

**Margaret Atwood's Critical Perspective on Genetic Modification in the Dystopian
Fiction *Oryx and Crake*.**

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Table of Contents

Acknowledgements	2
Table of Contents	3
List of Figures	5
Introduction	6
1. Objectives	10
2. Methodology	11
3. The Writer and Her Context	13
3.1. Atwood In the Literary Canadian Context	14
3.2. Atwood In the Ecocritical Context	17
4. Oryx And Crake	21
5. Related Work	24
5.1. Local and National Context	24
5.2. International Context	24
6. Theoretical Framework	31
6.1. Genres	31
6.1.1. Speculative Fiction	31
6.1.1.1. Neugebauer's Conception	31
6.1.1.2. Le Guin Vs. Atwood	34
6.1.2. Dystopian Fiction	36
6.2 Disciplines	38
6.2.1 Ecocriticism	38
6.2.1.1 Emergence and Development	41

6.2.1.2 Literary Ecocriticism: Tenets	45
6.2.2 Stylistics	48
6.2.2.1 Definition	48
6.2.2.2 Aims and Procedures	49
6.2.3 Genetic Modification	50
6.2.3.1 Important Concepts	51
6.2.3.2 <i>Genethics</i>	52
7. Literary Analysis: Margaret Atwood's Critical Perspective on Genetic Modification in the Dystopian Fiction <i>Oryx and Crake</i>	56
7.1. The Crakers: The Ultimate Creation	56
7.2. Bioengineered Animals: Scientists Playing God	63
7.3. Modified Food: Removing the Animality	70
7.4. Pharmaceuticals: Exterminating All Diseases, Creating New Ones ...	74
Conclusions	81
List of References	84
Works Cited	84
Works Consulted	90

List of Figures

Figure 1. How Stylistics is subject to Ecocriticism in order to approach the novel for the literary analysis.	12
Figure 2. Speculative fiction containing fantasy, historical, horror and science fiction.....	33

Introduction

Nowadays, the great amount of people that our planet houses have the huge responsibility of saving the Earth from themselves. Humans have enormously understood their surroundings; hence they are now able to modify nature and their own bodies and progeny. For instance, since 1996 (when people first introduced genetically modified organisms in agriculture) to 2011 people grew over 170 million hectares of genetically modified crops all around the world (James, 2010, 2011). Moreover, chickens now are made grow to more than before in no time because they “have been subjected to intense genetic selection. In the past 50 years, broiler growth rates have increased by over 300% (from 25g per day to 100g per day).” (Knowles, Kestin, Haslam, Brown, Green, Butterworth, et al., 2008). These examples serve as a reference of how humans try to improve things around them. However, is it correct to interfere with millions of years of evolution?

Margaret Atwood (2003a) proposes, in *Oryx and Crake*, the same panorama introducing her speculation of what could be our future if we continue behaving as we are right now, i.e. misusing scientific knowledge to please consumerism and other human vagaries. The author of this novel (the first of the *MaddAddam* trilogy) shows how our science might lead us to the greatest genetic inventions but also to a massive extinction. Therefore, one of the aims of this literary analysis is to determine Atwood’s stance on genetic manipulation according to what she presents in his speculative-fiction novel.

Atwood’s perspective may be confusing when the book is read for the first time, and although the first and most evident consequence (of a society obsessed with genetic manipulation) is chaos, one has to go further to find out that she does not totally disapprove the advance of genetics techniques and technology, and the aids it could provide.

Having explained a few issues of the context of this work, I will go further into its background to demonstrate why it has been worthwhile to write about the topics developed in this monograph. Some of the issues developed here have not been formally worked (in previous theses) in the faculty I belong to; therefore, the fact that this is the first ecocritical analysis, and the first study of Atwood's literature at Escuelade Ciencias del Lenguaje is rewarding and encouraging. The aspects I am referring to are: speculative fiction, ecocriticism, *Oryx and Crake*, and its author Margaret Atwood. She once stated that the novel I study in this monograph is not science fiction but *speculative fiction* because she defines the former as stories that contain intergalactic space travel, teleportation and Martians (Atwood, 2003b). *Oryx and Crake* does not contain any of those aspects but it deals with a field of science: genetics. It is another relevant aspect in this work since the author introduces the reader to a futuristic world where genetics has gone too far. Thus, the main goal of this paper is to determine her critical perspective on this subject. In order to do it, critical approaches such as Stylistics and Ecocriticism will be used. Nevertheless, Stylistics will be more a technique rather than an approach since it will be used as a tool to understand the language the author uses whereas Ecocriticism will be the critical approach that will guide the analysis and interpretation. This will find out what are the repercussions, of the issues worked here, on the relations between nature and culture (which is one of the main things ecocriticism deals with).

Since the central aim is already stated, I will describe in the following paragraphs how the work is sorted.

First of all, there are chapter one and chapter two, which include the objectives of this work and its methodology respectively. Then, the reader will find chapter three, whose main character is the Canadian writer Margaret Eleanor Atwood. The chapter is divided into two sub-sections: Atwood in the Literary Canadian Context and Atwood in the Ecocritical

Context. Both try to make clear how Atwood became the writer she is today, considering the information found in *The Cambridge Companion to Margaret Atwood* (Howells, 2006). The first part of chapter three attempts to describe her life as a student and a writer, her works and an invention of her own: the *LongPen*, whereas the second sub-section deals with the evidence that supports her ecocritical concerns on life and literature, not only expressed through her writings (or drawings) but also in the way she manages her office (O. W. Toad office).

Then, there are chapters four and five. The former is a brief review of *Oryx and Crake* to approach the reader to its main characters, settings and its plot. The latter names and describes the related works found while researching on ecocritical readings of *Oryx and Crake*. Next, chapter six is one of the most important because it contains all the Theoretical Framework that guides the present work. The aim of this part, aside from giving a better understanding of the theory, is to illustrate the students or scholars who are interested in references concerning ecocriticism, speculative and dystopian fiction, genetic modification, and stylistics.

After these preliminary chapters, the reader can find chapter seven whose purpose is to present the analysis of *Oryx and Crake*, using the stylistics technique to understand its meaning through the language used by the author, and critically approaching to relevant passages through an ecocritical approach, i.e. confronting the events seen in the story to find out their implications on the environment and how the relationship between nature and culture is expressed, in other words.

Finally, the conclusions that emerge from the analysis, that is to say, the findings that will state what is Atwood's critical perspective on genetic modification in the novel *Oryx and Crake*. Moreover, the reference section helps the reader to know where the information, cited

and consulted, came from. The idea of that last chapter is not only that but also to invite the students of Foreign Languages at Universidad del Valle, and from other institutions, to know more about the ecocritical approach because my wish is that the reader can notice that it is worth approaching literature from an environmental perspective, and that this work could be the beginning of a new ecocritical literary wave here in Cali.

1. Objectives

The objectives for this literary analysis are:

- To collect evidence that demonstrates Atwood's perspective on genetic modification of animals and food.
- To identify Margaret Atwood's stance on genetic modification of animals and food.

2. Methodology

First of all, this work does not aim to do a formalist analysis, i.e., it does not conceive Atwood's novel as an isolated piece of literary art. I am taking into account the environmental context proposed by the author and the one we are experiencing nowadays. That is the reason why this work's main pillar is Ecocriticism.

Due to the fact that Ecocriticism, as a literary critical approach, has not developed a structure in terms of steps to read and approach a literary text, I decided to use Stylistics as a secondary approach to tackle Atwood's novel before concluding, through an ecocritical approach, what seems to be Atwood's critical perspective on Bioengineering.

In order to do so, I proceeded following three main steps:

1. A thorough reading, and re-reading to extract significant segments (passages) from the novel.
2. The construction of a corpus made of those significant passages.
3. Analysis of the categories, and their segments, in the corpus. Firstly, through Stylistics in order to consider the meaning of them in terms of language and finally, through ecocriticism in order to critically approach those passages.

As I propose in Figure 1, Stylistics will be subject to Ecocriticism and the two of them will converge into the text while performing the final step of the analysis:

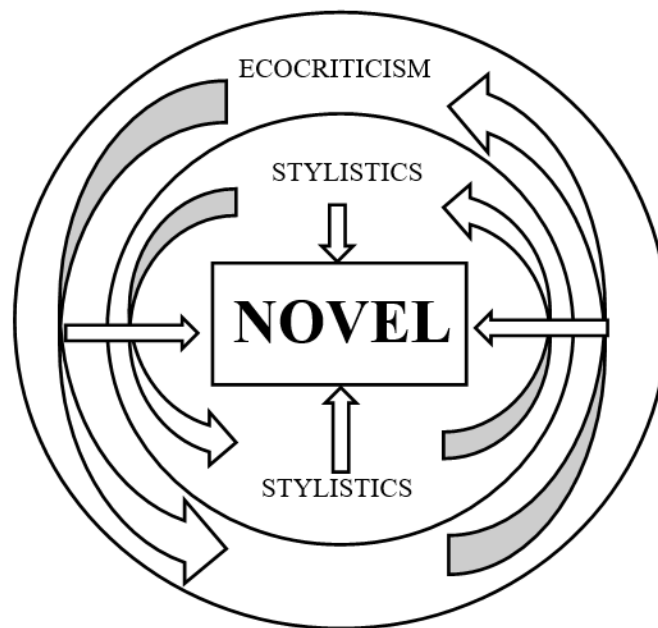


Figure 1. How Stylistics is subject to Ecocriticism in order to approach the novel for the literary analysis.

The categories already named in the last step of the analysis, will be the following ones:

- Atwood's perspective on the Crakers.
- Atwood's perspective on bioengineered animals.
- Atwood's perspective on genetically modified food.
- Atwood's perspective on pharmaceuticals.

Having presented the passages from the corpus, they will be studied taking into account the intrinsic aspects of the bioengineered creations in the novel.

3. The Writer and Her Context

When I started reading Atwood's work, I realized how little I, and my closest acquaintances, knew about her. The knowledge about this Canadian poet, novelist, literary critic, essayist, and environmental activist in Colombia was almost non-existent as one searches on web pages, libraries and databases in this country. However, she is an author that is worth being read as she offers several kinds of texts and topics, such as feminism, environmentalism, speculative fiction and others. In addition, Atwood is always updated in terms of technology. In 2006, a device called the *LongPen* made its debut. Ms. Atwood invented it as a signing device to allow her fans to get her signature no matter where they are. That can be found in "*Atwood Sign of the Times Draws Blank*" (Burkeman, 2006) where Atwood is called: "Canada's greatest living novelist." Her literary work includes 16 novels, 8 pieces of short fiction, 8 children's books, more than 21 poetry collections, 10 non-fiction works, 3 TV scripts, a radio script called "The Trumpets of Summer" and a theatrical adaptation for her own novella "The Penelopiad" ("Full Bibliography", 2013).

