

# **VIDEO GAMES**

## **AS A VEHICLE FOR SOCIAL CHANGE**

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## CONTENTS

Abstract.....	2
Working Paper.....	3
Design Brief.....	16
Bibliography.....	19
Table of Figures.....	22

## **ABSTRACT**

Values denote the importance people place on a particular object, action or behaviour. This research project explores the value humanity places on the consumption versus the conservation of natural resources, focusing particularly on endangered marine species, such as whales and tuna. To date, supporters of conservation have used traditional media such as posters, websites and movies to promote their values. However, as 18 to 34 year old men increasingly neglect traditional media for video gaming (Goodman, 2004), the potential of video games as a mechanism for social change in this demographic has grown (McGonigal, 2010). “Serious” games have limited appeal to this target audience, suggesting that attempts to change values may be more effective if embedded in the game to facilitate tangential learning (Portnow, 2008). This project will design a video game which seeks to promote the value of conserving endangered marine species. Using a traditional conflict narrative of character verses character, good (protectors) will be pitted against bad (users) to determine the fate of the species.

# WORKING PAPER

## Introduction

Public attention to environmental issues is growing as people are directly affected by problems such as climate change, overpopulation, deforestation and the loss of endangered species (Cooper, 2009). Governments, academia, NGOs, the media and even entertainment industries are increasingly focusing on how to address these problems. Over-exploitation of natural resources has put the welfare of humanity as well as the planet in peril (Cooper, 2009). There are conflicting opinions over the conservation versus consumption of endangered species, with some groups calling for complete bans while others continue to use resources with an insatiable appetite.

This working paper explores the question, “What value does humanity place on consumption versus conservation of natural resources?”, with particular attention to endangered species. It draws on three literary pieces focusing on: (i) conflicts arising out of competition for natural resources (Timura, 2001); (ii) tension between using natural resources in the short term versus conserving natural resources for the long term (Chichilnisky, 2009); and (iii) humanity’s ethical duty to save endangered species (Rolston, 1995), as well as a range of other sources on environmental issues.

Examples of successful campaigns run by pro-conservationists, e.g. on whales, can be found (Sea Shepherd Conservation Society, 2010). However, statistics on extinction rates of species resulting from destructive human activities suggest that society still does not place adequate value on stemming the loss of endangered species (WWF, 2010), as witnessed at a March 2010 meeting of the Convention on International Trade in Endangered Species where a proposal to ban trade in endangered Atlantic Bluefin Tuna failed (CITES, 2010, March 18).

Traditionally, groups seeking to raise awareness of environmental issues used printed media, such as posters, pamphlets and T-shirts, to communicate their messages.

Recent campaigns have begun to employ more sophisticated methods to win over public opinion, including movies, TV/radio, websites and even video games. However, these have tended to be 2D or “serious” games (Derryberry, 2007), strong on educative content and socio-political values, but weak on entertainment factor. This paper found that while pro-conservation groups are taking advantage of some digital communication media, primarily websites and social networking, they have yet to fully utilise 3D video gaming to convey their point of view.

This working paper documents investigative research into how video games might be used to affect a change in the values of a specific target audience. It compares “serious” games with entertainment games as well as summarises research into tangential learning (Portnow, 2008) and game narratives (Wolf, 2008). Examples of game characters, environments and genre which might be used as precedents to inform the design direction of a video game to promote the conservation of endangered species are also included.

## **The Problem**

The natural environment encompasses all living and non-living things occurring naturally on the planet. “Natural resources” are raw materials or phenomena which occur within environments, such as air, water, land, vegetation, animals and energy sources (Wikipedia, 2010). In economics, “consumption” of natural resource refers to both extraction activities (such as mining, fishing and forestry) as well as its final use by consumers (Wikipedia, 2010). “Conservation” speaks to the ethic of resource use, allocation and protection with a primary focus on maintaining the health of the natural environment (The Free Dictionary, 2010). “Humans” are distinct from other species because of their intellectual capacity, complex social structures and desire to understand and influence their environment (Wikipedia, 2010). These abilities have enabled humans to conquer their natural environment, putting the welfare of not only humanity, but all species in jeopardy (Cooper, 2007).

