interwoven with current interface research and development. At present, interest centres more on what can be achieved via human and computer interaction, with a focus on improving computer/screen user effectiveness. Technologies such as teleconferencing, telepresence, virtual and augmented reality, three-dimensional and perceptual user interfaces, immersive visualisation, and multimedia design are most often explored. The two most prominent New Zealand interface research units are the Human-Computer Interaction (HCI) laboratory at the University of Otago, and the Human Interface Technology Laboratory (HIT Lab NZ) located at the University of Canterbury. The Human Computer Interaction (HCI) unit at the University of Waikato is also an important interface research zone, due to their awareness of the need to address the ‘human’ element in computing (HCI Group, n.d.). Working with artists exploring body and technology convergence, with an emphasis on the body within these laboratories, may encourage new perspectives on alternative interfaces.

A successful 2005 partnership between Canterbury University’s HIT Lab and new media artists Angela Main and Caroline McCaw provides an example of what can be achieved with these types of joint ventures. Main completed an artwork *Animalia* in collaboration with McCaw as part of an artists’ fellowship at Canterbury University. *Animalia*’s focus remains centred on using digital technology to create an artwork external to the body, however, Main and McCaw explore Donna Haraway’s concept of the cyborg, thereby examining issues and aesthetics of human corporeal transformation and transgression, and human and animal melding (Main, 2006). *Animalia* was subsequently accepted into the international ZeroOne San Jose Global Festival

‘Art on the Edge’ (USA) in 2006, and was also reworked the same year into an installation artwork, entitled *Animalia Remix*, which functions as an interactive four player video game. This artwork was exhibited in June 2006 at the Corban Estate Arts Centre, Auckland, New Zealand (Main, 2006).

Art serves as a bridge between the laboratory and the public (Wilson, 2002). Using the body in art can foster stronger links between the research and the actual or potential recipients or users of the technologies developed. Promoting joint ventures between New Zealand cultural theorists and interface researchers and artists, with the aim to bring body-technology ideas into the public realm, generates more scope for awareness and the potential for public debate on these issues. These collaborative projects are being developed overseas, such as the STUDIO which was founded in 1989. The STUDIO is an experimental interdisciplinary arts centre based at the College of Fine Arts at Carnegie Mellon University (USA). Their mission is to “support creation and exploration in the arts, especially interdisciplinary projects that bring together the arts, sciences, technology, and the humanities and impact local and global communities” (STUDIO, n.d., para. 1).

Staff members at the Aarhus University in Denmark also ran an extensive collaborative interface project from 2004 to 2007, entitled *The Aesthetics of Interface Culture*. This project examined the interface from a cultural and corporeal perspective, with the goal to explore “the cultural and aesthetic developments surrounding the interface” (Pold, 2006, para. 1). The project head Søren Pold called “for a research dimension that is different from the predominant technical one” (2006, para. 1), thus paralleling my suggestion made here. One of the proposed sub-projects centred specifically on the cyborg body in art. In his projected paper *Cyborg Art in the Light of Aesthetic Theory and Evolution*, Jacob Wamberg planned to examine how the body, over the past 100 years, has in many ways been represented as an interfaced being, which has been my overall focus in this study. Wamberg is a professor

within the Department of Art History at Aarhus University. I suggest that a combined project focusing on cyborg art from both an art history and sociological perspective would further enhance understanding of cyborg art's themes and value, and foster academic and public recognition of cyborg art.

4. The creation of a website which presents a selection of the artworks included in this study. This website could also have a link to Chris Hables Gray's (2007) collaborative Cyborg Data Base website (Cyborgdb.org). Gray is currently seeking contribution to his Art section on this extensive website. A feedback mechanism could be included on the proposed site enabling the public to contribute to discussions of cyborg art. In addition, I suggest that the 'Cyborgs in art' section included on the Cyborg web page presented on the encyclopaedic website Wikipedia (wiki/Cyborg) could be extended. This is currently just over 150 words and could be lengthened to include discussions of two-dimensional and interactive artworks, and literal and figural works. The cyborg is real and unreal, and cyborg art avidly reflects both these states.
5. A two-minute video showcasing cyborg art to be presented on the popular video sharing website YouTube. A selection of cyborg artworks included in this study could be used as a base for this proposed video homage to cyborg art. I have commenced work on this suggestion; selecting 50 artworks which I feel will capture the interest of the viewing public. Philip Scott Johnson's YouTube videos – particularly *Women in Art* – and his celebrated morphing technique, serve as inspiration for the way I believe a Cyborg Art video may be designed. I also suggest that Morton Davis' 2000 CD *Cyborg Scream*, and his eerie blend of Euro-techno and electronic music, is well suited to accompany this proposed inaugural Cyborg Art video.
6. A collaborative project between writers and artists in the creation of a book examining cyborg art and the topics discussed in this thesis. This could centre on the exploration of both literal and figural interfaces. The visual imagery

could take centre stage in the form of a ‘coffee table’ art volume, or could be more theoretical in its approach. This thesis could serve as a base for the proposed book. This book could also include contact details in order to provide a feedback mechanism for artists whose works have not been included, and who feel their work may fit within the cyborg art genre.

7. A study to be conducted surveying actual individuals who are literally interfaced with technologies. This may include people who have an artificial limb (such as Cornel Winiata) or a heart pacemaker, or even those who spend more than 90 percent of their daily lives connected to telematic technologies, such as high-tech phones, computers or virtual reality systems. Interviewing recognised ‘literal cyborgs’ such as Steve Mann, Claudia Mitchell, or Neil Harbisson, either face-to-face or via email, would be an important component of this type of study as these individuals are well known for how they live out their daily lives linked to technologies. Obtaining these individuals’ thoughts first-hand would provide additional and relevant ontological and social understanding of how it feels to live as an interfaced being. Asking these individuals to offer their views on a selection of cyborg artworks would also be advantageous in terms of gauging their responses to the interfaces represented. This will foster understanding of cyborg art in general, and enhance awareness of, and ideas pertaining to, its potential social function.
8. A study could be undertaken which specifically centres on the artistic representation of triadic and quadratic cyborg art and correlated theoretical analysis. My research is the first that I am aware of that allocates a name to these artistic representations, and presents related text-based discussion. I have located several artworks which depict tribrid entities in various forms and suggest that this artistic expression requires further analysis. Although the concept and artistic exploration of quadratic merger is rare, theorists are increasingly examining the common origins and connections between all matter existent in the world. These ideas have to date not been linked to body-

technology interface art. I suggest that an in-depth study focusing on this melding will further facilitate understanding of this form of representation.

9. A follow-up year-long longitudinal study could be conducted based on this inaugural project to ascertain whether cyborg art can have tangible impact. This study was not able to obtain this type of data due to the research design and focus. Selected artworks could be discussed with research participants using the same format as this study. Then after a year, the same participants could be asked whether they had: (1) reflected on the artworks discussed; (2) altered their perspectives on technologies or body-technology issues since viewing the artworks; (3) experienced an increased interest in body and technology merger; (4) became more involved in, or engaged with, issues of body-technology integration or the way technologies are impacting on everyday lives; or (5) had been inspired to change their life-style in any way regarding technological usage. This thesis has demonstrated that art does impact on people's lives, and cyborg art is deemed to have an effect; however, this thesis could not tangibly show how significant this impact could be, in what ways the artworks generated impact, or how they might incite change.
10. A follow-up study could be carried out which focuses on asking specialists their views on cyborgisation. This study could centre on interviewing ten key experts in the field of body-technology integration, in order to obtain their thoughts and ideas regarding the impacts and consequences of the interface. These specialists may include surgeons, scientists, technicians, engineers, programmers, designers and artists who work with genetic, prosthetic, and telematic technologies; and researchers working in the field of enhancing human life spans. Interviewing these specialists would be advantageous as these individuals are at the forefront of creating and using these technologies. The interviews could be based on the interviewing procedures used in this study; centring on a semi-structured face-to-face or direct online/email interviewing format. These specialists could also be asked how they feel

interface or cyborg art may foster awareness of human corporeality and technology links, and what types of artworks may potentially generate more awareness or interest than others.

11. A follow-up study could be conducted with a sample of approximately 50 research participants, which focuses specifically on the sociological, political and ethical issues of mounting cyborgisation, as this form of research is infrequently conducted at present. For instance, such a study might ask participants if they would like to contribute to discussions and decision-making regarding advancing technologies, or whether they would like to be able to access information on corporeal technologies with more ease, and how this may be achieved. Furthermore, questions which centre on technological reliance and being under control via or having control over technology could also be addressed. Increased telematic connections, the speed of change, financial implications and the way we are potentially defining ourselves, and being defined by, technologies are also issues which could be examined.