The following contextualization is based on the information in *The Cambridge Companion to Margaret Atwood* (Howells, 2006).

Margaret Atwood, born in Ottawa on 18 November 1939, is a writer who has been translated into more than forty languages. She lived her early years in her hometown and Quebec. Regarding these years, Atwood (1973) claims "Americans usually find this account of my childhood -woodsy, isolated, nomadic- less surprising than do Canadians..." In addition, Atwood was not like the other girls; her orientation, thanks to her family, was not the traditional one; she did not want to become a cheerleader and her parents did not pressure her into getting married. They were from a different culture taking into account their

scientific orientation. In her own words “They just believed that it was incumbent on me to become as educated as possible” (Atwood, 1979)

She took heed of her parents’ expectations because, as she says, “they expected me to make use of my intelligence and abilities” (Atwood declarations as cited in Oates, 1978) so she began to write at the age of five, stopping it when she was eight and resuming literary activities at sixteen while studying at Toronto’s Leaside High School. It was in this academic setting where Atwood realized she was going to become into a prolific writer (Atwood, 1982).

3.1 Atwood in the Literary Canadian Context

She also declares that they studied authors at that time at school, but they were neither Canadian nor alive. Despite this lack of motivation to become a writer, Atwood considered activities related to writing such as journalism school. However, at that time women were supposed to write only obituaries or the ladies’ page and Canada was not a place for writers in the fifties. She remembers when she was at school and says they studied everything but real Canadian literature:

We had no Canadian poetry in high school and not much of anything else Canadian...Once a year a frail old man [Wilson MacDonald] would turn up and read a poem about a crow; afterward he would sell his own books [...] autographing them in his thin spidery handwriting. That was Canadian poetry

(Atwood, 1973).

Apparently, Canada was a country that had no respect for the literary efforts of certain Canadian writers that did not even mention their birthplaces in their stories; actually, they used to write for foreign readers and not for their fellow citizens; for example, Morley

Callaghan, a Canadian writer and TV and radio personality who began his literary career in Toronto but never mentioned this city on his writings.

Accordingly, this oblivion led Margaret Atwood to enroll in the honors English Language and Literature program at Victoria College in the University of Toronto in 1957. She really wanted to be a writer, so she had ventured her first attempt at writing after she truly discovered Canadian writing at the University. It was really happening; Canadians were writing and publishing as well so she decided she could too, then, she remembers, “I read a lot of stuff, and I was lucky enough to know somebody who had a fairly extensive library of Canadian poetry which I read from beginning, so that by the time I was 21 I had certainly found my tradition” (Gibson, 1973). As a result, in 1961 she won the E.J. Pratt Medal for *Persephone*, a small collection of poems; subsequently, with her Woodrow Wilson Fellowship, she got into Harvard University to begin her master’s program in English Literature. This renowned university has a huge collection of Canadian literature. Finally, she was in contact with the Canadian literary tradition that she had not known at school. Hence, it was there she changed her mind about her own country:

Harvard University was the place where I started thinking seriously about Canada as having a shape and a culture of its own. Partly because I was studying the literature of the American Puritans, which was not notable for its purely literary values-if one can study this in a university, I thought, why not Canadian literature? -and Boston was, in certain ways, so similar, in climate and landscape, to part of Canada. One began to look for differences.

(Oates, 1978)

Two years after starting at Harvard, Atwood returned to Toronto but the following year she accepted a lectureship in English at the University of British Columbia and then she

returned to Harvard to begin to work on her thesis on *The English Metaphysical Romance*. This dissertation remains unaccomplished due to her interest in creative writing while working there and, consequently, she published *The Circle Game* in 1966, her first full-length volume of poetry and winner of the Governor-General's Award, which is Canada's highest award for poetry. After this achievement, *The Animals in That Country* and *The Journals of Susanna* appeared in 1968 and 1970 respectively. In these collections of poems Atwood evokes Canadian history demonstrating a fascination to it. According to Staines (2006), "she is the first writer in Canadian literature to evoke an artistic figure from the past, Susanna Moodie in her case, and make her a major presence in a new work of art."

Although Atwood started her career writing poetry, she is also known as a novelist. In fact, *The Handmaid's Tale* (1985) got a film adaptation in 1990 by Volker Schlöndorff. In the fall of 1969, Atwood published *The Edible Woman* (1969), her first novel which coincided with the rise of feminism in North America during the Second-Wave of Feminism the United States. However, she says it was a proto-feminist novel when she explains that "there was no women's movement in sight when I was composing the book in 1965." (Atwood, 1980)

Another example of her work is *Survival: A Thematic Guide to Canadian Literature*. This is a 1972 volume of literary criticism where Atwood mentions what she calls "the great Canadian victim complex" (Gibson, 1972), a type of victimization that Canadians have embraced having certain stance towards the world that defines themselves as victims: "Look at poor innocent us, we are morally better than they. We do not burn people in Vietnam, and those bastards are coming in and taking away our country. Well the real truth of the matter is that Canadians are selling it." (Gibson, 1972). Nevertheless, with *Survival* (1972) and the aspects she had exposed about literature in Canada, that book took her to "forge an identity as a Canadian writer, something almost unique on the Canadian scene [...] and became the

major exponent of Canadian literature, a wholly viable and emerging voice of power and urgency” (Staines, 2006)

3.2 Atwood in the Ecocritical Context.

Considering many aspects such as the dystopian Maddaddam trilogy, it can be stated that Atwood has been from the beginning involved in environmentalism. This aspect makes the ecocritical study of her novels something relevant.

According to Bergthaller (2011), Ecocriticism is about asking ourselves about the contribution our field can give to “our understanding of the unfolding environmental crisis” and “how cultures construct and are in turn constructed by the non-human world”. This environmental concern is evident while reading the Maddaddam’s trilogy and some of her articles, such as the ones that can be found on the free literature and news platform *medium.com*, e.g. *The Carnivore Fund* and *It’s Not Climate Change – It’s Everything Change* (Atwood, 2016). *The Carnivore Fund* is an appendix of real companies which help to mitigate the impact of mankind on the planet by taking out CO₂ out of the air and creating environmentally friendly means of energy, among these companies one can find Cool Planet, Calera, Skyonic, and others. In fact, Margaret Atwood creates a fictional fund called the Carnivore Fund that is supposed to donate money to 12 companies that are the only ones that reduce production of CO₂. On the other hand, *It’s Not Climate Change – It’s Everything Change* is an essay which discusses three possible scenarios that show how society could react if there weren’t any oil: an optimistic one, a pessimistic one and finally a more realistic one.

Another example of Atwood's association with ecocritical concerns is her web page *margaretatwood.ca*. As she affirmed in a 2010 interview:

I was born into this issue. My father was a forest entomologist, which means he was aware that spraying forests for spruce budworm was counterproductive in that it didn't were exposed to it, either [...] My parents were gardeners themselves, and perforce they used environmental techniques because it was during the war, and you didn't have the new sorts of chemicals.

(Atwood, 2010)

That is why her online page is evidence of her environmental inclinations because when one explores it, green policies and some green organizations such as The David Suzuki Foundation, TreeHugger and Zerofootprint can be found. According to her webpage, the green policies or the procedures they use in the O. W. Toad Office (this name is an anagram of the letters in her last name) are:

- Using acid-free paper that is 100% recycled and ancient-forest friendly (100% post-consumer recycled).
- Reusing paper for scrap.
- Reusing envelopes and boxes for shipping when possible.
- Using paper that is free of bleach.
- Checking Forest Stewardship Council approval levels.
- Using recycled products such as Cascade toilet paper, paper towels, and tissues.

(Atwood, 2013, November 7)

Other examples of the role Margaret Atwood plays as a feminist worried about the environment are described in the fifth chapter of *The Cambridge Companion to Margaret*

Atwood (Hengen, 2006). Here Hengen analyzes a lecture delivered by Atwood at Carleton University (Ottawa, Canada) in January 2004. In this lecture, which is mainly about science fiction, Atwood mentions aspects that contribute to her impression of the environment such as despotism versus decency, obsessive control versus the spectrum of human desire, science and art, reason and imagination. Next, Hengen (2006) analyzes Atwood's literary work through Environmentalism. She states that:

Environmentalism in the works of Atwood and the biologists becomes a concern with the urgent preservation of a human place in a natural world in which the term 'human' does not imply 'superior', or 'alone', and in which what is fabricated or artificial is less satisfying than what has originally occurred.

(Hengen, 2006)

To exemplify this, we can choose Atwood's *Oryx and Crake*, where the author shows a world ruled by multinational corporations and rich compounds where almost everything has been modified or altered with bio-engineering, even humans in the case of what Snowman calls the Crakers. When everything is destroyed by Crake, being human is not a matter of being superior; in fact, it is a matter of survival because Snowman is, apparently, the last human on earth and he is at a disadvantage; he is not living in the city anymore. As he remembers his life as Jimmy, he relives his memories of the lifestyle he used to live when mankind tried to improve life by intervening in nature's processes:

The fake rocks looked like real rocks but weighted less; not only that, they absorbed water during periods of humidity and released it in times of drought, so they acted like natural lawn regulators. Rockulators, was the brand name. You had to avoid them during heavy rainfalls, though, as they'd been known to explode.

(Atwood, 2003a, p. 235)

Although this invention shows a good side of science in the story, Atwood also mentions the unethical alteration of food, making it worse than the original one:

What they were looking at was a large bulblike object that seemed to be covered with stippled whitish-yellow skin. Out of it came twenty thick fleshy tubes, and at the end of each tube another bulb was growing [...] Those are chickens, said Crake, Chicken parts. Just the breasts, on this one. They've got ones that specialize in drumsticks too, twelve to a growth unit.

(Atwood, 2003a, p. 237)

Concluding, Atwood has been aware of the importance of ecology and environmentalism because she denounces what humans might do to the planet and the different species which inhabit it. Moreover, she takes this awareness to her very office where she develops ecofriendly processes as the ones already described in the list above. These facts make her participation in the ecocritical context relevant to this work; however, her critical perspective on certain human behaviors, particularly genetic modification, will be developed in further chapters.