"Environmental conflict" is enjoying increased popularity as both a focal point of interdisciplinary research and as a mainstream buzzword (Timura, 2001). Timura argues that it is inadequate to say that demand for natural resources and ever increasing scarcity are the only factors which lead to conflict and that a more nuanced anthropological context which takes in to account political, economic and social factors is also necessary. Timura explores examples of resource conflicts. At one end of the spectrum, he quotes a study which found that frequent use of warfare among Maori emerged as a cultural trait because it was a more efficient way to gain access to cleared land vis-à-vis virgin forest. A more in-depth study into land disputes in Ghana, Brazil, and Mexico, however, suggested that many more complex factors were in play than simple supply versus demand (these included the amount of economic/political power conflicting sides had, corruption, ambiguous laws, reduced agricultural subsidies, and the arrival of Christian missionaries).

In the TV series "Planet in Peril", CNN journalist Anderson Cooper examined global-scale natural resource conflicts. Cooper concluded that four pillars were contributing to the destruction of the planet – global warming, species loss, overpopulation and deforestation (Cooper, 2007). This working paper focuses on the species loss pillar because: (i) the importance of the issue, specifically, that the extinction of species is resulting in a break down of the biodiversity cycle which could ultimately lead to the extinction of humanity (Shah, 2009); and (ii) unlike issues, such as climate change, species loss is not currently being effectively or adequately addressed (Cooper, 2007). The issue lacks a global role model, in the way that Al Gore championed the cause of global warming.

Society has always placed great economic value on natural resources, believing that many of the world's resources were inexhaustible. However, calls for new economic models to ensure more sustainable resource usage are on the increase (Chichilnisky, 2009). Chichilnisky acknowledges that the concept of sustainable development (or "sustainability") is not new, but suggests that a better balance needs to be struck between how we conserve and use natural resources in the present and the future.

Chichilnisky explores how markets can deliver economic values that go beyond immediate gain and encompass the needs of future generations. Chichilnisky concludes that humanity is starting to understand that our planet faces physical constraints today that did not exist before and we have become aware of the possibility of the extinction of our own species. As a result, this is leading humanity to behave according to the new equal treatment of present and future axioms.

Rolston (1995) explores the question whether humans have a duty to protect endangered species. He points out that there are some people who value species for their intrinsic, ecological, educational, historic, recreational and scientific value, while others who only value the economic (e.g. agricultural, industrial or medical) value afforded by the species. Acknowledging that some extinction of species will occur naturally, Rolston argues that the difference between natural extinction and human-caused extinction can be equated to the difference between death by natural causes and murder. Rolston concludes that humans have a duty to protect species from extinction both for the good of the species as well as humanity's own good, specifically that "...[there is] something morally naïve about living in a reference frame in which one species takes itself as absolute and values everything else relative to its utility" (p. 528).

If Chichilnisky's assertion that greater weight is being placed on long-term conservation of resources rather than short-term economic gain, then why did a proposal at a March 2010 meeting of the Convention on International Trade in Endangered Species (CITES) to ban trade in endangered Atlantic Bluefin Tuna fail (Herald on Sunday, 2010, April 25)? Why did humanity not feel a duty to protect this species when the scientific evidence that its population had dropped to 15% of historic levels (Prince Albert II of Monaco Foundation, 2010, March) was clear? Is there some reason that many countries place greater value on 'iconic' species such as whales than they do on fish? The answer appears to lay with Timura's view of the world - specifically that there are a number of complex scientific, socio-economic,

political and cultural factors at play when it comes to understanding conflict over natural resources.

Monaco, with the support of the EU, US and NGOs, mounted a campaign to ban trade in Atlantic Bluefin Tuna at this year's CITES meeting. This pro-conservation grouping argued that the species was in danger of extinction because of overfishing and trade, with over  $\frac{3}{4}$  of all tuna going to Japan (The Washington Post, 2010, March 4). Japan and fishing nations counter-campaigned that management of tuna should be left to the responsible regional fisheries management organisation rather than CITES (which has traditionally dealt with terrestrial species, e.g. elephants and tigers). Japan appealed to developing countries' values by threatening that third-world fishermen would not be able to export their tuna to its lucrative market and argued it was its historic and cultural right to eat tuna (New York Times, 2009, September 19). The ban proposal failed with even conservation-minded countries like New Zealand voting against it. Greenpeace (2010, March 22) argued that New Zealand, as an exporter of Southern Bluefin Tuna, had placed a higher value on its future trade in that species than it had on conserving the Atlantic stocks.