12. Lastly, a follow-up study could be conducted which centres on *how* the interview participants who contributed to this research project answered the questions during the in-depth interviews. It was beyond the scope of this study to analyse the strategies the participants may have used, as my focus was on analysing and grouping the actual responses to the artworks. Nonetheless, I uncovered ten main response-types whilst transcribing the interview transcripts, which I present here under five headings. These are: (1) Levels of Meaning: *Surface-level* and *Deep-level* (Stern, 2004); (2) Modes of Engagement: *Engaged and Active* and *Rigid and Passive* (Gotshalk, 1962); (3) Relative Response Types: *Archetypical* and *Atypical*; (4) Interpretive Resources: *Self-context*, *Artist-context* and *Knowledge-based*; and lastly, (5) Interpretation Avoidance: *No Response*. I suggest that these response-types could be developed further into a more conclusive analytical conceptual framework, in order to examine in depth the key strategies people may use to

respond to artworks, particularly those which represent far-reaching ideas and visions, such as many of the works included in this study.

Finally, as mentioned, it was also outside the scope of this research project to examine the differences noted in interview participants' responses regarding their age, gender and ethnicity. Yet, I suggest that a study focusing on how these variables may impact on perspectives and values pertaining to technology's effects on the body, and people's lives, may enable researchers and artists to become more aware of the way culture, gender and age play a role in people's general views towards 'the interface' or cyborgisation.

Government

13. Establishing a sector or unit of the New Zealand Ministry of Research, Science and Technology (MoRST) focusing specifically on body-technology integration and interface. This unit could be an extension of Futurewatch (see pp. 295-296), which the Ministry formed in 2005 in order to provide New Zealanders with information relating to biotechnology. One of the key responsibilities of this proposed unit would be to develop a nationwide website where members of the public can access information on changes or adaptations to the body being developed today, and envisioned for the future. Collaboration between The Ministry of Research, Science and Technology, The Ministry of Social Development, The Ministry of Communications and Information Technology, and The Ministry for Culture and Heritage would be promoted. Scholars, researchers and artists focusing on issues relating to cyborgisation would be asked to offer their contributions in order to enhance the effectiveness of the website. Providing public feedback mechanisms would further encourage people to present their views on the interface. In addition, legislation relating to technologies which impact on the body could be presented in an easy to understand format.

As shown in this study, the majority of research participants surveyed felt they were not given sufficient information on technologies which can impact on the body. Therefore, creating a base website in order to adequately inform the public of developments enables people to form their own ideas which are less likely to be clouded by implied, inferred or media-derived information (Sturgis, Cooper, & Fife-Schaw, 2005). This is by no means an easy task as most information is channelled via a person's or an institution's perspectives. For this reason, I suggest a mix of artists, scientists, technologists, academics, and corporate and government representatives could work together in order to maintain a high standard of what type of information is included, and how information is presented. The majority of research participants also stated that they had not contributed to discussions, debates or decisions made relating to body technologies. Yet, before the public can make a contribution, they require a prior understanding of the topic under examination. This proposed website could potentially serve as a central base for providing the public with informed knowledge and understanding.

14. Awarding an artist or artists who focus on body-technology integration a portion of the \$700,000 Smash Palace fund developed by Creative NZ (a division of The Ministry for Culture and Heritage) and MoRST in 2002. This fund was established in order to support collaborations between the arts, science and technology. A key objective of the Smash Palace fund is to “support the convergence between the arts and science as a building block for innovation and creativity” (Creative New Zealand, 2005, para. 3). The 2005-2007 funds were awarded to four projects focusing on quantum phenomena of the universe, electroacoustic manipulation of cave sounds, Auckland regional landscapes, and 3D recording of Māori performance.
15. The creation of a jointly funded government/industry art exhibition which centres on body and technology links specifically. Several of the artworks introduced in this study could be included in the exhibition, either shown

digitally via a screen, or as actual paintings, sculptures and interactive performances. Presenting static two-dimensional art alongside performance art could potentially resonate with viewers in term of offering diversity. A contemporary museum such as Wellington's Te Papa Tongarewa could be approached, or a gallery in one of the larger cities in New Zealand could be a suitable venue. The curators of the 2008 *Cyberdine* art exhibition, held at the Last Rites Gallery in New York, could be asked to contribute their knowledge in order to facilitate the successful implementation of the proposed event. An exhibition is a fitting way to bring cyborg art into the public arena, as exhibitions create a tangible place for people to share their experiences of art.

16. The creation of a nationwide school-based art competition focusing on cyborg or posthuman art. The aim of this competition would be to ignite interest in our increasing interconnections with technology, and to gauge how children and young adults envision the interface today and/or regarding the future. Key objectives would be to understand and explore not only how New Zealand school pupils and students feel technology affects the body, but also how they perceive body-technology links affecting society and culture. Gaining insight into the way Māori and Pacific Island students feel about these convergences would also be a key goal of the campaign. I note that there is currently limited indigenous (and black) artists working within the body and technology interface sphere, and there are also few non-Caucasian and non-Asian subjects and cultures represented in cyborg art.

Business

17. I also suggest that it may be advantageous for larger New Zealand businesses which centre on media and medical technologies, and human and technology interaction and integration in general, to periodically work with artists who focus on these issues, in order to create stronger ties between business leaders,

researchers and artists. Overseas companies have initiated this merger. For example, Xerox's PARC (Palo Alto Research Centre) artist-in-residence program PAIR, based in California, creates a pairing between scientists and artists; the Canon Artlab in Tokyo centres on collaborations between artists and engineers, and the ART + COM new media group in Berlin intersects art, culture, research and industry to create visionary ideas pertaining to new media technologies (Wilson, 2002). These collaborations unite artists and researchers in order to find new ways to explore the interface, and with added cultural understanding. Telecom is New Zealand's largest telecommunications company and may consider trialling a small scale project or partnership, due to its stance towards and support of New Zealand arts. This includes the annual IHC Telecom Art Awards, and collaborations with the recurrent New Zealand International Arts Festival, whilst also supporting the business incubator Creative HQ based in Wellington (Telecom New Zealand, 2009).

18. The creation of a New Zealand *Body-Technology Interface Expo*. This could be presented in a venue such as the Ellerslie Events Centre in Greenlane, Auckland, and comprise of a variety of exhibitions within the field of art, music, dance, design, fashion, film, gaming, toys, disability, prosthetics, media and medical technology, computing, and biotechnology. The expo would provide an opportunity to foster creative and business partnerships, obtain people's responses to new concepts being developed, and for the public to see and experience first-hand what types of technologies exist today – either in actuality or via digital viewing. The cyborg concept is compelling due to the way it delves into fundamental dimensions of human existence such as birth, death, sex, health, communication, and change.
19. Creating a weekly or monthly discussion column to be included in a New Zealand-based current affairs, art, technology, or men's/women's life-style magazine. This column could focus on and explore the increasing interface between human bodies and various technologies – in both literal and

imaginative spheres. A combination of theory, research, art and imagery could be used to create an avenue where cyborgisation would be presented in everyday language and therefore more easily understood by the majority of the public. The column could select a different theme with each issue published, and include associated imagery.

20. Developing a New Zealand-based cartoon, comic book or gaming character, which may appeal to a younger audience, featuring cyborg configurations that are both realistic and futuristic, and which deviates from the typical superhero characters dominating comic books. Providing information and exploration on the emerging and/or envisioned interface would be a key objective in order to enhance public understanding and knowledge of what types of technologies exist today, and which technologies are currently in experimental stages. A cyborg character presented in one of the artworks included in this research project could be used as a main character, or the ideas and themes which *Tora Cy*, shown here, incarnates may also be used as inspiration.



I co-designed this character with graphic artist Robin Sung in 2005. *Tora Cy* is a female cyborg cartoon character who wears a wompack, which is a detachable external womb, where her offspring gestates. The wompack is created as a way to ignite debate on issues of accountability in a technological world. *Tora* also has computer implants on each of her wrists. One monitors her body and can be connected to the wompack when worn; the other is a global communication device – connecting her to the web and to the world.

The proposed cartoon could also be used as a vehicle to promote Haraway's push for democratic responsibility toward nature, technological usage, and its effects on nature. For instance, *Tora* wears a plant vine laced around one leg as adornment, which grows in a hydroponic ankle band. Using nature as a type of jewellery or decoration as opposed to wearing artificial or manufactured artefacts suggests reverence towards, and an appreciation for, plant life. This idea is similar to the way Cornel Winiata has adorned his artificial limb with a koru design (which also indicates a connection to and respect for nature), and the way Heidi Taillefer has created a cyborg entity – *Venus Envy* – whose corporeal configuration also includes elements of nature.

Artists

21. I also suggest that it may be advantageous for an increased artistic focus to be given to ubiquitous technologies, such as mobile phones and music players, portable computers, and gaming and video/camera devices. Few cyborg artworks depict these types of technologies, either literally linked to or metaphorically interfaced with the body. The focus is more often on elaborate and fictional apparatuses and themes. Creating art which includes everyday technologies has the potential to generate more public interest in the artwork and the technologies represented. This is due to people being able to relate to

these technologies with more understanding as they translate to ideas, experiences, and meanings explicitly linked to their everyday lives.