4. Oryx and Crake

Oryx and Crake is a novel that was published in 2003. Its author, Margaret Atwood, says she started this story in 2001 during a tour for her previous book *The Blind Assassin* in Australia (Atwood, 2003b). She says, in *Perfect Storms: writing Oryx and Crake* (Atwood, 2003b), that while visiting a birder “it was while looking over Philip’s balcony at the red-necked crakes scuttling about in the underbrush that Oryx and Crake appeared to me almost in its entirety.” (Atwood, 2003b). However, she also states in the essay already mentioned that she had already been thinking about possible speculative scenarios for a new novel. This story is an example of speculative fiction whose base is the question *What if?* Hence, the question in the novel is, according to Atwood (2003b), “what if we continue down the road we’re already on? How slippery is the slope? What are our saving graces? Who’s got the will to stop us?”

Thus, the road Atwood is referring is the road that science has established in a race against time and nature, a race that is deforming, restructuring, and destroying the structure-blocks of life. As the story shows, Jimmy lives with his parents in a fictional city of New New York (this is the actual name in the story). As the writer describes in the story, the city is supposed to be divided in two: The Compounds area and the Pleeblands. The former refers to fortified complexes ruled by huge companies who base their businesses on genetic modification to offer products for health, nutrition, security, aesthetical treatments, among others. Those Compounds are protected by a company called CorpSeCorps. On the other side of the city, there is the Pleeblands, the equivalent of a downtown, where one could find “the addicts, the muggers, the paupers, the crazies.” (Atwood, 2003a) A person who lives in a Compound should not go there by himself because it could be dangerous since the security in the Pleeblands is not good.

The story happens in three types of narrative time: a dystopian past, an apocalyptic past, and a post-apocalyptic present. In the dystopian past Jimmy's parents used to work together at the OrganInk Compound on the Pigoon Project but Sharon (Jimmy's mother) started to realize how wrong it was to alter life in the way they were doing it. They were obsessed with modifying living things, they were playing God: "There'd been a lot of fooling around in those days: create-an-animal was so much fun, said the guys doing it; it made you feel like God." (Atwood, 2003a). Whereas Jimmy's father, whose name is not mentioned, trusts in genetic modification; he believes he is changing the world, helping the people who are in need.

In terms of family relationship, Jimmy (who in the present timeline is called Snowman) tries to get along with his parents but it is difficult for them to do it. But then, Jimmy meets Crake and they become good friends. Through all their friendship the reader can notice the similarities they share when they enjoy the same gory websites and online games. However, their differences are bigger. While Crake is a person of numbers and science, Jimmy is not because he is good at letters and arts. That is the reason why they have to go their separate ways when they finish school. Crake starts his career as a brilliant scientist at Watson-Crick Institute, the best place to be whereas Jimmy goes to Martha Graham Academy which was placed next to the Pleeblands. However, they meet again a couple of times, the last one is when Crake proposed Jimmy to work with him in the Paradise Project. Jimmy accepts thinking that Crake's plans are not too harmful and falls in love with Oryx (the little girl they once saw on a child pornography website); surprisingly, in the end he realizes Crake's true goal: human extermination and the creation of a new and perfect race: The Crakers. Apparently, every human being in the world is exterminated thus converting Snowman (Jimmy's Paradise Project codename) in the only person who can tell the story, i.e., the last human on the planet. Crake had thought about that, and for his purpose, he injected Jimmy

with an antidote against the virus he created. He chose Snowman as the person to take care of the Crakers. After those events, and having killed Crake, Snowman conceives him and Oryx as just memories because he is trapped into a planet where he is the only one of his kind, therefore the last one in the food-chain pyramid. At the end of the story he realizes he is not the only human on Earth.

I decided to present the novel in chronological way, however Atwood uses the internal analepsis to tell the story, i.e., she starts with Snowman's present (after the extermination) and every time he remembers his past the reader can know more about the context and the causes of such a disaster.

The novel deals with several themes different from the one I decided to work on. For example, feminism as worked in *Towards' feminist mothering: oppositional maternal practice in Margaret Atwood's Oryx and Crake* (Banerjee, 2013), reproduction and destruction as worked in *Eco-Dystopia: Reproduction and Destruction in Margaret Atwood's Oryx and Crake* (Dunlap, 2012), post-apocalypse and post-trauma as worked in *"Time to go": The Post-apocalyptic and The Post-traumatic in Margaret Atwood's Oryx and Crake* (Snyder, 2011). In the next chapter I will name and cite more works that I consider are more relevant and related to this work.

5. Related Work

This chapter provides an overview of previous works related to the analysis of *Oryx and Crake*. The purpose is to present these works from the local context to the international one. The latter, will be sorted into two different types: works that deal with genetic modification (or related issues) in *Oryx and Crake* and works which also analyze this novel but whose main topic is different from the one presented in this monograph. It is important to clarify the fact that these papers suppose, directly or indirectly, an ecocritical or environmental reading of *Oryx and Crake*.

5.1 Local and National Context

In the local context, after searching for information on ecocritical analysis of *Oryx and Crake*, the results were non-existent in the Literature and Foreign Languages departments at Universidad del Valle.

On the other hand, in the national context, I did find some works in the field of ecocritical analysis, but they were related neither to *Oryx and Crake* nor to Atwood. Examples of these are *Personajes Nocivos: La naturaleza a través del lente de la ecocrítica. Una mirada a La Historia de Horacio* (Arias & Arias, 2014) and *Alteridad y Pertenencia: Lectura ecocrítica de María y La Voragine* (Bula & Bermúdez, 2009).

5.2 International Context

In the international context, the works found on this topic are numerous, I have chosen the ones that are closely relevant to this work in terms of approach and topic.

First, I will review the works whose theme is the novel I analyze in this monograph and genetic modification, or related topics. Then, works that analyze Atwood's *Oryx and Crake* but whose main topic is different will be described at the end of this section.

Before beginning with the description of the works that deal with the novel and its genetic modification aspects, I have to state that it was quite difficult to find theses focusing only on the topic of my monograph. Consequently, I will present papers that appear in journals and one that was presented in a conference. The first one is *Of Monster and Man: transgenics and transgression in Margaret Atwood's Oryx and Crake* (Ku, 2006), whose objective is to try to identify the limits between human and monster in this novel. The reader of Atwood's first novel of the *MaddAddam* trilogy, may conceive the transgenic species and food described as a monstrosity, at first glance, just because they are not natural. However, Ku (2006) goes deeper into the question of what it means to be a monster; obviously, he takes into account the genetic-modification factor. He divides his text into three parts. The first one deals with singularity of human beings' form and the hierarchical position of humans over other species. What Ku (2006) considers is the fact that some of the bioengineered species, such as Pigoons and Crackers, "resemble humans in corporeality" (Ku, 2006); hence Snowman may be considered as a monster since he becomes the one who is different from the rest, i.e., the last man on earth who is surrounded by species who have better and more adaptive features and skills. Next, the second part of this paper discusses the scientific manipulation performed by Crake when one talks about ethical transgression. The author describes him as a "monstrous form of *homo faber*," that is to say, a man who can control and change his destiny and surroundings through his tools (scientific knowledge), but who has also become part, according to Ku (2006), of what Capitalism needs. The last part contrasts Snowman and Robinson Crusoe.

In addition, Ku (2006) finds out that Atwood describes an 'inverted food chain' since Snowman finds himself living in a tree and hiding from different animal species all the time. Moreover, this author affirms that after the elimination of the human race, transgenic beings outnumber humans, so they start to challenge human's dominance. On the other hand, that

type of dominance of those animals suggests that science failed and Ku relates this failure to the technocratic society described in the novel, where there is a strong relation between capitalism and science, i.e., scientists who “simply take orders from their investors” (Ku, 2006).

The relevance of this paper resides in the fact that it discusses the monstrosity, described by Atwood, focusing on concepts such as xenotransplantation and eugenics (see *Theoretical Framework*), the former is the “transplantation of an organ, tissue, or cells between two different species” (Merriam-Webster Dictionary, 2006). These terms are part of this work when reading the novel’s context through and ecocritical point of view.

The next paper chosen to shape this section is *A Consuming Read: the ethics of food in Margaret Atwood’s Oryx and Crake* (Galbreath, 2010). This one belongs to Florida Gulf Coast University’s Second International Humanities and Sustainability Conference. Here, Galbreath aims to employ the topic of transgenics rather than apocalyptic issues and/or feministic affairs, for example. The author also intends to explore Atwood’s “critique of food production ethics in the figures of the ChickieNob and pigoon, and the ensuing moves she makes that position the human as a consumable organism” (Galbreath, 2010). In terms of the procedures Galbreath follows, one can notice that she divides her exploration into three parts: contemporary industrial farming and Atwood’s science, ChickieNobs/ Pigoons, and finally, consumable organisms. In the first part, the author finds that the plants and animals that are genetically modified are presented as “medical and victual fodder for near-future humanity may be bizarre in appearance, but not in genesis”, then she explains the present situation and Atwood’s fictional society in terms of genetic engineering, stating that in fact, “two of the creatures Atwood features in *Oryx and Crake* are already with us: the neon green rabbits and the goat that produces spider silk in her milk”(Galbreath, 2010).

Galbreath (2010) also analyzes ChickieNobs and Pigoons because they are two of the most representative transgenic beings in the story. This author realizes that on the one hand ChickieNobs (which is chicken meat sliced from a transgenic organisms) represents the contrasts between something which is wrong from the ethical point of view, i.e., a headless, limbless, and featherless chicken, and the perfect food in terms of massive production. The latter idea is conceived since it is better for producers and distributors to sell this kind of animal product, that is the reason why Galbreath says that ChickieNobs is a “critique of consumer habits, and serves as an example of removing the ‘animalness’ from the animal in order to address any compunction humans may have about eating other creatures”.

On the other hand, according to the author, pigoons introduce the idea of cannibalism, the reversion of the food-chain, and “refute the Cartesian machine animal” (Galbreath, 2010). Furthermore, according to Galbreath, humans are represented as consumable organisms through the character of Snowman, who is always afraid of being eaten by other animal species. That is the result of the technocratic society described by Atwood: destruction of society itself, where “those who question or reject this paradigm are considered traitors” (Galbreath, 2010).