For many years, New Zealand, Australia and others have opposed whaling, arguing that whales should be protected because there are iconic species which were devastated by industrial-scale whaling last century. There are discussions underway in the International Whaling Commission which could lead to the legitimisation of some whaling in exchange for a significant reduction in the number of whales caught (Otago Daily Times, 2010, April 26). However, such a proposal is greeted with hostility by pro-conservation organisations such as the Sea Shepherd Conservation Society and the International Animal Welfare Fund (Otago Daily Times, 2010, April 26). The whaling issue remains a classic example of natural resource conflict with one side, whaling countries such as Japan, arguing that whales should be allowed to be consumed sustainably, and the other side campaigning vigorously for the maintenance of the 1982 moratorium on commercial whaling (Greenpeace, 2007, February 13).



## Design Responses

In the past, groups seeking to raise awareness of environmental issues relied on traditional printed media, such as posters, pamphlets, stickers, bags, luggage tags (Fig 1.) and T-shirts (Fig 2.), to communicate their messages. These methods were relatively successful in capturing the attention of a broad audience up until the 1980s, prior to the explosion of the Internet, global TV coverage and music industry, and the rapid evolution of computer hardware and applications.



Fig 1.



Fig 2.



Fig 3.

In Fig 3. the public were encouraged to call on European fisheries authorities to stop fishing bluefin tuna. The blunt ultimatum, shock factor (the fish-shaped soya sauce condiment container spilling blood) and use of compositional techniques, is effective in getting across a call to action. However, the poster is somewhat passive and needed to be combined with a more interactive medium – in this case a reference to the WWF website – to enhance its effectiveness.

In recent years, pro-conservation environmental campaigns have employed more sophisticated and technologically advanced media. All major international NGOs campaigning on endangered species issues, including WWF ([www.worldwildlife.org](http://www.worldwildlife.org)), Greenpeace ([www.greenpeace.org](http://www.greenpeace.org)), International Fund for Animal Welfare ([www.ifaw.org](http://www.ifaw.org)), World Society for the Protection of Animals ([www.wspa-international.org](http://www.wspa-international.org)) and Traffic ([www.traffic.org](http://www.traffic.org)), maintain websites. These tend to be populated with a large amount of background or ‘factual’ information, linked to related issues/organisations and often call on the audience to get involved by “signing up”,

volunteering, blogging, donating or purchasing products. A small number invite their audience to connect further through social networking websites. Most of the websites are relatively simplistic in their design.

Fig 4. shows one of the more sophisticated pro-conservation websites currently in use. The first screen requests a donation to “Bluerage”, the Sea Shepherd Conservation Society’s 2010 bluefin tuna defense campaign, before the reader can enter the website proper. The website carries detailed information on its endangered species (e.g. whales, tuna, seals, sharks) campaigns; footage of its direct action protest activities against the Japanese whaling fleet (often picked up by third party media, such as TV news); RSS feeds; purchasing/donating opportunities; and extends invitations to join or follow the organisation on Facebook, Twitter and myspace.com.



Fig 4.

Recent examples of TV programmes and movies on environment issues and conflicts over natural resources follow. Some of these are pure documentaries, such as *Whale Wars* (Fig 5.) which documents clashes between the Sea Shepherd and the Japanese whaling fleet and *The End of the Line* (Fig 6.) which documents the perilous state of stocks of Atlantic Bluefin Tuna. *The Inconvenient Truth* was a mixture of educative content and Hollywood-style drama. Other blockbusters, such as *Avatar*, were produced with the primary goal of entertaining, but incorporated an underlying environmental message (Fig 7.).



Fig 5.

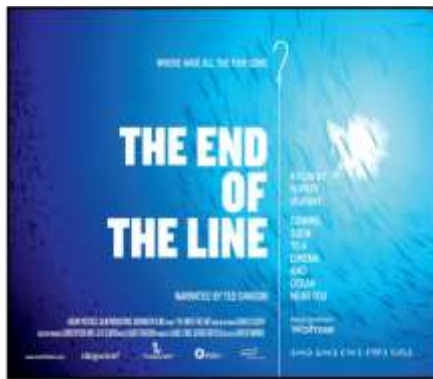


Fig 6.



Fig 7.