22. An increased artistic focus on medical interface technologies. I make this suggestion because art, as a medium, is able to depict actual devices to viewers in an alternative way to a photograph or a diagram, often surpassing their inherent limitations. For example, viewing an artwork which shows a cochlear implant directly linked to a person's nerve endings is substantially different to viewing a photograph of an implant situated by the ear. Art also remains closely allied with culture, ideology and ontological change. Cyborg art's resounding strength is that it can re-represent the interface back to us in unique ways which differs from diagrams, photography, film and text.
23. Developing ways to increase the number of female artists exploring body and technology convergence. This study includes artworks created by 47 male artists and only seven female artists. This disproportion creates imbalances over the way men and women feel about and represent the interface. This could, in part, be addressed via the website, book and exhibition ideas, as the artworks created by female artists would be readily available for viewing. In addition, cyberfeminist and women's art-based groups such as the Critical Art Ensemble and Guerrilla Girls could be contacted to discuss the imbalance of female and male artists creating works which centre on corporeal technologies and human body and technology interface themes. Selecting female artists to serve as ambassadors to younger artists who have an interest in this area may also be beneficial in reducing the disparity between male and female artists.
24. Lastly, I suggest that an increased focus on the cyborg body or corporeal interface from the perspective of indigenous artists is important. This research found no significant differences between Māori and European participants' perspectives on body-technology integration. Yet I was unable to locate a Māori artwork which explores cyborg themes relating to Māori culture, aside

from Cornel Winiata's koru design artificial limb. Nigel Reading and Gary Wyatt state in their extensive 2006 art volume *Manawa: Pacific Heartbeat* that Māori artists also look to the future for their inspiration. However, no Māori artworks featured in this book explicitly explore body-technology links. This is likely due to Māori culture's Vitalist ontology, close links to nature, and perspective towards the human body as being sacred or tapu (Singer, N., personal communication, September 18, 2007). Yet I believe that viewing interface artworks from a Māori cultural perspective would foster awareness of how Māori define increasing body technologies, particularly the way cultural, social, political and ethical repercussions of the interface are examined. Approaching Māori art schools such as Toi Houkura, The Visual Arts and Design School in Gisborne, in order to discuss how Māori students feel about incorporating technology into their portrait or figure-based works would also be advantageous. Māori artist Rua Pick and artificial limb recipient Cornel Winiata could be approached to assist with this proposal.

Moreover, as mentioned, I have not found an artwork which depicts an unambiguously black or indigenous female as the feature character interfaced with technology. González stated in *Envisioning Cyborg Bodies* (1995) that images and artworks depicting women of colour as cyborg characters were uncommon. This lack of race and body-technology portrayal remains evident in 2009. I note that the Asian female anime and manga cyborgs *Battle Angel Alita* and *Major Kusanagi* are also depicted as more Caucasian than Asian in terms of their facial features and body type. It may be useful and beneficial, with regard to sociological and cultural themes, for artists to explore and counterbalance the under-representation of black and indigenous women shown interfaced with technology, as these women are as much a part of the interface debate as white Western women. These women will desire, reject, be required to, or possibly even be forced to, conform to the interface as technology continues to advance. This imbalance in racial representation also denies the cyborg the facility to serve as a universal icon for women.

Collaboration

25. The final suggestion presented here requires collaboration between many differing fields of expertise including academic, media, artists, writers, and industry or government sectors for possible funding requirements. This future vision centres on developing a proposal for a television documentary, or a 20-minute segment presented on a current affairs or art-based show, focusing specifically on cyborg art. This media-based proposal draws on ideas regarding format and focus from two well-known British BBC documentaries created in the past eleven years: Robert Winston's *The Human Body* (1998 onwards) and Simon Schama's *Power of Art* (2006), and Gary Johnstone's visionary television documentary *The Cyborg Cometh* (1994).

Robert Winston's multi award-winning series *The Human Body* focuses on the potential of the human body, and the systems in place which keep our bodies functioning from birth to death. Winston is a British doctor, scientist, writer and politician and has presented several documentaries on the human body, including *Making Babies* (1996) and *Superhuman* (2000). Winston's aim is to bring complex ideas to the public in ways which are comprehensible and compelling. He believes that "Scientists must listen to public fears, and respond to the concerns of ordinary people. We must behave responsibly, ensuring our work has the highest ethical standards" (Winston, n.d., para. 1).

Simon Schama is a British historian, and writer and presenter of the documentary series *Power of Art*, which TV ONE (TVNZ) screened in 2007. This series focuses on eight artists and one of each of their pivotal works. The series includes van Gogh's *Wheat Field with Crows* and Picasso's *Guernica*. Schama believes that the power of great art can "shake us into revelation and rip us from our default mode of seeing" (as cited in BBC Arts, 2008, para. 1). Whether this viewing causes excitement, desire, shock, pain, or revulsion, Schama argues that art can change our senses and how we view the world.

Gary Johnstone's 1994 television documentary *The Cyborg Cometh* examines technologies altering and shaping the human body today, such as artificial limbs and medical body scanners, and the effects increased usage of technology has on human abilities and perceptions (The Internet Movie Database, 2009). It has been 15 years since this documentary was created. I therefore suggest that it is an opportune time to build on this literal interface focused documentary and develop a documentary with an artistic focus. Chris Hables Gray (2008) featured in *The Cyborg Cometh*; he is also someone who regards public outreach as an essential component of cyborgology.

In addition, James Cameron's much anticipated film *Battle Angel* due for release in 2011 will further ignite public interest in the cyborg concept and the futuristic narratives of cyborgisation. Cameron sees *Battle Angel* as a potential three film cycle (Knowles, 2006), which will keep the cyborg concept in the public eye for many years. The proposed Cyborg Art documentary could sit adjacent to the many films featuring cyborgs, providing an artistic lens into cyborgology. Fictional cyborgs shown via entertainment, and actual cyborgs shown via documentaries – including *The Cyborg Cometh* and Steve Mann's *Cyberman* (2001) – have been presented to the public in various ways. Yet the artistic cyborg lens has yet to be adequately presented and shared. Medical and communication-based body and technology integration is mainly shown via television in the form of news and current affairs programmes, while the cyborg is largely linked to science fiction and entertainment. This proposed show would link the literal and applied with the fantastical and metaphorical as a way to illustrate how these two concepts are increasingly converging.

I contend that utilising key ideas from Winston's, Schama's and Johnstone's documentaries in developing a Cyborg Art documentary, or show segment, may be compelling to the general viewing public due to the extent to which technology is impacting on people's lives within Western society. The format of the proposed documentary could centre on presenting a selection of cyborg-

inspired paintings, illustrations, sculptures, performances and interactive works with accompanying narratives, or could be more extensive in its approach, such as travelling to the country where an artist lives, interviewing the artist, examining key artworks, and the cultural, social and ontological issues which the artworks explore. I present four key reasons, within the closing pages of this thesis, to support my suggestion that a Cyborg Art documentary proposal ought to be given consideration.

1. There is a noted interest in the junction of technology, science and art, which Stephen Wilson avidly explores in his 900-page book *Information Arts: Intersections of Art, Science, and Technology*, published in 2002. *Leonardo: The International Society for the Arts, Sciences and Technology* centres on this junction, publishing books (such as Wilson's) and journals, supporting education and awards programs, and holding conferences and workshops (Leonardo On-Line, 2009). Robert Winston (n.d.) also has a personal interest in theatre and has presented documentaries focusing on British painters in the past. Moreover, he appeared as himself in the BBC doco-film *Frankenstein: Birth of a Monster* (2003), which focused on renowned author Mary Shelley's life and works. In particular, her 1818 gothic tale *Frankenstein: Or The Modern Prometheus*. This novel is one of her most recognised and celebrated, due to the way the story metaphorically addresses concerns regarding the encroachment (and power) of industrialisation, technological innovation and its subsequent use. Shelley's Frankenstein creature is often considered the foundational cyborg as it was given life through the use of technology, beginning a new chapter in the narratives of human existence (Gray, Mentor, & Figueroa-Sarriera, 1995; Kuni, 2004-2005a). Winston's current research centres on transgenic technologies with the goal to help fight human diseases. He is also interested in advanced fertility research such as developing ways to mature eggs external to a woman's body (Winston, n.d.). This thesis has introduced artistic representations relating to these research spheres, signifying its relevance regarding contemporary research.

2. The empirical research and findings obtained in this study indicate that there is interest in body-technology integration and interface art as concepts. However, this study has also shown that there is an element of mystification and uncertainty regarding the cyborg and cyborg art. Presenting similar ideas addressed in this thesis via an entertainment medium such as television may resonate with viewers, as the artworks would be shown with accompanying dialogue which will foster additional understanding of the concepts examined. Television is also based on imagery and motion, and as such, is one of the most popular visual mediums which exists today (de Kerckhove, 1997). Artworks presented via television can also be viewed in the context they were created, and in motion with regard to the performance artists.