The third paper selected for this revision of related work, *It's Game Over Forever: Atwood's Satiric Vision of a Bioengineered Posthuman Future in Oryx and Crake* (Bouson, 2004), is an essay that aims to show the concern for the future expressed by Atwood. According to Bouson, this can be seen in the story, although Atwood “casts ridicule on the ‘surreal zoo’ of transgenic species being created by genetic engineers in our age of biological control and genetic determinism.” (Bouson, 2004). The ridicule Bouson mentions, is just a reference to the “peculiar” names given to the new animal species created *in vitro* by the scientist in the story: pigoon, wolvog, rakunk, etc.

The essay's goal is reached by the author while she introduces and explains Atwood's notions and concerns, providing several quotes from the novel and other sources related to it. After reading the essay, one can see that Bouson (2004) found that, in *Oryx and Crake*, Atwood "fears that in our new age of genetic manipulation and biological control, we may be blindly entering a catastrophic post-human future". It means, we are going straight to our own destruction while we allow scientists play with the foundations of life.

The relevance of this paper is the ecocritical analysis of the novel, which guided me to know what could be presented as a new proposal, and to avoid repeating what had already been said about Atwood's novel as well as her stance on genetic manipulation.

The previous three papers were related work concerning the genetic modification issues in *Oryx and Crake*. In the following paragraphs, I will describe three other works which analyze the novel; although their main topics are different from the ones I am focusing on, they are relevant due to their environmental concerns while analyzing Atwood's novel.

In the first place, I will present *(un)Natural bodies, Endangered Species, and Embodied Others in Margaret Atwood's Oryx and Crake* (Galbreath, 2010) whose objectives can be divided into two. Galbreath claims that she aims to explore the novel "through the lens of the various forms of extinction, using posthumanist, ecocritical, and feminist theory" and to demonstrate that it is "a dialogue contrasting humanity's simultaneous alienation from the natural world and homologous connections to the animal other" (Galbreath, 2010, p. 6). This author finds that there are alarming elements in the story which can be seen currently in our everyday life, e.g. "Internet games, corporate greed, animal abuse, and social constructs of race and gender that reflect the contemporary world" (Galbreath, 2010). Thus, Snowman becomes the "visible example of a deteriorating humanity" (Galbreath, 2010).

Additionally, Séverac (2012) wrote a monograph on manipulation called *Manipulation and Dystopia in Oryx and Crake*. This work, presented at the Université Stendhal in Grenoble, sought to define Oryx and Crake as “an heir to the dystopian genre” (Séverac, 2012). This author analyzes manipulation in the story and shows that it is innovative and exerts an impact on the person who reads it because of “its verisimilitude and accuracy” (Séverac, 2012). In essence, Séverac claims that Atwood aims to “strike, to arouse the reader and leave traces of the fiction in his reality, in order to make things change”

The last work is *A Necessary Change from ‘Man’ to ‘Homo Sapiens’: An Ecocritical Study of Oryx and Crake and The Year of the Flood by Margaret Atwood* (Faure, 2015), which is an exploration of the two first novels of the *MaddAddam* trilogy from an ecocritical perspective. She confronts anthropocentrism and ecocentrism. Faure aims to analyze “how the preservation or restoration of the equilibrium in the natural world can be achieved by changing some habits and ways of behaving which are intrinsically human”. To do so, she uses a comparative methodology with both novels, exploring the ecocritical concepts, the attitudes that the characters present and discussing the changes suggested by Atwood in order to coexist with the natural world. After this, the author discovers that in both stories Atwood calls for a change in terms of human attitude towards nature, stating that this change is necessary to stop harming the natural world.

The revision of the related work discussed above demonstrates the significance of Atwood’s novel because it is clear that it has awakened interest in scholar all around the world. However, interestingly, in our local and national context nobody has shown enthusiasm about this topic. Perhaps, the topics I decided to focus on are different from the ones studied in the related work, but they helped me to continue with my analysis and to find a ground on which I could base it. The next chapter is also part of the basis already mentioned. It will present the theoretical horizon that frames my work.

6. Theoretical Framework

6.1 Genres

6.1.1 Speculative Fiction

A dispute to define Speculative Fiction and its difference between this genre and Science Fiction could be seen in a series of interviews, prefaces and declarations (which I will refer to later) made by Margaret Atwood and one of the most iconic representatives of Sci-fi and Fantasy genres: Ursula Kroeber Le Guin. She is the author of the *Earthsea* novels and *The Lathe of Heaven*.

The definition of Speculative fiction is open to doubt because many writers present several and different interpretations of it, making the boundaries between genres quite uncertain. In this section, I will try to be loyal to Margaret Atwood's conception of Speculative Fiction. I will first present the definitions by other writers in order to illustrate their differences and to extract the useful things from them to complement Atwood's conception.

6.1.1.1 Neugebauer's Conception

Annie Neugebauer is an American writer who specializes in horror, literary fiction, poetry, gothic, picture books, and speculative fiction. Her short stories and poetry appear in the *Black Static* magazine, *Apex Magazine* and *Fireside*, among others. Additionally, she is a founding member and past president of the Denton Writer's Critique Group, member of the National Federation of State Poetry Societies and a columnist at websites such as LitReactor and Writer Unboxed.

Neugebauer wrote an entry for her web page <http://annieneugebauer.com> where she explains what Speculative fiction is. At the beginning of her entry *What is Speculative*

Fiction? she proposes a diagram whose simplicity shows an easy way to understand and distinguish genres at first glance; however, the fact that “Spec-fi” can be simply defined as “fantasy, science fiction, and horror” (Neugebauer, 2014) is puzzling since there are works of those genres which are not speculative and one can find other kind of genres that must be included into the speculative paradigm.

Now, I will recapitulate Neugebauer’s considerations. The writer separates both Speculative and Fiction, stating that when we say fiction, we talk about something ‘untrue’ and when we speculate we, implicitly or explicitly, ask *what if...*? According to her, this question “takes our existing world and changes it...” (Neugebauer, 2014) which is relevant, considering that Margaret Atwood (2003b), in her essay *Perfect Storms: writing Oryx and Crake*, refers to the ‘*what if?*’ of two of her novels while affirming they are both speculative:

Like *the Handmaid’s Tale*, *Oryx and Crake* is a speculative fiction, not a science fiction proper. It contains no intergalactic space travel, no teleportation, no Martians. As with *The Handmaid’s Tale*, it invents nothing we haven’t already invented or started to invent. Every novel begins with a what if, and then sets forth its axioms. The what if of *Oryx and Crake* is simply, what if we continue down the road we’re already on? How slippery is the slope? What are our saving graces? Who’s got the will to stop us?

(Atwood, 2003b)

On the other hand, Neugebauer defines ‘Spec-fi’ as fiction in which the author speculates upon the results of changing what is real or possible, not how a character would react to events or different type of situations. An example of this can be found in the novel here analyzed. Atwood (2003a) takes a real field of study which is gene splicing (bioengineered modification) and speculates upon the results of going further on this road of

humans playing God. Other examples could be altering war results, such as WW1 or WW2 or altering the laws of the world in story, i.e., this world laws have to be different from ours. Here is an example given by Neugebauer (2014): “Dropping a bad guy into a nest full of mutant alligator-sharks is ‘speculative’ because it is not possible in our world” What she wants to indicate is the idea of speculating upon the consequences of doing it.

Neugebauer (2014) proposes the following diagram to define the difference and relationships between each genre:

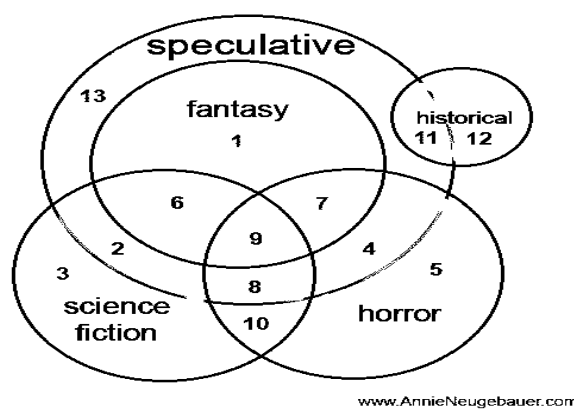


Figure 2. A diagram Speculative fiction and its components. Reprinted from Annie Neugebauer, by A. Neugebauer, 2014, Retrieved from <http://annieneugebauer.com/2014/03/24/what-is-speculative-fiction>. Copyright 2014 by Annie Neugebauer. Reprinted with permission.

The diagram is divided into 13 areas that will be explained:

Area 1: according to Neugebauer (2014) all fantasy is speculative because it is something that does not exist in our world. It includes subgenres such as epic, soft, urban and magical realism.

Area 2: science fiction is usually but not always speculative. When it is speculative, it includes space and time travel.

Area 3 represents Sci-fi which is not speculative.

Area 4: horror is frequently speculative but not always. When it is based on real events or when there are no supernatural events, it is not speculative (**Area 5**) The Speculative Horror includes paranormal, creature and weird tale.

Areas 6 to 10: there could be combinations of speculative fantasy, speculative sci-fi and speculative horror interchangeably, those are areas 6 to 9. Area 10 is not speculative.

Area 11: historical fiction with elements such as supernatural and alternate history.

Area 12: it is historical fiction without speculative elements.

Area 13: dystopian stories, weird tales or surrealism. These stories are speculative but they are not fantasy, science fiction, horror or historical.

Neugebauer's considerations are useful since they clarify the outlook of these different genres which are sometimes confusing.

As mentioned above, there are certain discrepancies between Neugebauer's and Atwood's conceptions of Speculative fiction. In the next section of the Theoretical Framework, I will develop such discrepancies and also to compare Atwood's conception vs Le Guin's.

6.1.1.2 Le Guin vs Atwood

Margaret Atwood (2011) wrote *In Other Worlds: SF and the Human Imagination*, which (in her own words) is "an exploration of [her] own lifelong relationship with a literary form, or forms, or subforms, both as reader and as writer" (Atwood, 2011). This "exploration" was dedicated to the American writer Ursula K. Le Guin, who declared that Atwood "does not want any of her books to be called science fiction" (Le Guin, 2009). This type of declarations, and the fact that Atwood herself does not conceive *The Handmaid's tale*

and *Oryx* and *Crake* as science fiction, have caused readers to think that she is “a silly nit or a snob or a genre traitor for dodging the term because these books are as much ‘science fiction’ as 1984 is...” (Atwood, 2011). On the other hand, the Canadian writer considers that “much depends on your nomenclatural allegiances, or else on your system of literary taxonomy” (Atwood, 2011), which means that it depends on your literary conceptions in order to define a genre; besides, the mere fact of defining what is genre or a subgenre, or a category, etc. is difficult per se. It can be evidenced with Bruce Sterling, an American science fiction writer and coiner of the term ‘Slipstream’, who wrote an article that was published in *SF eye* N° 5 in July 1989 in which he defines ‘category’ and ‘genre’. He states that the former is “a marketing term. It is commercially useful, but can be ultimately deadening” whereas the latter is defined as “a spectrum of work united by an inner identity, a coherent esthetic, a set of conceptual guidelines, an ideology if you will. It is powerful” (Sterling, 1989). After this definition, one can see all the conditions in order to declare that anything is a genre, which supports a little what Atwood says about the nomenclatural allegiances.