Pro-conservationists have used video games to promote their message. However, these games have tended to be 2D, strong on educative content and socio-political values, but weak on entertainment factor (Fig 8. and Fig 9.). As a result, the pro-conservation movement has had limited success to date in employing video games to generate engagement or produce changes in values on a global scale.



Fig 8.



Fig 9.

### **Video Games as a Vehicle for Social Change**

The video game industry is booming. Sales in the US topped US\$11.7 billion in 2008 (Entertainment Software Association, 2009). The New Zealand market was worth NZ\$170 million in 2009 - up 12% from 2008 (NZ Herald, 2010, January 27). Much of the growth is being driven by the expansion of the demographic of the players. Video games are no longer just a form of entertainment for children and young adults. Old stereotypes no longer apply, with women making up 40% of gamers, the average age of gamers having increased to 35 years of age and, surprisingly, 25% of gamers being over the age of 50 in the US (Entertainment Software Association, 2009).

Instead of being reliant on TV as the main source of entertainment and information, younger generations, and increasingly even older generations, are consuming multiple media (Baird, 2009) or “Transmedia” (Jenkins, 2009). This has opened up opportunities for developers to make games for an ever growing range of media.

Friedler (2004) argues that digital games fall into three categories. (1) “Casual games”: mostly simple, web-based Flash games based on generic entertainment; heavily marketed towards 30-something women. (2) “Advergames”: with a richer graphical experience; broader audience ranging from children, to women and older men. (3) “Retail games”, also known as “video games”: representing over US\$10 billion of global sales per annum; occupying a growing amount of attention of the 14-34 male demographic.

Derryberry (2007) also notes that there is a genre of games advocating social responsibility. These are known as “serious” games and are contrasted with “entertainment games”. These games seek to tackle some of the most pressing and depressing issues of our time. Some developers and activists believe these games have the potential to raise sociopolitical consciousness among the gaming community (Bell, 2007). Others think sociopolitical messages and video games “go together like dog poo on a birthday cake” (Benedetti, 2008).

Proponents of “tangential learning” offer an alternate solution, suggesting that it is possible to embed educative content in entertainment games, including to indirectly influence audiences on social and political issues (Portnow, 2008). The concept of embedding in-game advertising has been successfully used by game developers and marketers (Nuttall, 2009), particularly the use of billboards and product placement (Anekal, 2008). However, embedding educative content in video games, to date, has been primarily limited to historic figures and settings. Fig 10. shows an example of embedded in-game advertising. Fig 11. is an example of embedded historical/educational content in a game.



Fig 10.



Fig 11.

### Video Game Genres, Aesthetics and Characters

Like books, music and movies, video games can be divided into genres. Genres may be loosely categorised by a common set of game mechanics and interface standards, but it is not uncommon for games to belong to more than one genre (Cook, 2005). Some common genres of video games include sports, first-person shooters and strategy games. The fighting game genre lends itself well to issues where there is conflict between two opposing values, as is the case with endangered species.

Arsenault (2009) argues that narratology has been a long-contested issue in video game studies. He argues that it is not important whether video games conform to traditional definitions of narrative or story, but that they represent a unique new form of narrative proposition. The hero's journey, myths, problem solving and conflict are common video game narratives.

Using a traditional conflict narrative of character verses character (Fig 12. on page 14), "good" heroes (protectors of iconic endangered species, such as whales or tuna) can be pitted against "bad" villains (whalers, fishers and consumers) to see who's values will prevail. In fighting games, players have a strong empathy with the characters because they assume the identity of the character they are playing (Finn, 2000). Because of this affinity, developers of games can use characters to role model certain behaviour or values which they are seeking to promote. Some initial research into possible characters for an endangered species game follows in Table 1. Examples of character development concepts follow in Table 2.