3. The artists whose works are included in this study comprise of a diverse array of nationalities, identifying a growing global interest in the cyborg and posthuman concept. This divergent focus enables the public to have an insight into various cultural perspectives pertaining to the interface; from the viewpoint of the artist. In addition, numerous artists who explore interface themes are multi-talented individuals involved in many artistic ventures within the realms of art, music, design, film, and literature. Biographical details of the artists could therefore be included in the discussions in order to enhance viewer connection to the artworks and the themes presented.

4. Lastly, cyborg art is dynamic as it centres on new forms of augmentation, interaction, adaptation, gestation, sex, sexuality, and death; and explores novel ideas relating to gender, disability, ethnicity, and post-hybrid melding. Many of the artworks are also aesthetically riveting, rebellious, and dramatic, which can generate high levels of viewer interest, as the immense public response to von Hagens' exhibitions show. Moreover, cyborg art is created using a variety of art mediums, such as sculpture, painting, illustration, and digital, media, and interactive art. Cyborg art is also situated in both popular and fine art realms, thereby having the potential to attract a broad and varied audience.

This thesis has shown that cyborg art has immense scope as a creative and discursive tool for addressing the interactions which exist between humanity and technology. Best and Kellner affirm that “Creative, critical and theoretical perspectives are necessary to grasp both the promises and the perils of the turbulent transformations that the human species is undergoing” (2001, p. 151). Exploring cyborg bodies in art and imagery also draws out “the implicit desires, anxieties and interests that are fuelling humanity’s continuing relationship with its tools and technologies” (Graham, 2002, p. 1). Cyborg art examines, evokes, questions, represents, confronts, shares, ethically engages with, and offers experiences relating to, cyborgisation. Visual culture theorist W. J. T. Mitchell alludes to the importance of paying attention to art which explores various developments of technoscience and using it for critical reflection, discussion and debate. He contends that:

Perhaps this moment of accelerated stasis in history, when we feel caught between utopian fantasies of biocybernetics and the dystopian realities of biopolitics, between the rhetoric of the posthuman and the real urgency of universal human rights, is a moment given to us for rethinking just what our lives, and our arts, are for. (Mitchell, 2005, p. 335)

I have suggested and demonstrated throughout this thesis that a need arises to embed cyborg art in the realm of corporeal human-technology interface debate, and to recognise cyborg art as constituting a specific theoretical framework and relevant and critical postmodern art genre. I have shown the importance of acknowledging cyborg art as a significant arena for examining issues surrounding changing human ontology, and I have argued that because of cyborg art’s symbolic function and critical potential, it should be valued as complementary to theoretical discussion focusing on cyborgology and the processes of body and technology integration. Cyborg art has social meaning as this art genre offers versions of the technoscience debate which are often not considered, and forms of resistance not immediately apparent. Ultimately, cyborg art visually represents the altering human body and the scope of developed and discovered corporeal technologies, which impact on all of us - and future generations. This is the function, value and potency of cyborg art.

Appendix A

Information Pertaining to the Research Participants.

1. In-depth Interview Participants: 34 in total.

(i) The ethnicity shown alongside each interview participant's name is self-defined, offered in response to the question: *What ethnicity are you?* The interviewee's age is noted following his or her self-identified ethnicity.

(ii) Māori are the indigenous peoples of New Zealand. The Māori term 'Pākehā' is used by many people living in New Zealand to refer to non-Māori, 'white', or European New Zealanders. The term often denotes a New Zealand identity (King, 1985).

Male Interviewees: 20	Female Interviewees: 14
1. Matt, New Zealand Caucasian, 23	1. Margaret, Pākehā New Zealander, 59
2. Javin, Sikh, 18	2. Darri, Māori European, 18
3. Paul, New Zealand European, 21	3. Marion, New Zealand European, 44
4. Phil, European New Zealander, 24	4. Kayla, New Zealand Māori, 18
5. Donovan, New Zealander, 37	5. Demelza, New Zealand European, 25
6. Emmanuel, European Māori, 32	6. Lesley, Māori Pākehā, 49
7. Chris, European, 21	7. Cherie, Samoan European, 35
8. Blair, European, 18	8. Maree, New Zealander, 21
9. Art, Danish Irish New Zealander, 23	9. Marie, English European, 21
10. Malcolm, New Zealander, 45	10. Misty, Māori, 24
11. Morten, European, 34	11. Kirsty, English, 25
12. Gregg, New Zealand Māori, 24	12. Nadz, South African, 21
13. Luke, South African, 24	13. Sally, Māori Pākehā, 67
14. Steven, Māori, 40-50	14. Maddy, New Zealand European, 18
15. Jason, English Portuguese, 33	
16. David, European New Zealander, 22	
17. Laurie, Māori, 31	
18. Nick, European New Zealander, 19	
19. Nick <i>Nico</i> *, Pākehā, 22	
20. Nick <i>Nicholas</i> *, Caucasian, 25	
<p>*As three of the male interviewees shared the same name 'Nick', I altered two names, as shown above, for the thesis verbatim quotations in order to avoid any misunderstanding.</p>	

2. Email Questionnaire Respondents: 11 Artists in total.

Male Artists: Ten	Female Artists: One
<ol style="list-style-type: none"> 1. Stelarc 2. Justin Fox 3. Christos Magganas 4. Viktor Koen 5. Rua Pick 6. Philip Hitchcock 7. Joachim Luetke 8. Daniel Van Winkle 9. Brice Vandemoortele 10. Daniel Lee 	<ol style="list-style-type: none"> 1. Lynn Randolph

3. Hand-distributed Questionnaire Respondents: 65 in total.

Male Respondents	Female Respondents
31	34
<p>Age bracket of 65 respondents:</p> <p>18 – 27 10</p> <p>28 – 37 16</p> <p>38 – 47 14</p> <p>48 – 57 10</p> <p>58 – 67 8</p> <p>68 – 77 5</p> <p>78 and over 2</p>	

Appendix B

Department of Societies and Cultures
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Researcher: Elizabeth Borst

Corporeal cyborg aesthetics: An ontological and sociological analysis of increasing human-technology interface

Interview Stream One: Interview guide for in-depth semi-structured interviews

Interviewing questioning structure: Six areas of interest, 22 images and 80 questions in total.

1. *Questions concerning general research themes. (10 Q)*
2. *Questions relating to artwork. (45 Q)*
3. *Questions relating to concepts examined by artwork. (11 Q)*
4. *Ontological questions. (3 Q)*
5. *Sociological questions. (6 Q)*
6. *Personal, contextual questions. (5 Q)*

Throughout the interview, please feel free to:

1. Ask any questions about an image.
2. Ask for more time to answer.
3. Ask to view an image again.
4. Ask to skip any questions.
5. Ask any questions to be repeated.
6. Ask to add to, or retract any comments made about an image.
7. Ask to be able to read any questions yourself for clarification.

Introductory questions

Questions concerning general research themes.

1. In general, how do you view technology? (Ask positive or negative or both)
2. In general, how do you view art? (Ask messages or aesthetics or both)
3. Has the viewing of an artwork ever impacted on your life? In what ways?
4. What do you think a cyborg is?
5. In general, have science fiction cyborgs (perhaps depicted in television shows, films, books and comics) increased your understanding of the links between humanity and technology? If answered no – Why do you think this? If answered yes – In what ways?



Questions relating to artwork.

6. These three images show the way in which communications technology, as incorporated with the body, has been depicted by various artists since 1919. Which image is the most interesting for you? Why?
7. How would you describe the way in which a fourth image (developing on from these images) would appear?
8. What do you feel is the strongest visual aspect of the third image?



Questions relating to artwork.

9. What do you think this artwork represents?
10. How does viewing this artwork make you feel?

Questions relating to concepts examined by artwork.

11. In general, do you think that negative (dystopian) images of cyborgs are more common than positive (utopian) images of cyborgs? Why do you think this is?



Questions relating to artwork.

12. How do you feel about this artwork?
13. Can you describe the key visual features of this artwork?

Questions relating to concepts examined by artwork.

14. What do you think about the possible link between female cyborgs and sexualisation?



Questions relating to artwork.

15. What is your response to this artwork?

Questions relating to concepts examined by artwork.

16. What do you think about the possible link between male cyborgs and aggression?



Questions relating to artwork.

17. What ideas do you think this artwork presents?

18. How do you feel about this artwork?

19. Why do you think both female and male sex organs are represented in this artwork?



Questions relating to artwork.

20. What is your response to this artwork?

21. Can you describe the key visual features of this artwork?

22. This image shows the male sex organ symbolically depicted on the female cyborg. What do you think this represents?



Questions relating to artwork.