The debate here, between the Le Guin and Atwood, is about whether Atwood’s novels are science fiction or speculative fiction. To that effect, it is imperative to know what they understand by Sci-fi. Le Guin (2009) says that this type of fiction “extrapolates imaginatively from current trends and events to a near-future that is half prediction, half satire” whereas Atwood (2005) defines it as “fiction in which things happen that are not possible today”. Furthermore, the Canadian writer provides the meaning of speculative fiction, saying that it means “plots that descend from Jules Verne’s books about submarines and balloon travel and such things that really could happen but just had not completely happened when the author wrote the books” (Atwood, 2011)

In order to conclude this section of the work, we will think of Le Guin’s science fiction as an equivalent of Atwood’s speculative fiction, and we will respect Atwood’s

definition since she is the author of the novel being analyzed in this work. However, it is also relevant to consider (through Atwood's definition) Neugebauer's structure to know the different kinds of speculative fiction out there. Those differences are important in this work for the reader to know how the novel is classified and why it is not (according to its own author) Science Fiction but Speculative Fiction. Nevertheless, the book could be also classified as a dystopian story but that is going to be developed in the next sub-section.

6.1.2 Dystopian Fiction

Sometimes it is useful to define a concept from its opposite in order to have a broader view of it. For that reason, I will start defining the opposite to *dystopia*.

The term Utopia was first used by Thomas More in his book *Libellus vere aureus, nec minus salutaris quam festivus, de optimo rei publicae statu deque nova insula Vtopiae* (1516). In the story, Utopia is the name of an imaginary island where its political, social and legal systems are perfect. Nowadays, the term is often used to make reference to "an imagined place or state of things in which everything is perfect" (Oxford Dictionary, 2000) In fact, Utopia comes from the Greek *uo* (not) and *topos* (place) meaning that there is no place like it, as the island described in More's book which was like no other, in other words: perfect.

Considering the definition above, now it is necessary to explain *dystopia*, which is the main concept in this section. According to the Oxford Dictionary (2000), dystopia is a noun that refers to "an imagined place or state in which everything is unpleasant or bad, typically a totalitarian or environmentally degraded one" where the Greek particle *dys-* means "bad, abnormal, difficult" Furthermore, we can complement that definition saying that dystopian stories are often futuristic and sometimes there is an illusion of a perfect society which is maintained through different kinds of control, such as moral, technological, bureaucratic,

totalitarian, etc. However, the dystopian scenario described by the Oxford dictionary frequently makes a criticism about current society aspects, e.g. trends, norms or politics. Examples of this genre are: *1984* (Orwell, 1949), *Fahrenheit 451* (Bradbury, 1953), *Divergent* (Roth, 2011), *A Clockwork Orange* (Burgess, 1962) and *The Hunger Games* (Collins, 2008) among others.

Based on the previous considerations and what Lee Briscoe Thompson (1997) said in *Scarlet Letters: Margaret Atwood's The Handmaid's Tale* (Thompson, 1997), *Oryx and Crake* must be considered as a dystopia. Thompson (1997) took a stance saying that “dystopias extend certain negative contemporary conditions to even grimmer future extremes” In other words, a dystopia’s task is to hyperbolize current negative societal aspects in order to show possible consequences of our present context, or as Howells (2006) declares: “the primary function of a dystopia is to send out danger signals to its readers”.

Thus, we must consider the manipulation or control exerted by governments in this type of fiction. In *Oryx and Crake*, Atwood presents a society where genes, language and relationships are manipulated. Moreover, there is a generalized police entity called The CorpSeCorps, which is in charge of guarding places such as schools, compounds and excluded areas from both unwanted individuals (e.g. government opponents) and disease. Additionally, this type of manipulation is created to give citizens an illusion of a perfect society, where everybody knows what is meant to do, smart people are recruited into the compounds and the ones who are not ‘science people’ are segregated from them. Therefore, a wrong ideal of what a society has to be can be perceived when the reader understands what went wrong with the ‘Paradise Project’ run by Crake, the ‘hero-villain’ of Atwood’s story.

6.2 Disciplines

6.2.1 Ecocriticism

When I started constructing this idea of analyzing a novel from an ecocritical point of view, I realized how unaware people in my context are about Ecocriticism. Even some professors asked me what that was. After giving a scanty explanation of what I poorly knew, one of them said it was “carreta”, a Colombian slang for eloquent and insincere rhetoric. Maybe at that moment I really did not know how to express myself in order to convince this person that this environmental movement is nothing of the sort but something well-structured and although it is relatively new, it is changing minds and shaping the way some scholars approach literature. Actually, searching on the Escuela de Ciencias del Lenguaje data bases, I did not find a single monograph or thesis where the ecocritical approach is used, therefore it is imperative to make its definition and basics clear.

First of all, the main book of reference to be used in the working definition of Ecocriticism in this framework and in the whole work is: *The Ecocriticism Reader: Landmarks in Literary Ecology* edited by Glotfelty and Fromm (1996), considered as “the first significant critical collection” of Ecocriticism (Buell, 2005). However, more publications such as books and other kinds of papers will be named. Glotfelty’s book was published in 1996 as a compilation of several essays with an environmental approach on literature. The idea of collecting all these papers from different scholars was to gather essays that were written in different decades; actually, some of them were written in the 70’s, and although Glotfelty (1996) asserts “there is no essay on an ecological approach to literature” when he wrote his introduction to *The Ecocriticism Reader*, the essays that were written before this collection were not part of a homogeneous movement. Indeed, according to Glotfelty (1996), “the authors did not organize themselves to accord a single point of view or goal; hence this environmental approach for literature was not recognized by the academic society. Most of

these papers were catalogued into headings such as: American Studies, regionalism, pastoralism, the frontier, human ecology, science and literature, nature in literature, landscape in literature...” As a result of this multifaceted cataloguing, most of the authors of those essays did not know anything about the rest, so they did not cite each other into their writings even though they wrote about the same topics. Glotfelty (1996) simply defines Ecocriticism as “the relationship between literature and the physical environment [...] ecocriticism takes an earth-centered approach to literary studies”. He also presumes the term Ecocriticism was first used by Rueckert (1978), the author of *Literature and Ecology: An Experiment in Ecocriticism*. In this essay, Rueckert defines it as “the application of ecology and ecological concepts to the study of literature.” Although Glotfelty mentions this definition which is restrictively referring to the science of ecology, he proposes in his anthology to consider all possible relations between literature and the physical world.

On the other hand, the American writer and professor emeritus at Princeton University, William Howarth, in his essay *Some Principles of Ecocriticism* (1996) presents the ecocritical reader as “a person who judges the merits and faults of writings that depict the effects of culture upon nature, with a view toward celebrating nature, berating its despoilers, and reversing their harm through political action”

In addition, the EASLCE (European Association for the Study of Literature, Culture and Environment) provides on its webpage a brief definition of Ecocriticism, written by Hannes Bergthaller from the National Chung Hsing University. He briefly describes the emergence and development of this movement, saying that it “is the youngest of the revisionist movements that has swept the humanities over the past few decades” (Bergthaller, 2011) and states the common ground among all its different strands, saying that this common joint basis is “the assumption that the ideas and structures of desire which govern the interactions between humans and their natural environment (including, perhaps most

crucially, the very distinction between the human and the non-human) are of central importance if we are to get a handle on our ecological predicament”(Bergthaller, 2011) At the end of his writing, Bergthaller reminds us that Ecocriticism is an interdisciplinary enterprise in nature, adding its pursuit to be involved with environmental history, philosophy, sociology and science studies, including ecology and the life sciences. This is related to Bagula’s words (2015) in the article *Ecocritical Approach to Literary Text Interpretation*. According to him, it is difficult to understand what Ecocriticism actually is because of the diversity of its contents, so in order to avoid any type of confusion Bagula provides a set of top nine aspects of Ecocriticism, where the first one states the following:

It brings knowledge from different scholarly arenas to bear on your analysis of the same person, place, or thing. To illustrate the above aspect, let’s consider this example: A **rose** can be a symbol for love. A rose is also a woody perennial that’s part of the genus *Rosa*. A rose is also a royal flower. A rose can be studied from the perspectives of philosophy, botany, and history, or more. And that’s the heart of interdisciplinarity.

(Bagula, 2015)

Finally, the definition I will propose in my work is an amalgam of all of the ones cited above. Ecocriticism will be conceived in the context of my work as the study of nature and culture inside literary work, identifying their relationships (whether they are harmonious or hostile) through interdisciplinary media. Besides, it is important to know that the previous definition also means that culture and nature are independent entities, that is why Barry (2002) states that “the most fundamental point to make here is that ecocritics reject the notion (common to most of the other theories considered in this book) that everything is socially and/or linguistically constructed”. He also complements that idea saying that nature does not need anything from us, it can exist by itself since it is not only a concept and it goes beyond

our minds and social constructions (Barry, 2002). In the next sub-section I will provide some facts on the emergence of this ecocentric thoughts to see where they come from.

6.2.1.1 Emergence and Development.

Since the beginning of time, humans have been aware of their surroundings and that can be verified in Western and Eastern cultures as stated in *The Future of Environmental Criticism: Environmental Crisis and Literary Imagination* (Buell, 2005) naming the Genesis, Maori and Mayan cultures at the beginning of his first chapter: *The Emergence of Environmental Criticism*. For instance, in the book of Genesis Elohim orders Adam and Eve to manage his creation:

God blessed them, and God said to them, ‘Be fruitful and multiply, and fill the earth and subdue it; and have dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth.

(Genesis 1:28, New Revised Standard Version).

After Elohim gave the creation to the humankind, he told them to take care of it:

“The Lord God took the man and put him in the garden of Eden to till it and keep it.”