Table 1 – Character Development Matrix

Name	Description	Country	Motivation	Endangered species Angle	Martial Arts Style
Brittany Beale	Socialite	USA	Trying to repair her damaged image by championing the endangered species cause.	Received bad press from wearing shoes and carrying handbags which were made from endangered species while attending high profile fund-raising galas.	Mixed Martial Arts - Joined popular club for exposure and self promotion
Wayne Evans	Eco Activist	NZ	Dissatisfied with the non-aggressive, law-abiding methods employed by Greenpeace, Jason joined "Water Warriors" to fight for the rights of whales hunted by commercial whaling ships. He is especially interested in endangered marine species and their possible extinction.	Travels the world, as a member of the Water Warriors to protest against the use of endangered whale species	Boxing - National University Boxing Champion
Dr Sarah Miller	Marine Biologist	Australia	More than just a job, Doc sees protecting and managing diverse marine ecosystems for future generations as a lifestyle choice. Angered at the rampant and often thoughtless destruction of these fragile ecosystems, she wants to confront the causes by seeking out the people who are responsible.	Studying the effects of man's impact on marine ecosystems and endangered marine species	Kickboxing - Took up kickboxing as a way to keep fit, but due to her natural skill and perseverance, competes semi-professionally
Aishwarya	Industrialist	India	Under the shadow of her father - The father of the Indian Industrial Revolution - "Doc" is trying to stamp her own mark and create a legacy for herself.	Specialising in pharmaceutical R&D - Tata has invested millions into extracting commercially viable materials from rare endangered species ie, sponges	Taekwondo - Received martial arts training as well as piano from a young age as her father wanted her to be accomplished in mind and body and groomed her as his logical heir and successor to his financial empire.
Hassan	Fisherman	Morocco	Developed countries are now seeking to cap Morocco's commercial tuna trade. Hassan is concerned that his livelihood is in danger and wants to know why.	The tuna market provides a much needed solution as open ocean tuna catches are exported to Japan for huge profits. Hassan has a small fishing business which employs a majority of the workforce in his small village.	(to be researched)
Jun Tanaka	Whaler	Japan	Jun's father was a whaler who lost his job due to an injury from an accident while whaling. Jun's father asked that he replace him at work in order to provide for the family. Jun has had encounters with the whale warriors and wants to know why they are against the whaling tradition.	New to the whaling ship, Jun is keen to learn all parts of the process. He is unaware that some of the whales his ship catches are on the endangered species list.	Karate - Local Karate Champ, Jun, is known throughout his region as a talented practitioner making him a popular member on his whaling ship.
Maiko Tanaka	Student	Japan	Sister to Jun, Maiko was sent to school in Tokyo and lives with her aunt. She is at university but has returned home upon hearing that her father had been in a work-related accident.	Maiko is studying law, specialising in the law of the sea. She is aware of the controversy surrounding whaling and wants to defend Japan's right to whale.	Hip Hop Aikido - Influenced by the Tokyo Hip Hop scene, Maiko has learnt Aikido at university and fused it with her repertoire of hip hop dance moves.
Lian Zhang	Chinese Herbalist	China	Lian's herbal medicine business is not doing well. She finds out that pharmacies in her town are telling the community that the use of tiger products in medicines are not necessary. She now seeks the source of this information.	Uses tiger bone in medicine concoctions.	Shaolin Wushu - Lian's father was a Shaolin Wushu martial arts legend. Although women are not trained in this art, Lian's father left the Monastery for love, marrying Lian's mother and raising his daughter, Lian, instructing her with his philosophies and martial arts training.
(to be researched)	Hunter	Canadian First Nation	After living most of his life in relative isolation, ... is harassed by western NGO environmental groups and reporters seeking answers to endangered species hunted by Inuit tribes. He has been sent by his tribe as a representative to understand the issue, give his tribes perspective and fight for the rights of his people.	Hunts endangered polar bears and whales as his tribe has done traditionally for centuries and for survival.	(to be researched)

Table 2 – Character Development Concepts



Being too literal with the game aesthetic, both with characters and environments, is another drawback of “serious” games currently available. The game aesthetic should be appealing to the target audience and aligned to the genre as much as providing a vehicle to showcase the issue (Fig 13.). Eighteen to thirty-four year old men expect an immersive, layered and realistic environment and a variety of characters with depth to select from, i.e. they want the opportunity to play heroes, anti-heroes and villains.



Fig 12



Fig 13



Fig 14

The majority of “serious” games found on the market today do not employ sophisticated game mechanics (Fig 14.), such as motion control via controllers and cameras, practice screens, training/arcade/on-line modes and game cinematics. Many are limited to basic movements such as left, right, up, down and “jump” or “read” action keys, and are on a 2D plane. For a video game with a pro-conservation theme to be successful, it will need to pay as much attention to game mechanics as the message – a downfall of current “serious” games.