23. What is your reaction to this image?
24. Why do you think Cornel placed the koru design on his artificial limb?
25. Why do you think these artificial limbs have been beautified?

Questions relating to concepts examined by artwork.

26. How aesthetically attractive is technology for you?
27. In general, how do you think cyborgs are presented in relation to ethnicity?



Questions relating to artwork.

28. What ideas does this artwork present?
29. What is your response to this artwork?

Questions relating to concepts examined by artwork.

30. How do you feel about the concept of external wombs?



Questions relating to artwork.

31. This is a photographic image of a real male corpse (cadaver) which has been preserved and molded into this position, by having resin injected into his veins. He is part of an exhibition called Body Worlds. What is your reaction to this image?

32. What moral issues are raised by the creation of this artwork?



Questions relating to artwork.

33. What do you think this image is identifying?

34. How do you feel this image depicts the connection between the body and the mind?

Ontological questions.

35. Do you feel that the body and the mind are connected? Why?



Questions relating to artwork.

36. This is a photographic image of performance artist Marcel.Í Antúnez Roca. Members of the audience are able to manipulate his body using controls which are linked to cables, which in turn activate devices which stimulate movement of his body such as stretching his mouth. What do you think the artist is trying to present in this performance?

37. What is your reaction to this image?

Sociological questions.

38. In what ways is control an issue for people in relation to technology?



Questions relating to artwork.

39. This is a photographic image of an interactive artwork, which enables individuals to experience sexual encounters (who may be located in different cities or countries) via technology. The technology allows the partners to feel each others 'touch' using high-tech wearable devices. What is your reaction to this?
40. How does this image impact on you?

Questions relating to concepts examined by artwork.

41. How might the act of 'remote technologically enabled sex' be a substitute for actual sex?



Questions relating to artwork.

42. What ideas do you think this artwork presents?
43. Can you describe the key visual features of this artwork?

Questions relating to concepts examined by artwork.

44. Is the 'screen' (television, cinema, computer, play station) a dominant feature in your life? In what ways?



Questions relating to artwork.

45. What do you think this artwork represents?

Questions relating to concepts examined by artwork.

46. How does technology relate to issues surrounding the prolonging of human life?

Sociological questions.

47. In general, what do you think about our possible increasing dependency on technology?

Questions concerning general research themes.

48. In general, how might the cyborg be a symbol of contemporary Western Society?

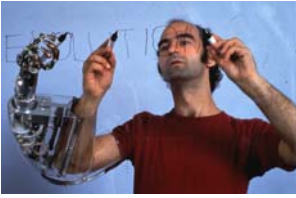


Questions relating to artwork.

49. This artist was extensively injured in an accident when she was young. She suffered ongoing complications and pain as a result, and endured many operations. What is your reaction to this artwork?

50. What do you think this artist is trying to convey with this self portrait?

51. Can you describe the key visual features of this artwork?



Questions relating to artwork.

52. This is Stelarc, a performance artist, who is writing 'evolution' simultaneously with three hands. What do you think he is trying to depict in this image?

Questions relating to concepts examined by artwork.

53. In general, how is technology changing human evolution?

Sociological questions.

54. Do you feel you are able to contribute to decisions concerning human and technological merger?



Questions relating to artwork.

55. What is your reaction to this image?

56. What ideas are presented in this image?

Sociological questions.

57. What ethical issues are associated with human-animal hybrids?



Questions relating to artwork.

58. What do you think this artwork is identifying?

59. How does this artwork impact on you?

60. How might an artwork such as this increase awareness of animal-human hybrid gene research?

Sociological questions.

61. Do you think that you are provided with adequate information concerning research that alters natural reproduction? If answer is yes – Can you give me an example? If answer is no – What might the consequences of this be?
62. Who do you think makes most of the decisions concerning research into human-animal merger?



Questions relating to artwork.

63. What ideas do you think this artwork presents?
64. How do you feel when viewing this artwork?
65. Why do you think the artist has combined human, animal and technological elements within one artwork?
66. Why do you think the artist has used an image of a baby in this artwork?



Questions relating to artwork.

67. What is your reaction to this artwork?
68. Can you describe the key visual features of this artwork?

Questions relating to concepts examined by artwork.

69. What might be the reason increasing numbers of artists are creating artworks which combined human, animal and technological elements within one image?

Final questions relating to the study in general.

Questions concerning general research themes.

70. Were you aware of cyborg art before you became involved with this research project?
71. Has involvement with this project increased your understanding of cyborgs?
72. Has involvement with this project increased your appreciation for cyborg art?
73. In general, do you think that cyborg art can increase people's awareness of the links between the human body and technology?

Ontological questions.

74. In a few words, what do you think it means to be human today in relation to technology?
75. In a few words, who, or what, do you think we are *becoming* in relation to technology?

Final personal, contextual questions.

Personal, contextual questions.

76. What is your age?
77. What is your gender?
78. What ethnicity are you?
79. Do you have a spiritual belief?
80. What is your highest qualification?

Thank you again for your time. I appreciate it very much.

Appendix C

Department of Societies and Cultures
University of Waikato. Private Bag 3105, Hamilton
Researcher: Elizabeth Borst

Corporeal cyborg aesthetics: An ontological and sociological analysis of increasing human-technology interface

Interview Stream Two: Interview guide for in-depth semi-structured interviews

Interviewing questioning structure: Six areas of interest, 29 images and 84 questions in total.

1. *Questions concerning general research themes. (10 Q)*
2. *Questions relating to artwork. (55 Q)*
3. *Questions relating to concepts examined by artwork. (6 Q)*
4. *Ontological questions. (3 Q)*
5. *Sociological questions. (5 Q)*
6. *Personal, contextual questions. (5 Q)*

Throughout the interview, please feel free to:

1. Ask any questions about an image.
2. Ask for more time to answer.
3. Ask to view an image again.
4. Ask to skip any questions.
5. Ask any questions to be repeated.
6. Ask to add to, or retract any comments made about an image.
7. Ask to be able to read any questions yourself for clarification.

Introductory questions

Questions concerning general research themes.

1. In general, how do you view technology? (Ask positive or negative or both)
2. In general, how do you view art? (Ask messages or aesthetics or both)
3. Has the viewing of an artwork ever impacted on your life? In what ways?
4. What do you think a cyborg is?
5. In general, have science fiction cyborgs (perhaps depicted in television shows, films, books and comics) increased your understanding of the links between humanity and technology? If answered no – Why do you think this? If answered yes – In what ways?



Questions relating to artwork.

6. This is a wax sculpture of a science fiction film cyborg character called Robocop. What is your response to this artwork?
7. How does viewing this artwork make you feel?



Questions relating to artwork.

8. What do you think this artwork represents?
9. What is your reaction to this artwork?



Questions relating to artwork.

10. This drawing was created in 1958. What ideas may this artwork present in relation to the era in which it was created?
11. Can you describe the key visual features of this artwork?



Questions relating to artwork.

12. What ideas do you think this artwork presents?
13. How does this artwork impact on you?
14. Do you see this as a negative or positive image? Why?



Questions relating to artwork.

15. What do you think this artwork represents?
16. Why do you think the artist entitled this artwork “Screw God”?
17. How does this artwork impact on you?
18. Do you see this as a negative or positive image? Why?



Questions relating to artwork.

19. What is this artwork representing?
20. How does viewing this artwork make you feel?
21. Can you describe the key visual features of this artwork?



Questions relating to artwork.

22. What is your response to this artwork?

Questions relating to concepts examined by artwork.

23. In general, do you think that negative (dystopian) images of cyborgs are more common than positive (utopian) images of cyborgs? Why do you think this is?



Questions relating to artwork.

24. What is your response to this artwork?

Questions relating to concepts examined by artwork.

25. The cyborg concept originally came about through research into adapting human beings for outer-space travel. Where you aware of this? What did you think might be the cyborg's origins?

26. In relation to the changing environment, how might human beings become more incorporated with technology in order to survive?



Questions relating to artwork.

27. What is your reaction to this artwork?

28. In what ways is this female cyborg depicted in relation to sexualisation?



Questions relating to artwork.

29. What do you think this image is identifying?
30. How does viewing this artwork make you feel?



Questions relating to artwork.

31. What is your reaction to this artwork?

Questions relating to concepts examined by artwork.

32. In general, how do you think cyborgs are presented in relation to ethnicity?



Questions relating to artwork.

33. This is a photographic image of performance artist Guillermo Gómez-Peña. What ideas do you think the artist is trying to present in this image?
34. How does this image impact on you?



Questions relating to artwork.

35. What do you think this artwork is representing?
36. How do you feel when viewing this artwork?

Questions relating to concepts examined by artwork.

37. How do you feel about the concept of external wombs?



Questions relating to artwork.

38. This is a photographic image of a real female corpse (cadaver). She has been frozen and then cut into extremely thin slices. Each slice is presented on the internet for viewing. What is your reaction to this image?
39. What moral issues are raised by this image?