(Genesis 2:15)

On the other hand, Maori culture has the Kaitiakitanga concept which means guardianship and conservation. This culture, whose origins date back to 1280 CE, believe all life is connected and there is no superior species. That’s why there are Kaitiaki (guardians) who take care of lakes, rivers, forests, etc.

Thus, the fact that the concept and importance of nature have been in our consciousness is undeniable. Lawrence Buell (2005) supports this idea when he states that “if environmental criticism today is still an emergent discourse it is one with very ancient roots.

In one form or another the idea of nature has been a dominant or at least residual concern for literary scholars and intellectual historians ever since these fields came into being”. However, Ecocriticism has gone beyond the myth behind nature, giving up on the stories about gods and nature keepers chosen by divine entities. On the one hand, ecocriticism as we know it today is based on three major transcendentalists and writers: Margaret Fuller, Ralph Waldo Emerson and Henry David Thoreau (Barry, 2002). On the other hand, others say that the path to its origins goes to the very beginnings of humankind so it is not necessary going that far, Leo Marx’s *The Machine and the Garden: Technology and the Pastoral Ideal in American Culture* and Raymond Williams’ *The Country and the City* are sufficient (Buell, 2005).

For the purposes of this work, accepting Atwood’s denouncement on the consequences of science misuse, we will start from Marx and Williams’ books referenced above, whose importance resides in “the identification of the dynamics of the history of what we would now call national imaginaries in terms of a symbiotic opposition between contrasting prototypical landscapes” (Buell, 2005). They can be related to the environmental or ecocritical movements since both of them focused on history and literary exemplification of the convoluted history of perspectives towards the relationship between nature and culture, for Williams it is nature vs. urbanism and for Marx it is nature vs. industrial technology, i.e., the intrusion of technology (machines) into a rural scene. Furthermore, as said by Buell (2005), they were worried about the prominence and persistence of their national affections to identify that national essence symbolically, Marx proposes a pastoral middle landscape between settlement and the wilderness, whereas Williams talks about country. After these books were published, more works on this kind of topics were written, for example, the subsequent essays from Marx and William’s books. However, one of the works that encloses important and seminal ecocritical essays is *The Ecocriticism Reader* by Glotfelty (1996). In this anthology, the author considers certain ecocriticism’s genesis. He names studies and

efforts made by American scholars to spread this environmental knowledge. In his introduction, Glotfelty (1996) wrote a section on Birth of Environmental Literary Studies, where he states that “in the mid-eighties, as scholars began to undertake collaborative projects, the field of environmental literary studies was planted, and in the early nineties it grew” A testimony of this is the chronological list Glotfelty (1996) makes after the citation already presented:

- In 1985 Frederick O. Waage edited *Teaching Environmental Literature: Materials, Methods, Resources (Options for Teaching)*.
- In 1989 Alicia Nitecki founded *The American Nature Writing Newsletter*.
- In 1991 the MLA (Modern Language Association) special session was organized by Harold Fromm, the name of the session was *Ecocriticism: The Greening Literary Studies*.
- In 1992 the American Literature Association organized a symposium which was chaired by Glen A. Love. This symposium was called *American Nature Writing: New Contexts, New Approaches*.
- In 1992, the Association for the Study of Literature and Environment (ASLE) was formed at the annual meeting of the Western Literature Association.
- In 1993, Patrick Murphy from ASLE, established ISLE. It is the official journal of ASLE. This quarterly journal wants to explore the relation between humans and nature so they publish articles from literary scholars, environmental historians, specialists in the visual and performing arts, environmental philosophers, geographers, economists, ecologists, and scholars in other fields relevant to literature and environment.

Since 1993, this ecological literary study has emerged as a critical school (Glotfelty, 1996) and if one takes a look to organizations such as ASLE, it is

evident that they have grown a lot. For instance, this organization has different branches or related associations: ASLE-UKI in the UK and Ireland, ASLE-Japan, ASLE-India, ASLE-Korea, ASLE-Taiwan, ALECC in Canada, EASLCE in Europe and ASLEC-ANZ. Moreover, there are recent publications that show how updated the ecocritical movement is nowadays. Titles such as *Anthropocene Fictions: The Novel in a Time of Climate Change* (Trexler, 2015), *Ecocriticism of the Global South* (Slovic, 2015) and *Handbook of Ecocriticism and Cultural Ecology* (Zapf, 2016) are some examples.

6.2.1.2 Literary Ecocriticism: Tenets

Since 1978, when the term ecocriticism was first used in an essay titled *Literature and Ecology: An Experiment in Ecocriticism* (Rueckert, 1978), some scholars committed to the environment have been asking about what Ecocriticism is and how it works. In this section, I will present some of them and their perspectives on what an ecocritical way of reading a text is.

The works that will be implemented in these sections are: *The Ecocriticism Reader: Landmarks in literary ecology* (Glottfelty, 1996), *Eco-Critical Theory or E-Theory: Some Newer Perspectives* (Habeeb & Habeeb, 2012) and *Ecocritical Approach to Literary Text Interpretation* (Bagula, 2015).

Taking into account that Glottfelty's collection is a seminal work for modern Ecocriticism, I decided to choose it as the pillar from where the ideas of the other authors are originated. Another important aspect is the key role of nature(non-human) and culture(human)concepts in this work, whose relationship is explained by Barry (2009).

To be able to understand, Glottfelty (1996) in his introduction to his ecocritical collection establishes the main questions, premises and subjects of an ecocritical approach.

The first one to be analyzed here is *How is nature represented?* Ecocritical literature is supposed to stress on how nature is represented, what is its condition and its role inside the narration. It is a character who does not need from humans to exist. Consequently, it is imperative to consider one of Bagula's (2015) strategies of Ecocriticism: How our textual representations of nature render meaningful the world around us? An ecocritical writer or reader, who approach to an ecocritical literary piece, must understand the description of nature inside the text in order to create a meaningful link between the 'fiction' in a novel, for instance, and the environment being lived in their 'real' world.

At the same time, the question *What role does the physical setting play in the plot?* is a crucial one because it leads us to a broader understanding of literature and environment and their role in society. Let's think about Jimmy and Snowman in *Oryx and Crake*. When the writer describes the former's everyday life one can notice that non-humans are just a part of humans' game. They modify and commodify them to their liking. Therefore, in this part of the story, nature is a product that can be bought and sold:

The goal of the pigoon project was to grow an assortment of foolproof human-tissue organs in a transgenic knockout pig host – organs that would transplant smoothly and avoid rejection, [...] Such a host animal could be reaped of its extra kidneys; then, rather than being destroyed, it could keep on living and grow more organs...

(Atwood, 2003a, p. 25)

On the other hand, Snowman is in the hands of the wilderness. In this case, nature is in charge, that is to say, its role is a dominant one, however this domination is not destructive or evil, this is a benevolent way of ruling the world:

On the eastern horizon there's a greyish haze, lit now with a rosy, deadly glow.
 Strange how that colour still seems tender. The offshore towers stand out in dark
 silhouette against it, rising improbably out of the pink and pale blue of the lagoon.
 The shrieks of the birds that nest out there and the distant ocean grinding against the
 ersatz reefs of rusted car parts and jumbled bricks and assorted rubble sound almost
 like holiday traffic.

(Atwood, 2003a, p. 3)

As we have seen, regardless of their role both nature and culture coexist, therefore there is a relationship between them. For this reason, an ecocritical reader must pay close attention to their connection. Glotfelty (1996) reinforces this idea asserting that “human culture is connected to the physical world, affecting it and affected by it” i.e., because we exist, we think and express ourselves thanks to nature, giving it specific meanings depending on our goals as humans. In addition, Bagula (2015) considers “the many relations between literature and the natural world” as well as “how have people related to nature in different ways at different parts in history” Thus, it does not matter how much our language (written or spoken) separates us from the non-human world, we will always be connected to it. It is just matter of analyzing our everyday life, aspects such as oxygen, intestinal bacteria, insects, plant breathing process and so forth. In the same way, eco-literature connects them through narration whatever their role is. That's the reason why Glotfelty (1996) stipulates the Ecocriticism main subject, which is to identify “interconnections between nature and culture, specifically the cultural artifacts of language and literature”.

Finally, a relevant side of ecocritical study is environmental ethics. Habeeb & Habeeb (2012) propose as objectives for ecocritical study “a concern for the present-day issues of threat to wildlife, global warming, industrial pollution, depletion of natural resources,

population, explosion, etc.” and “spread awareness about environment through literature” In other words, ecocritical literature should denounce and raise awareness about the dangers to which nature is exposed. Consequently, it is imperative to recognize what is wrong and what is not when affecting nature, taking into account that we live a perennial relationship with it. Therefore, when conceiving a text through an “eco-ethical” point of view, one should take into account its goals. In the second edition of their book *Boundaries: A Casebook in Environmental Ethics*, Gudorf and Huchingson (2010) state that Environmental Ethics “attempts to expand the circle of moral concern beyond the human species to include at the very least other mammals, perhaps lower animals and plants and finally even entire ecosystems”

In summary, an ecocritical writer/reader should consider:

- The representation of nature.
- The role of nature in the story.
- Nature/Human relationships.
- Environmental ethics.

6.2.2 Stylistics

6.2.2.1 Definition

Stylistics could be referred to as an approach or a branch of another field. Sometimes, it is even discussed if it is a theory or a practice, as in *Beginning Theory: An Introduction to Literary and Cultural Theory* (Barry, 2002) in its section Stylistics: a theory or a practice? Nevertheless, in this very book, Barry provides the basics of Stylistics. He first defines it using the concept: “a critical approach” (Barry, 2002) whereas other scholars say it is a “linguistic approach” (Nøgaard, Montoro, & Busse, 2010). Although they use different adjectives to define it, they both use the word ‘approach’. On the other hand, both sources

agree when they relate the term to linguistics. Barry (2002) conceives Stylistics as “a critical approach which uses the methods and findings of the science of linguistics in the analysis of literary texts” while (Nøgaard et al., 2010) declares that it is necessary to use linguistic models, theories and frameworks to get to understand the way a text works and its meaning through the words on its pages.

Having said that, it is clear that Stylistics, in certain way, depends on Linguistics, hence it has to base its interpretations on hard data and objective aspects to support intuitions about a literary text, as well as use specialized and technical concepts obtained from the science of linguistics (Barry, 2002).