## Conclusion

Topical issues, such as climate change and the growing number of endangered species, is highlighting the fact that natural resources are finite and that human demand is outstripping supply. Many people appear to accept that a lack of action to better conserve natural resources is putting in jeopardy humanity’s own future. However, governments are not universally committed to action because they face a complex range of social, political, economic and cultural factors in making hard decisions to balance long-term conservation needs with short-term economic reality.

There are some groups in society, primarily NGOs, which place a high value on conservation and are attempting to affect change. However, there are other equally, if not more, powerful forces which continue to use resources with an insatiable appetite. Conflict over natural resources is certain to continue.

Designers can support groups trying to affect social change, such as those working to protect endangered species, by producing materials which are well targeted to an increasingly diverse and technologically sophisticated audience. Producing a video game with a pro-conservation theme focusing on endangered species which can successfully gain a following in the most challenging of gamer demographics (male, 18 to 34 years of age) is a major challenge. However, this paper concludes that the probability of success will be enhanced by designing a video game which creates character empathy and employs an appropriate genre, suitable narrative, soft-sell embedded messaging, appropriate aesthetic and genre-specific game mechanics. These are explored in the design brief which follows.



## DESIGN BRIEF

### Research Question

How can designers affect social change by producing materials which support environmental groups seeking to promote the value of endangered marine species?

### Topic Outline

Public attention to environmental issues is growing. Over-exploitation of natural resources is putting the welfare of humanity as well as the planet and its species in peril. There are conflicting opinions over the conservation versus consumption of endangered species, with some groups calling for complete bans while others continue to use resources with an insatiable appetite. Examples of successful pro-conservation campaigns, e.g. whales, can be found. However, the recent failure of a proposal to ban trade in endangered Atlantic Bluefin Tuna demonstrates that society continues to place only limited value on conserving endangered species.

Traditionally, groups seeking to raise awareness of environmental issues used printed media to communicate their messages. Recently, these groups have begun to employ more sophisticated methods to win over public opinion, such as websites and social networking. To date, video games as a vehicle for social change have tended to be “serious” games, strong on educative content, but weak on entertainment factor. Pro-conservation groups have yet to fully utilise 3D video gaming to convey their message.

Research suggests that for a video game with a pro-conservation theme to successfully gain a following in the most challenging of gamer demographics (male, 18 to 34 years of age), it would need to have the following parameters:

- An appropriate genre: A fighting game lends itself well to an endangered species theme as it can readily demonstrate the conflict between the pro-conservation and pro-use sides.
- A suitable narrative: A conflict narrative of character vs character, where protectors (heroes) of conservation are pitted against users and consumers (villains) to determine the fate of the species, would be appropriate to promote the value of conserving endangered marine species. I will employ symbolism, semiotics and metaphor in support of the narrative.
- A soft-sell embedded message: Rather than have a direct political message, the game will draw on tangential learning techniques, such as in-game advertising, information at the load-in screen, Wikipedia links at the character selection screen, to get across pro-conservation ideals.
- Character empathy: This will be created by having a large number of varied characters to enable players to select characters they identify with. I will develop a roster of at least six characters on each side (heroes and villains), with a variety of character personalities, background stories and fighting skills. I will produce a game trailer to briefly introduce each character. The heroes will have flaws and the villains will have appeal to avoid stereotyping.
- An appropriate aesthetic: I will use stylised anime, similar to Tekkon Kinkreet and Super Street Fighter IV, to appeal to my target audience age group. The game environment will reflect the values, background stories and location of each character.
- Employ genre-specific game mechanics: The trailer will be designed to reflect the game mode selected for this game – either player vs player or player vs computer.

The primary focus of my project will be on character design.