Questions relating to artwork.

40. What ideas do you think this artwork presents?
41. Can you describe the key visual features of this artwork?

42. How do you feel this image depicts the connection between the body and the mind?

Ontological questions.

43. Do you feel the body and the mind are connected? Why?

Sociological questions.

44. Do you feel you are easily able to contribute to decisions concerning human and technological merger?



Questions relating to artwork.

45. What ideas does this artwork present?
46. In what ways is this male cyborg depicted in relation to communications technology?
47. What is your reaction to this artwork?



Questions relating to artwork.

48. What ideas do you think this artwork presents?

Questions relating to concepts examined by artwork.

49. Is the 'screen' (television, cinema, computer, play station) a dominant feature in your life? In what ways?



Questions relating to artwork.

50. What do you think this artwork is identifying?
51. Can you describe the key visual features of this artwork?

Sociological questions.

52. In general, in what ways is control an issue for people in relation to technology?
53. In general, what do you think about our possible increasing dependency on technology?



Questions relating to artwork.

54. Which artwork is the most interesting for you and why?
55. What do you think the grid pattern, shown on each of these three women in each artwork, represents?



Questions relating to artwork.

56. What is your reaction to this image?



Questions relating to artwork.

57. This artwork is created by Japanese artist Takashi Murakami. What ideas do you think this artwork presents?
58. How does this artwork impact on you?

Questions concerning general research themes.

59. In general, how might the cyborg be a symbol of contemporary Western Society?



Questions relating to artwork.

60. What is your reaction to this artwork?
61. How might an artwork such as this increase awareness of animal-human hybrid gene research?

Sociological questions.

62. What ethical issues are associated with human-animal hybrids?



Questions relating to artwork.

63. Why do you think the artist has used a father and child in this artwork?
64. What is your reaction to this artwork?



Questions relating to artwork.

65. What do you think this artwork is identifying?
66. How does this artwork impact on you?
67. Why do you think the artist has combined human, animal and technological elements within one artwork?

Sociological questions.

68. Who do you think makes most of the decisions concerning research into human-animal merger?



Questions relating to artwork.

69. What ideas do you think this artwork presents?
70. How do you feel when viewing this artwork?
71. Why do you think the artist has used an image of a baby in this artwork?



Questions relating to artwork.

72. This is created by a well-known feminist artist. What ideas are presented in this artwork?



Questions relating to artwork.

73. What is your reaction to this artwork?

Final questions relating to the study in general.

Questions concerning general research themes.

74. Were you aware of cyborg art before you became involved with this research project?

75. Has involvement with this project increased your understanding of cyborgs?

76. Has involvement with this project increased your appreciation for cyborg art?

77. In general, do you think that cyborg art can increase people's awareness of the links between the human body and technology?

Ontological questions.

78. In a few words, what do you think it means to be human today in relation to technology?

79. In a few words, who, or what, do you think we are *becoming* in relation to technology?

Final personal, contextual questions.

Personal, contextual questions.

80. What is your age?

81. What is your gender?

82. What ethnicity are you?

83. Do you have a spiritual belief?

84. What is your highest qualification?

Thank you again for your time. I appreciate it very much.

Appendix D

Two-part Transcription Key. Outlining the interview transcription components and procedures. Section A shows the seven key components of the transcripts, and Section B shows the four key components of the verbatim quotations selected for inclusion in the thesis.

Two-Part Transcription Key		
	Interview transcript component	Explanation of transcript component
<i>Section A: Seven key transcript components</i>		
1	a. ! b. ha ha	An <i>exclamation mark</i> (as shown by a) is used rarely, and only in cases where a significantly raised voice or a highly enthusiastic tone is noted. An indication of <i>laughter</i> (as shown by b) is also included rarely, and only used in cases of extreme displays of amusement or humour.
2	<i>(Cannot decipher)</i>	This is placed within the transcripts when a word is, or words are, undecipherable; either when the conversation was overlapping or when words were spoken too quickly, quietly, abruptly, with laughter or when certain types of accents or enunciation were too pronounced to be clearly audible.
3	<i>(Unrelated dialogue)</i>	This is used rarely and only when the dialogue is entirely unrelated to the study and does not, under any circumstances, contribute to the research project.
4	<i>(Tape stopped)</i>	This is included within the transcripts when the dialogue was broken due to the tape recording stopping.
5	a. <i>somethink</i> something b. <i>somethin</i> something c. <i>try-na</i> trying to d. <i>dunno</i> don't know e. <i>gonna</i> going to f. <i>wanna</i> want to g. <i>kind-a</i> kind of	The incorrect or colloquial phrasing or words on the left are exchanged for the more formal wording shown on the right.

	<p>h. <i>sort-a</i> sort of</p> <p>i. <i>na</i> no</p> <p>j. <i>yip</i> yeah</p>	
6	<p>um, mm, like, ah, man, I mean, I guess, I would say, right, you know, you know what I mean, what can I say, it's like, type thing, and the like, and that sort of thing, and that kind of thing, and stuff, basically, if you will, or something, or whatever, or whatnot, to be honest, to be fair</p>	<p>Several of these <i>speech fillers</i> have been omitted from the transcripts when excessively used. However, the decision was made with caution and many remain in the transcripts in order to retain the essence of the dialogue.</p>
7	<p><i>sort of</i> and <i>kind of</i></p>	<p>These phrases remain in the transcripts as they denote tentativeness towards an idea or topic under discussion, which is an important consideration of the data.</p>
<p>Section B: Four key components of the verbatim quotations selected for inclusion in the thesis</p>		
1	<p><i>The Six Million Dollar Man, The Terminator, Bionic</i></p>	<p>The titles of artworks, images, books, television shows, movies and well-known characters which are discussed, are italicised in the transcripts <i>and</i> the verbatim quotations included in the thesis.</p>
2	<p>a. <i>or?</i> added as a filler at the end of a sentence</p> <p>b. <i>ah?</i> added as a filler at the end of a sentence</p> <p>The following used at the start of a sentence and as a filler:</p> <p>c. <i>well</i></p> <p>d. <i>yeah</i></p> <p>e. <i>ok</i></p> <p>f. <i>oh</i></p>	<p>These frequently used and common <i>speech</i> or <i>conversation fillers</i> are on occasion omitted from the verbatim quotations (although they remain within the transcripts).</p>
3	<p>a. ...he felt uncomfortable with that decision.</p> <p>b. When I was young technology was important to me...</p>	<p>Ellipses are used to indicate that a sentence has been broken either part way though (as shown by a) or before its conclusion (as shown by b).</p>
4	<p>a. What was seen by him as...gender equality.</p> <p>b. We are becoming more dependent on technology.../...but technology is seen as a positive step forward.</p>	<p>Ellipses are used in the middle of two differing segments of the <i>same response</i> as a way to join the dialogue (as shown by a). A division bar positioned between ellipses is used when two segments from <i>differing responses</i>, within a dialogue exchange centring on a specific topic, are joined (as shown by b).</p>

Appendix E

Transcript Collation and Analysis Chart. Ten-step analysis process of 34 interview participants' responses obtained during the in-depth interviews.

Transcript Collation and Analysis Chart: Key Themed-groupings		
Analysis of 34 interview transcripts. Interviewee responses to a question or a group of questions are systematically analysed to note patterns, similarities and dissimilarities.		
Analysis steps	Analysis Procedures	
1	<p><i>File A:</i> Completion of thirty-four interview transcripts.</p>	<p>Each interview transcript is allocated a different colour and/or font to distinguish it from others during the analysis process. A heading is created which includes details of the interview stream, the name, age, and ethnicity of the interviewee, and the total word count of the interview transcript.</p>
2	<p><i>Files B1 and B2.</i> Creation of main headings from the interview questions.</p>	<p>Each question or set of closely interconnected questions are grouped and then developed into main question-headings from each interview stream. For example the heading <i>General views on technology</i> relates to the question: In general, how do you view technology? <i>File B1</i> contains female interviewees' transcript data from interview stream one. <i>File B2</i> contains female interviewees' transcript data from interview stream two. (*See step 6 for male interviewees' transcript data). Female and male responses are initially separated in order to note any significant differences in the responses and to retain a manageable sized file in order to work with the data.</p>
3	<p><i>Topic interview dialogue sections</i> are transferred from <i>File A</i>.</p>	<p>Under the main headings created in <i>Files B1 and B2</i>, <i>Topic interview dialogue sections</i> (dialogue exchanged between interviewer and interviewee) from each individual interview are transferred from <i>File A</i> and placed under the corresponding question-heading in <i>Files B1 and B2</i>. (*Responses to flawed and inconsistent interviewing questions are not transferred; see pp. 87-88).</p>
4	<p>Creation of a <i>Grouping of themes index</i> positioned underneath the <i>Interview dialogue</i></p>	<p>A <i>Grouping of themes index</i> is placed following the <i>Interview dialogue sections</i>. This index is headed with the name, age and ethnicity of the interviewee, in addition to an allocated number. Three main headings are used: a) feelings, b) descriptions and</p>