6.2.2.2 Aims and Procedures

As reported by Nøgaard et al. (2010), this approach, which searches the ways in which meaning is created through language, started with Aristotle’s rhetoric; however, in 1960 it was really encouraged by two Russian formalists: Roman Jakobson and Viktor Shklovsky with a more scientific literary inquiry. Since then, this approach has attempt to provide objective and scientific commentaries on literature and other types of texts focusing on “phonological, lexical, grammatical, sematic, pragmatic, and discoursal features of texts” (Nøgaard et al., 2010).

In summary, and as Barry (2002) presents it, here is a list of what stylisticians do when approaching to a text:

- Description of technical aspects of language, e. g. grammar to discover how meanings are made in literature.
- They do that type of description in order to establish objective linguistic data for supporting reading.

- Sometimes they do it to provide a reading based only on linguistic data.
- It is important to consider the fact that literature does not have any aspect which is beyond analysis: It is made by making the technical accounts already mentioned.

6.2.3 Genetic Modification

This section of the Theoretical framework aims to briefly present some relevant concepts and ideas on Genetic Modification. I decided to use this term although one can find some others that describe the same type of technology. Desmond S. T. Nicholl (2003), in *An Introduction to Genetic Engineering*, name some of this terms: gene manipulation, gene cloning, recombinant DNA technology, genetic modification and the new genetics. According to Nicholl (2003), the term genetic engineering is “probably the label that most people would recognize”, defining it as “an all-inclusive term to cover all laboratory or industrial techniques used to alter the genetic machinery of organisms so that they can subsequently synthesize increased yields of compounds already in their repertoire, or form entirely new compounds, adapt to drastically changed environments, etc.”

Nonetheless, and from my point of view, I’m considering the words *genetic* and *modification* as very effective cognates which will be understood perfectly to the Spanish native speaker.

As said before, I will present relevant concepts concerning Genetic Modification. First, important concepts (their definitions and their appearance in Atwood’s story) will be introduced for a better comprehension of what’s the main topic of this work, which is Atwood’s critical perspective on genetic modification. Finally, some ethical concerns, taken from Nicholl (2003), will be presented to contextualize the estate of genetics regarding the society and all its variables, such as religion, family and, above all, moral.

6.2.3.1 Important Concepts

In *Oryx and Crake*, Atwood presents a society based on a huge technological development. This means that this near future shows a very advanced society in terms of gene manipulation. In order to understand this field of science a little bit more, it is necessary to know its basic concepts. Since it is not my intention to delve into genetics, the concepts will be presented as clear/brief as possible using the seventh edition of *A Dictionary of Genetics* (King, Stansfield, & Mulligan, 2006) and the book written by Nicholl (2003).

As we all know, **DNA** is inside us, it is an acid that contains all the genetic instructions in the development and the functioning of organisms. Scientists have discovered several ways to alter it in order to modify certain species and their traits making use of **recombinant DNA technology**, whose purpose is to join DNA molecules *in vitro* and introduce them into living cells where they replicate. According to King et al. (2006) these techniques make possible:

- The isolation of specific DNA segments from almost any organism.
- The synthesis in a host organism of large amounts of specific gene products that may be useful for medicine or industry.
- The study of gene structure-function relationships by *in vitro* mutagenesis of cloned DNAs.

Another term that is used by Atwood (2003a) in *Oryx and Crake* is **transgenic**. King et al. (2006) define **transgene** as an external gene, which is injected into an organism by fertilized eggs. The transgene can be presented in the genomes of some animals, so it might be transmitted to their progeny.

Lastly, Atwood uses the term *splicing*, which is divided into two types: RNA splicing and DNA splicing. For the purposes of this work, I will take into account the DNA one, whose definition is the same as recombinant DNA: “a composite DNA molecule created *in vitro* by joining a foreign DNA with a vector molecule” (King et al., 2006)

6.2.3.2 *Genethics*

The term *genethics*, according to Nicholl (2003), has been coined to describe the ethical problems that exist in modern genetics, which are likely to increase in both number and complexity as genetic engineering technology becomes more sophisticated. On the other hand, people should not state Science is bad or wrong *per se*. Instead, they should take into account its purposes and the means it is using to reach them. This idea is quite supported by Anthony Griffiths (2004) in his article *Genetics According to Oryx and Crake*, where he attacks Atwood’s conception of what Genetics is. However, he says that is not fair to use “genetic engineering as a lightning rod for wrath aimed at the negative outcomes of science in general” (Griffiths, 2004). Therefore, it is not this field’s fault. We should not forget that other fields have brought destruction to our planet, e.g. toxic pollution, super bombs, global warming, etc.

Nonetheless, what does Genetic Modification aim at? According to Nicholl (2003), the premise on which [this] technology is based is that “genetic information, encoded by DNA and arranged in the form of genes, is a resource that can be manipulated in various ways to achieve certain goals in both pure and applied science and medicine” Now, this is clear to be of a great help for humanity, however, the problem began when people started to know that human DNA could also be manipulated, even cloned. They forgot about the areas in which genetic manipulation is of value. Nicholl (2003) reminds us some of them:

- Basic research on gene structure and function.

- Production of useful proteins by novel methods.
- Generation of transgenic plants and animals.
- Medical diagnosis and treatment.
- Genome analysis by DNA sequencing.

People also forget about the efforts that the scientific community has done to avoid unethical procedures using recombinant DNA technology. For example, the Asilomar Conference (1975) was the first time when potential hazards of recombinant DNA research were discussed. In its Summary Statement, the reader can find recommendations and guiding principles for scientists who are in charge of experiments where genetic engineering is applied.

The ethical concerns on genetic manipulation have brought questions such as the neutrality of ethics and moral in terms of genetic modification, the use of animals in research, scientists playing God, etc. For the neutrality question, Nicholl (2003) answers that “scientists are humans, therefore they are not ethically and morally neutral” but he also warns that is not only scientists’ responsibility, he says that “in the developed world, we live in societies shaped by technology, which is derived from the application of scientific discoveries. We must all share the responsibility of policing the new genetic technology” This caution has to make us stop and observe what are the elements of the ethic debate, whose foundation can house several types of ideas: religious conceptions, the concern of animals’ welfare, scientific limits and concerns, etc. In the medical field, Nicholl (2003) notes that the molecular diagnosis of genetically based disease can be validated even before birth, so the dilemma resides in deciding whether or not “a fetus should be aborted if a disease-causing trait is detected” (Nicholl, 2003). On the other hand, the biotechnology industry faces the influence of commercial interests and the complaint of several movements

in the society. That is why Nicholl (2003) lists some ethical questions posed thanks to the development and use of transgenic organisms:

- In the late 1990s, the public backlash against genetically modified (GM) food began to influence what biotech companies were doing.
- GMO effects on health and the environment.
- Transgenic animals are often used in medical contexts. They are generally accepted.

Besides these concerns, we may find organismal cloning: “the most difficult area from an ethical viewpoint” (Nicholl, 2003) It is problematic since there is the possibility that humans can be also cloned, therefore, religious movements and others would question it appealing to what Nicholl (2003) calls the “debate about the unique nature of personality, character, soul, nature, or whatever it might be called”

Before concluding, there is a term quite relevant for the discussion on ethical affairs in terms of human genetic manipulation: ***eugenics***. It is one of the engines that strongly moves Crake in *Oryx* and Crake to do what he does with all mankind. King et al. (2006) describe *eugenics* as “the improvement of humanity by altering its genetic composition by encouraging breeding of those presumed to have desirable genes (positive eugenics), and discouraging breeding of those presumed to have undesirable genes (negative eugenics).” In its definition, the King et. al (2006) also present the coiner of this term, polymath Francis Galton.

In the end, no matter what the reasons or elements of the debate are, society has a huge responsibility, not only scientist but all of us. We must take into account our needs, the limits of our hunger for knowledge and to respect life above all.

7. Literary Analysis: Margaret Atwood's Critical Perspective on Genetic Modification in the Dystopian Fiction *Oryx and Crake*

The purpose of this section is to provide evidence of Margaret Atwood's stance on genetic modification presented in *Oryx and Crake*. She presents, in the story, the genetic manipulation of animal species and food as one of the major topics in the novel. This issue will be the object of an ecocritical analysis, having considered the meanings expressed by Atwood through literary language. The plan is to go through passages from the book to support and understand her perspective. Likewise, each passage will be included in one category from a corpus. This corpus comprises 4 categories, two major ones and two minor ones. The former are the ones that study Atwood's critical perspective on the Crakers and the bioengineered animal species in the book. On the other hand, the latter show her stance on both genetically modified food and pharmaceuticals in the novel.

7.1 The Crakers: The Ultimate Creation

Once Crake has the opportunity to have a complex such as the *Paradise* Dome, he recruits experts on bioengineering in order to accomplish his greatest goal: the creation of the Crakers. These genetically modified beings are conceived by Crake as the key for immortality; this can be seen as he describes it to Jimmy: “-My unit's called Paradise-, said Crake, over the soy-banana flambé. -What we're working on is immortality-” (Atwood, 2003a, pp. 343-344) Although Crakers die, they do not know death since none of them have died during the story; therefore, Crake's conception of immortality it is not about somebody whose body is eternal. Instead, he explains that it “is a concept. If you take ‘mortality’ as being, not death, but the foreknowledge of it and the fear of it, the ‘immortality’ is the absence of such fear. Babies are immortal. Edit out the fear, and you'll be...” (Atwood, 2003a, p. 356) Furthermore, this post-human incarnation has other qualities such as different

skin colors, e.g. chocolate, rose, tea, butter, cream and honey. They also have a way to avoid predators by urinating, “Crake’s model had been the canids and the mustelids, and a couple of other families and species as well. Scent-marking was a wideranging mammalian leitmotif, he’d said, nor was it confirmed to the mammals. Certain reptiles, various lizards.” (Atwood, 2003a, p. 182). In addition to those previous features, they can heal themselves by purring on somebody’s wounds. Although these beings are created to be prepared for the environment Crake thinks they are going to face, they are not immune from wounds. According to the story, Crake spent several years working on the Craker’s purring:

He’d discovered that the cat family purred at the same frequency as the ultrasound used on bone fractures and skin lesions and were thus equipped with their own self-healing mechanism, he’d turned himself inside out in the attempt to install that feature. The trick was to get the hyoid apparatus modified and the voluntary nerve pathways connected and the neocortex control systems adapted without hampering the speech abilities.

(Atwood, 2003a, p. 184)

Considering all the features described above, one might think the Crakers are a good creation since they can help other species, like humans, to improve their life in terms of protection, health, and aesthetics. However, one has to take into account the two sides of the coin. Atwood provides two ways of conceiving the Crakers and that is what is going to be presented in this sub-section.