## Design Process and Production Timeline

Timeline	Design Process
Semester 1 Week 12 – Semester Break Week 1	<p>Research</p> <ul style="list-style-type: none"> <li>• Identify Audience (according to game category, platform and game genre) – Mood board, Profiles</li> <li>• Research Appropriate Game Genre (according to Audience)</li> <li>• Research Game Mechanics (according to Genre)</li> </ul>
Semester Break Week 1 – Semester Break Week 2 –	<p>Development</p> <ul style="list-style-type: none"> <li>• Develop Game Narrative – Conflict Narrative – Good Vs Bad (to conserve vs to use)</li> <li>• Character Development – Character research, back stories, fighting moves, sketches, concept drawings</li> <li>• Environment Development – environment research, sketches, concept drawings</li> <li>• Game Interface Design</li> <li>• Storyboard (camera angles, shot sequence order, story arc)</li> </ul>
Semester Break Week 2 – Semester Break Week 6 –	<p>Production: Environment and Characters (Part 1)</p> <ul style="list-style-type: none"> <li>• Modelling (UV Mapping, Displacement or Normal Mapping)</li> <li>• Texturing (Render test textures)</li> <li>• Rigging (Weight Painting)</li> </ul>
Semester 2 Week 1– Semester 2 Week 10	<p>Production: Environment and Characters (Part 2)</p> <ul style="list-style-type: none"> <li>• Animation (according to storyboard)</li> <li>• Rendering (Lighting tests)</li> </ul>
Semester 2 Week 11 – Semester 2 Week 12	<p>Post Production</p> <ul style="list-style-type: none"> <li>• Compositing – Renders, sound, effects, game interface creation, storyboard sequencing</li> </ul> <p>Tweaking</p> <ul style="list-style-type: none"> <li>• Fixing animation, re-rendering, tweaking composites, exporting movie tests</li> </ul>

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## TABLE OF FIGURES<sup>1</sup>

Figure.	Image	Page
Fig 1.	Rob Schwalger. <i>Tigers: An Endangered Species</i> . 2010, May 17. Photograph.	7
Fig 2.	Anonymous. <i>Kelly Osbourne - Save the Seals</i> . Photograph. Retrieved April 22, 2010, from <a href="http://www.peta.org/feat-Seal-Kelly-Osbourne.asp">http://www.peta.org/feat-Seal-Kelly-Osbourne.asp</a>	7
Fig 3.	Anonymous. <i>Stop bluefin tuna fishing now or lose it forever</i> . 2010. Poster. Retrieved March 18, 2010 from <a href="http://www.orenji.eu/news/">http://www.orenji.eu/news/</a>	7
Fig 4.	Anonymous. <i>Sea Shepherd Conservation Society</i> . 2010. Website. Retrieved May 3, 2010, from <a href="http://www.seashepherd.org">http://www.seashepherd.org</a>	8
Fig 5.	Anonymous. <i>Whale Wars</i> . 2009. TV Advertisement. Retrieved April 23, 2010 from <a href="http://animal.discovery.com/tv/whale-wars/">http://animal.discovery.com/tv/whale-wars/</a>	8
Fig 6.	Anonymous. <i>End of the Line</i> . 2009. Movie Poster. Retrieved April 19, 2010 from <a href="http://www.endoftheline.com">http://www.endoftheline.com</a>	8
Fig 7.	Anonymous. <i>Avatar</i> . Movie Poster. Retrieved March 31, 2010 from <a href="http://www.fotopedia.com/en/Avatar_%282009_film%29">http://www.fotopedia.com/en/Avatar_%282009_film%29</a>	8
Fig 8.	Anonymous. <i>Eco-Quest</i> . Casual Game. Retrieved March 31, 2010 from <a href="http://activism.greenpeace.org/eco_quest/">http://activism.greenpeace.org/eco_quest/</a>	9
Fig 9.	Anonymous. <i>Harpooned</i> . Casual Game. Retrieved April 10, 2010 from <a href="http://harpooned.org/">http://harpooned.org/</a>	9
Fig 10.	Anonymous. <i>I Am Legend</i> . Embedded In-Game Advertising. Retrieved April 19, 2010 from <a href="http://www.wired.com/gamelife/2008/07/sony-taps-doubl/">http://www.wired.com/gamelife/2008/07/sony-taps-doubl/</a>	11
Fig 11.	Anonymous. <i>Assassin's Creed</i> . Casual Game. Retrieved April 22, 2010 from <a href="http://suryodesign.wordpress.com/2009/11/19/">http://suryodesign.wordpress.com/2009/11/19/</a>	11
Fig 12.	Anonymous. <i>Mortal Kombat Vs DC Universe</i> . Video Game Cover. Retrieved April 20, 2010 from	12

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Fig 13. Anonymous. *Bioshock*. Video Game Environment. Retrieved April 23, 2010 from

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Fig 14. Anonymous. *Age of Empires*. Computer Game Mechanics Screenshot. Retrieved April 23, 2010 from

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