	<i>sections in Files B1 and B2.</i>	c) ideas, while d) and e) are for additional responses. For example: 3. Marion, New Zealand European, 44. Interview Stream 1. a) Feelings: b) Descriptions: c) Ideas: d) (specific responses - if required) e) (specific responses - if required)
5	Summarising interviewees' main themes and ideas in the <i>Grouping of themes index</i> .	Interviewees' responses are summarised and placed beside the corresponding headings in the <i>Grouping of themes index</i> . For example, emotional responses, feelings, and general comments relating to a topic or artwork are placed beside <i>Feelings</i> , while tangible details such as colour, style and imagery relating to a specific artwork are placed next to <i>Descriptions</i> . Specific concepts and interpretations are placed alongside <i>Ideas</i> .
6	Creation of <i>Files C1 and C2</i> .	Steps 2, 3, 4 and 5 are repeated in order to create <i>Files C1 and C2</i> which contain interview dialogue with male participants.
7	Key quotations that may be included in the thesis are underlined.	Key quotations in the interview dialogue are underlined as the summarising process is being carried out. This enables fast identification when unique and distinctive ideas are shared by the interviewee.
8	Creation of <i>File D</i> . Summarised datasets are developed for category creation in order for comparative analysis to begin.	The question-headings are transferred from <i>Files B1, B2, C1 and C2</i> to <i>File D</i> . Following this, the <i>Grouping of themes index</i> from <i>Files B1, B2, C1 and C2</i> are transferred to <i>File D</i> under the corresponding question-heading to create a summarised dataset in order for analysis to begin. The number of participants who contributed to the topic under discussion is noted next to the question-heading.
9	Data analysis begins with the creation of final themed groupings.	Analysis begins with a reduced and manageable dataset in <i>File D</i> following the transference of each <i>Grouping of themes index</i> . Themed groupings are developed from shared or similar responses formed from all the interviewees that contributed to each question-heading.
10	Single responses are noted following the main themes which transpire.	Idiosyncratic or single responses which were not shared by other interview participants are placed following the main themes which emerge from the analysis procedure.
*When all the verbatim quotations have been selected for inclusion in the thesis, they are checked against the original interview transcripts included in <i>File A</i> to ensure they have been accurately interpreted and transferred or copied into the thesis.		

Appendix F

(Email Questionnaire sent to artists)

Dear (artist's/creator's name)

My name is Elizabeth Borst and I am a PhD student based at the University of Waikato in Hamilton, New Zealand. I am emailing you concerning your artwork _____. I feel this artwork is an excellent example of 'corporeal cyborg aesthetics,' which is the focus of my research. I am interested in the ways in which artists depict and represent the increasing interface between human bodies and technology.

I would be extremely grateful if you would answer ten questions concerning _____ in relation to the concept of the cyborg. Your contribution is extremely important to me, and I value your input very much. My aim is to gain an insight into your intentions, thoughts and ideas when you created _____ and how you believe _____ may relate to the concept of the cyborg.

The answers that you provide will be used as direct quotes, however I will also be interpreting your answers to some of these questions. The analysis and interpretation of your written contribution concerning your artwork will be compared with, and related to, viewer responses and to the cyborg concept in general. I have selected several cyborg artworks to present to participants for viewing in an interview setting, in order to discuss in depth the increasing interface between human bodies and technology.

The ethical issues pertaining to your involvement in this research project are presented at the end of this email so that you are aware of your rights as a participant in this study and of my obligations to you as the researcher. Your name as the author of the answers to these questions will be included in my thesis; if this is acceptable to you, please type your full name and date in the section provided below. Thank you very much again. I await your response with much enthusiasm.

Questions

1. What were your overall intentions when you created _____?
2. Would you refer to _____ as cyborg art? Why or why not?
3. What are some of the messages (implicit or explicit) in this artwork?
4. How did you envision _____ to be perceived by those who view this artwork?

5. In what ways have other viewers, that you are aware of, interpreted _____?
6. How do you feel _____ best conveys increasing human and technological amalgamation?
7. In what ways do you feel (if at all) that cyborg art can enhance society's awareness of increasing human body and technological fusion?
8. In what ways would you deem your artwork to be political?
9. Are there any important questions you feel that I have omitted from this questionnaire?
10. Is there anything else that you would like to add to this questionnaire?

Thank you very much.

Please type your full name and the date you completed this questionnaire in *either* or *both* 1 or 2.

1. "If my name has been typed here and dated, this identifies that I give permission for my name to be used as the author of the answers to the questions provided in this questionnaire"
-

2. "If my name has been typed here and dated, this identifies that I would like to view the section/s of the thesis in which my written contribution arises once that section has been completed, in order to make any possible changes, and to give my approval before this section/s is handed in for assessment"
-

If it is at all possible, could this questionnaire to be completed and returned before April 16, 2007? If you would like to discuss any issues with me pertaining to this request, please email your home phone number and I will contact you as soon as possible. If you do not accept this request, I appreciate your time in reading this email and I would like to express my interest and appreciation for your artwork.

This research has been approved by the FASS (Faculty of Arts and Social Sciences) Human Research Ethics Committee and uses the following ethical principles.

A) *Voluntary participation* – You are able to decline or accept this invitation to participate. You have the right to refuse to answer any particular questions, and to withdraw from the study at any time during, or *before* four weeks after the completion and return of this questionnaire.

B) *Informed consent* – Consent to use your contributions within my doctoral research is assumed by you completing and returning the questionnaire.

C) *Potential risk to participant* – The information you provide in this questionnaire will be used as direct quotes, however I will analyse and interpret your contribution in the manner that I deem appropriate for my thesis. Therefore the section in which your artwork and answers to the questions features will be emailed to you to be approved before the section is finalised. You may add to, or retract any statements made at this time.

D) *Confidentiality and privacy* – All data sourced from this questionnaire will be kept under lock and key in the home of the researcher. All data will be removed from the computers that have been used for this thesis after the final assessment has been completed and will be kept in a secure location for no longer than five years. After this time, all data pertaining to this questionnaire will be destroyed. In addition, all ‘work in progress’ on any computer used will be secured under a password.

E) *Publication of findings* – The data collected will be used for the completion of my doctoral thesis at the University of Waikato, Hamilton, New Zealand. There may be occasions where aspects of the data will be used for publication in academic journals or books, used at conferences, seminars or during lectures and tutorial presentations.

If you have any complaints pertaining to this email questionnaire, please contact my supervisor, Dr. Carolyn Michelle, contact phone: +64 7 838 4847, email: caro@waikato.ac.nz or to the administrator of the Faculty of Arts and Social Sciences Human Research Ethics Committee, Charlotte Church, contact phone: +64 7 838 4636.

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Appendix G

Artists' Response Analysis Chart. This chart shows the processes which were carried out in order to analyse the artists' responses to ten questions presented in the email questionnaire, both as a group and individually.

Artists' Response Analysis Chart		
Analysis of 11 email questionnaires. Individual artist's responses to each question, and artists' responses as a group, are analysed to note patterns, similarities and dissimilarities.		
Analysis steps	Analysis procedures	
1	<i>File M:</i> Returned email questionnaires are copied into a new file.	The questions and responses are copied from the returned email questionnaire into <i>File M</i> . Each artist's responses are allocated a different font colour in order to enable tracking of the responses throughout the analysis process.
2	Summarising individual responses to all ten questions.	Each artist's responses to the ten questions are summarised (where necessary) and placed underneath each separate question-response, under subheadings such as: <i>Koen: Summary Q 1</i> .
3	Artists' responses are collated as a group.	The artists' response are collated and grouped together where applicable. The number of artists who responded to a question and their names are noted next to the question heading and the key themes which are formed.
4	<i>File N:</i> Analysis file.	Individual artist's summarised responses and the grouped responses are transferred into <i>File N</i> . Analysis begins through the creation of key themes and ideas.
*When all the verbatim quotations have been selected for inclusion in the thesis, they are checked against the original transcripts included in <i>File M</i> to ensure they have been accurately interpreted and copied into the thesis.		

Appendix H

Self-Completion Questionnaire – For participants 18 years and over

PhD study on cyborgs: Corporeal cyborg aesthetics: An ontological and sociological analysis of increasing human-technology interface

The researcher for this project is **Elizabeth Borst**.

I can be contacted by phone on **021 160 9656** or by email lizzy.borst@xtra.co.nz

Brief introduction to project

I am looking for information on how people feel about the connection between human bodies and technology and in particular what people know about ‘cyborgs’. My aim is to gain an idea of how well known the concept of the cyborg is, where the cyborg is most often found, and how people feel about technology in general.

This **anonymous** questionnaire has been designed for male or female participants **aged 18 and over** and comprises of twenty questions. Completion of this questionnaire should take approximately 10-20 minutes.

If you decide to complete this questionnaire, I would like to state now how much I appreciate your time and input. The information you provide will contribute to an understanding of the way in which the increasing interface between human bodies and technology is perceived. Your answers are important and invaluable. Thank you.

If it is at all possible, I would like this questionnaire to be **completed by April 16, 2007**. If your questionnaire is misplaced or damaged please contact me for an additional copy. A self-addressed envelope is enclosed in which you can post this questionnaire back. If you have any problems please contact me as soon as possible either by email or phone.

Where the data collected will be used

The data collected will be used for the completion of my doctoral thesis at the University of Waikato, Hamilton, New Zealand. There may also be occasions where aspects of the data will be used for publication in academic journals or books, used at conferences, seminars or during lecture or tutorial presentations. However, **anonymity in this study is assured. Your name is not needed on this questionnaire.** You are also not required to put your name on the back of the self-addressed envelope when returning the questionnaire.

If you take part in this study, you have the right to:

- Refuse to answer any particular questions.
- To withdraw from the study at any time during the completion of this questionnaire, and at any time within four weeks after the completion and return of this questionnaire.
- Contact me at anytime to ask any relevant questions you have in connection with this questionnaire or study in general.

Thank you very much. Elizabeth Borst.

1. In general, do you view technology as having mainly: (please tick one)

- 1. Positive aspects _____
- 2. Negative aspects..... _____
- 3. Having both positive and negative aspects..... _____
- 4. Having neither positive nor negative aspects _____
- 5. Not sure _____

2. What do you think a cyborg is? (please tick as many as you wish)

- 1. A science fiction character _____
- 2. A robot _____
- 3. A clone _____
- 4. A person with technological adaptations..... _____
- 5. A person who is consistently connected to communication technologies _____
- 6. A human and machine hybrid _____
- 7. An organism fused with technology in some way _____
- 8. An organism altered by technology in some way _____
- 9. Not sure _____
- 10. Other, please state _____

3. Which cyborg(s) are you most familiar with? (please tick as many as you wish)

- 1. The Six Million Dollar Man..... _____
- 2. The Terminator..... _____
- 3. Darth Vader _____
- 4. Seven of Nine..... _____
- 5. Robocop _____
- 6. Wolverine..... _____
- 7. Kevin Warwick _____
- 8. Steve Mann..... _____
- 9. Other, please state _____
- 10. None _____

4. Where do you believe cyborgs are most often found? (please tick as many as you wish)

- 1. Television..... _____
- 2. Film _____
- 3. Art _____
- 4. Communities _____
- 5. Laboratories..... _____
- 6. Universities _____
- 7. Corporations _____
- 8. Not sure _____
- 9. Other, please state _____

5. Do you consider yourself a cyborg? (please tick one)

- Yes _____
- No..... _____
- Not sure..... _____

If you answered **no**, or **not sure** please go to question 6

If you answered **yes**, please state why (please tick as many as you wish)

- 1. I am technologically altered..... _____
- 2. I work behind a computer frequently..... _____
- 3. I am hooked into the internet frequently..... _____
- 4. I have metal body piercings..... _____
- 5. I use cosmetic surgery..... _____
- 6. I use medical technologies..... _____
- 7. I use weaponry..... _____
- 8. Other, please state _____

6. Have you been technologically altered? (please tick one)

- Yes _____
- No..... _____
- Not sure..... _____

If you answered **no**, or **not sure** please go to question 7

If you answered **yes**, please describe _____

7. Have you viewed any 'cyborg art'? (please tick one)

- Yes _____
- No..... _____
- Not sure..... _____

If you answered **no**, or **not sure** please go to question 8

If you answered **yes**, please describe _____

8. Do you think that cyborg art often involves a political message? (please tick one)

Yes _____
No _____
Not sure _____

If you answered **no**, or **not sure** please go to question 9

If you answered **yes**, please describe _____

To what extent do you agree with the statements below?

9. Human bodies and technology are increasingly interconnected (please circle one)

strongly agree somewhat agree *agree* don't know *disagree* somewhat disagree *strongly disagree*

10. The cyborg is a symbol of contemporary society (please circle one)

strongly agree somewhat agree *agree* don't know *disagree* somewhat disagree *strongly disagree*

11. Cyborg imagery can enhance understanding of Western society's relationship to technology (please circle one)

strongly agree somewhat agree *agree* don't know *disagree* somewhat disagree *strongly disagree*

12. Human beings are becoming increasingly more dependent on technology (please circle one)

strongly agree somewhat agree *agree* don't know *disagree* somewhat disagree *strongly disagree*

13. Do you feel that you are given adequate information on the technological developments associated with the human body, such as artificial organs, cloning or genetic engineering? (please tick one)

Yes _____
No..... _____
Not sure..... _____

14. Do you feel that you are able to contribute to decisions made concerning the way in which the human body and technology are interfaced? (please tick one)

Yes _____
No..... _____
Not sure..... _____

15. Overall, which area of technological development do you think has the potential to have the MOST impact on human bodies in the next few decades? (please tick one)

- 1. Communication technologies (telecommunication extensions of the human body such as wearable computers, cell phones, the internet and virtual reality)..... _____
- 2. Prosthetics (mechanical and electronic interfaces with the human body such as exo-skeletons, artificial limbs, bones, sight and hearing devices, and implants)..... _____
- 3. Biotechnology (adaptations to the human body using techniques such as genetic engineering, assisted or artificial reproduction, xenotransplantation and cloning)..... _____
- 4. All of the above equally..... _____
- 5. Not sure..... _____
- 6. None..... _____
- 7. Other, please state _____

Personal, contextual questions

16. What is your age? (please tick your age bracket)

- 18 – 27 _____
- 28 – 37 _____
- 38 – 47 _____
- 48 – 57 _____
- 58 – 67 _____
- 68 – 77 _____
- 78 and over..... _____

17. What is your gender? (please circle one)

Male Female

18. What ethnicity are you? _____

19. Do you have a spiritual belief? (please tick one)

Yes _____

No _____

Not sure _____

If you answered **no**, or **not sure** please go to question 20

If you answered **yes**, please state _____

20. What is your highest qualification? (please tick one)

Secondary _____

Tertiary _____

Not sure _____

Other, please state _____

Please place in the return envelope enclosed and post back to me. Your sender address is not required.

Thank you again for your time. I appreciate and value your input very much.

Elizabeth Borst.

Appendix I

Questionnaire Data Placed into Microsoft Word and Excel for Analysis.

1. *Complete 20-question Data Table.* An example of how the results from the hand-distributed questionnaire were entered into Excel: Questions Five to 11. Questionnaires are entered into the Y axis, and the actual questions into the X axis.

Questionnaire Number	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10	Q 11
1	No	Yes	Not sure	0	StronglyA	SomewA	Agree
2	No	No	No	Not sure	SomewA	Don't k	Don't k
3	No	No	No	No	SomewA	SomewA	SomewA
4	No	Yes	Not sure	Not sure	Agree	Agree	Don't k
5	No	No	No	Not sure	Agree	Agree	Agree
6	No	No	Not sure	Not sure	Agree	Don't k	Don't k
7	No	No	No	Not sure	StronglyA	Don't k	Agree
8	No	No	No	Not sure	Agree	Don't k	Agree
9	No	Not sure	Not sure	Not sure	StronglyA	Don't k	Don't k
10	No	No	No	No	Agree	SomewA	SomewA
11	No	No	Not sure	Yes	Agree	Agree	Agree
12	No	No	No	No	Agree	Disagree	Disagree

2. *Individual Question Data Table.* Example of the results from Question Two included in the hand-distributed questionnaire, placed in Word.

<p>Question 2: What do you think a cyborg is? (sixty-five responses)</p> <p>1. A science fiction character 59 58 56 55 52 50 49 48 47 45 44 43 39 26 15 8 total: 16</p> <p>2. A robot 58 52 50 49 39 34 32 26 20 11 10 4 3 total: 13</p> <p>3. A clone 56 39 20 total: 3</p> <p>4. A person with technological adaptations 65 63 62 61 60 57 56 52 51 50 49 47 46 44 41 38 36 33 32 31 30 27 24 20 18 17 16 15 12 8 total: 30</p> <p>5. A person who is consistently connected to communication technologies 45 42 36 34 33 32 15 total: 7</p> <p>6. A human and machine hybrid 64 62 59 58 56 54 52 51 50 49 47 44 41 38 36 33 32 29 28 26 24 22 13 11 8 total: 25</p> <p>7. An organism fused with technology in some way 59 56 51 50 49 47 45 43 38 24 23 19 8 7 total: 14</p> <p>8. An organism altered by technology in some way 62 56 49 47 43 38 22 9 8 total: 9</p> <p>9. Not sure 60 58 53 40 37 35 25 21 17 14 11 9 6 5 2 1 total: 16</p> <p>10. Other, please state total: 0</p>

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