Firstly, the novel provides four major significant quotes to study Atwood’s perspective on Crakers. The first one presents some positive aspects and features that Crake equipped his creation with. The quote to be analyzed is the following:

No more *No means yes*, anyway, thinks Snowman. No more prostitution, no sexual abuse of children, no haggling over the price, no pimps, no sex slaves. No more rape. [...] Sex is no longer a mysterious rite, viewed with ambivalence or down right loathing, conducted in the dark and inspiring suicides and murders. Now it's more like an athletic demonstration, a free-spirited romp.

(Atwood, 2003a, p. 194)

The context behind this quote is that of Snowman referring to the mate season of Crakers. Their female specimens turn blue on their bellies in order to show the male ones that it is time to mate and to perform a ritual of their own before the coitus. That is why Snowman considers that this feature and subsequent behavior ends misunderstandings and possible consequences from not mating when the moment arrives, saying that people would do many bad things to get sexual pleasure when needed. Having said that, it is understandable that Atwood wants to state that one of the purposes of the creation of the Crakers was to avoid those problematic situations such as raping and sexual abuse.

In addition, the denouncement of maltreatment suffered by some people is shown by Atwood while using the concept of 'sex slaves', referring to people who cannot decide on their sexuality. They have to please other people's will because they belong to them. This aspect, as seen above, has been affecting society for a long time and Atwood presents the sexual genetic modification in the Crakers as something brilliant thanks to the ending of all types of sexual abuse. She means that if humans first learn to take care of themselves and the ones of their same kind, they will be able to respect nature as well, in this case, mating when necessary in order to respect the natural course of the planet and its different inhabitants.

On the other hand, one can also see that the author's critical perspective on these features of the Crakers is a supportive one. That is because when one analyzes the words used

by Atwood, one can see that nouns with negative connotations appear next to the expression “*no more*” and the one having a positive connotation appear next to “*extra*”. Moreover, those adjectival expressions appear repetitively, which could be a sign of stress by Atwood trying to emphasize what she agrees and what she does not.

The second relevant quote is about the impact of Crakers’ habits on nature. According to the story, they do not eat meat: “...the Children of Crake are vegetarians and eat mostly grass and leaves and roots...” (Atwood, 2003a, p. 186) and that is because they have a quite efficient alimentation and digestive process. In order to take more advantage of food, the Crakers consume something called *caecothrops* “consisting as they do of semi-digested herbage, discharged through the anus and re-swallowed two or three times a week.” (Atwood, 2003a, p. 187) The author was inspired, according to the story, by the *Leporidae* (rabbits and hares).

In the quotes presented above, Atwood invites the reader to imagine how the future of the Earth would be if the Crakers stayed instead of the humans that inhabit it nowadays. The Children of Crake, as they are also known, would not kill to eat, even if they are suffering from starvation and they would not eat if they are not hungry, i.e., the irresponsible consumption of food that comes from animals whose means are destructive would have an end if the Crakers thrived. This does not mean that Atwood is trying to say that humanity deserves to be totally destroyed (as Crake does); she is saying that people should change their ways and become more aware of their natural surroundings. When the author mentions the reusing-food feature of the Crakers, she describes as a “boy-genius concept” (Atwood, 2003a, p. 187). Thus, she lets the reader understand that it is something quite brilliant that despite being revolting, it is a way of saving resources and an ecofriendly way of exploiting the benefits given by nature.

So far, just one side of the coin has been shown, which is the positive perspectives Atwood provides on the Crakers. Now, let us see the other side of the coin to make a contrast between the positive features the Crakers have and why they were not totally a good idea of Crake's. In order to present those negative aspects, I decided to discuss about sexuality within human beings. The fact that it is essential in human lives is undeniable; i.e., many of humans' problems or the things they do are dependent on their sexual lives. Sex is important for humans, and not only for reproduction needs, but for pleasure as well. Crake, who is not represented as a usual lover, understands the ways humans behave in terms of the erotic component of their lives. That is why he decides to disguise human extinction in the form of bliss. Although the BlyssPluss Pill is not a component of the Crakers in terms of their biological constitution, it is part of the plan and an important issue in the Paradise Project. There are two passages from the book that describe the BlyssPluss pill's features and aims in order to show what is the cost that humans had, in Crake's plans, to allow the Children of Crake to accomplish what he wants: a new humankind.

The first passage introduces the aforementioned pill:

Within Paradise, said Crake –and they'd visit the facility after lunch –there were two major initiatives going forward. The first–the BlyssPluss Pill–was prophylactic in nature, and the logic behind it was simple: eliminate the external causes of death and you were halfway there.

(Atwood, 2003a, p. 345)

The second quote specifies the effects of the pill:

a) would protect the user against all known sexually transmitted diseases, fatal, inconvenient, or merely unsightly;

- b) would provide an unlimited supply of libido and sexual prowess, coupled with a generalized sense of energy and well-being, thus reducing the frustration and blocked testosterone that led to jealousy and violence, and eliminating feelings of low self-worth;
- c) would prolong youth.

(Atwood, 2003a, p. 346)

Both quotes from the novel present the BlyssPluss pill as an incredible pharmaceutical invention whose purpose is to end antagonistic features of human behavior caused by sexual frustration and other aspects that are the consequence of not using the sexual energy in a proper way. In the first quote, the author mentions powerful nouns of our everyday life: war, economy, race and religion (actually all of them, but *war*, are in their adjective form) When it is said that they are powerful, it means that they call people's attention powerfully when they are pronounced while discussing worldwide social issues, and, as Crake explains, they are frequently accused of being the cause of many of humankind's problems. In the second quote mentioned above, Atwood describes the characteristics of the pill's functions with verbs that usually possess a positive undertone: protect, provide and prolong. Those words would get into a customer's mind as something reassuring, or helpful if you will, making him feeling sure that the product in question will not be harmful. The way Crake disguises the real goal of this pharmaceutical invention is outstanding due to the way it approaches the customer, in other words, it guarantees him that he will become a sex god, i.e., limitless sex, no boundaries, no infections, pure bliss.

As stated before, these quotes are intended to be the explanation of why the Crakers' creation is not good in every respect. At first glance, Crake's goal seemed to be altruistic since he decided to decimate the human kind, even himself, for nature's sake; however,

Atwood presents Crake as a mad scientist whose intentions are egotistic, otherwise egomaniacal, expecting a solution of worldwide problems by destroying, not the source, but the being who can perceive it and find millions of paths that can conduct to a win-win resolution. Therefore, the reason why the existence of the Crakers is not entirely good is because of his creator's means of achieving his goals.

7.2 Bioengineered Animals: Scientists Playing God

First of all, it is pertinent to state that experiments such as the pigoon project (pigs that hold human organs to be transplanted) are not that far away in the future as one may think. The prestigious science journal *Cell*, published an article called *Interspecies Chimerism with Mammalian Pluripotent Stem Cells* (Wu, J., Platero, A., Sakurai, M., Sugawara, A., Gil, M., Yamauchi, T., . . . Izpisua, J., 2017) where the results show that scientists have created the first human-pig embryo, making the idea of a human-pig being more realistic than ever. Nevertheless, the intention is not to elaborate on that specific topic but to make the reader note that Atwood is accurate when speculating and denouncing, through a novel, that human organs will grow inside pigs to help people when they need a new one. Moreover, the aim is to analyze how Atwood presents the genetic modification in animals; i.e., the language she uses and the ecocritical analysis of the passages which contain the evidence of this kind of manipulation.

Margaret Atwood created, through *Oryx* and *Crake*, a world full of new species. Those creations were made by scientists who felt inebriated with power, the power of modifying and creating life. The author mentions that feeling when she talks about the new species these scientists created in their laboratories just for fun:

The rakunks had begun as an after-hours hobby on the part of one of the OrganInc biolab hotshots. There'd been a lot of fooling around in those days: create-an-animal was so much fun, said the guys doing it; it made you feel like God.

(Atwood, 2003a, pp. 56-57)

After those days, species such as the rakunk, the glowing rabbit, bobkitten, spoot/gider, bulb-like chicken, and the wolvogs were created. Although in this passage Atwood only mentions the rakunk, she expresses the lack of responsibility shown by those scientists when she uses expressions such as 'fooling around' and 'after-hours hobby'. This makes the reader aware of how irresponsible the people who have this type of knowledge could be; however, this behavior is led by something much stronger: arrogance and pedantry. The author describes what these people felt when creating species at their will, they felt like God. Therefore, they did not take into account the possible consequences of playing with the structures of life and of having those species into the wild. In other words, Atwood tells us that, in certain way, human knowledge and techniques have separated us from nature, that natural link is almost gone and now we are playing God and altering everything only because we can.

Among all those genetically modified creatures mentioned above, there is a notable animal in Atwood's story: the pigoon. This animal is relevant in the story since it is the depiction of many aspects that will be developed in this sub-section. The following paragraphs will consist in the citation of four relevant passages in the novel whose content allows the analysis of its significance in terms of an environmental perspective.

The goal of the pigoon project was to grow an assortment of foolproof human-tissue organism a transgenic knockout pig host –organs that would transplant smoothly and avoid rejection, [...] Such a host animal could be reaped of its extra kidneys; then,

rather than being destroyed, it could keep on living and grow more organs, much as a lobster could grow another claw to replace a missing one. That would be less wasteful, as it took a lot of food and care to grow a pigoon. A great deal of investment money had gone into OrganInc Farms.

(Atwood, 2003a, p. 25)

In this passage, Atwood describes a creature that can hold human organs, which is something that can sound weird to most of the people but the author, who made her own research on genetic modification, tries to warn us through this type of creatures. Once again, the debate on ethics concerning genetic manipulation is within Atwood's lines. She shows an idealistic description of a medical advance in terms of organ transplant, an opportunity for people who need it urgently or for the ones who want to last forever. Imagine a person who reaches age twenty with the certainty that he can replace any organ from his body; this would lead to a non-responsible behavior towards life and health-care. On the other hand, animals would continue being seen as products and not as beings who have their own rights to live and to develop as species that are supposed to live their own way into the wild. Atwood also talks about profit when she uses the term 'wasteful' referring to what OrganInc might get or lose from providing the service of saving organs for future transplants. Thus, they forget once again about animal rights.

The second quote is also an evidence of animals being treated as objects. Atwood uses adjectives such as the participle *customized* and the comparative *cheaper*. Those terms are usually used when one talks about something that can be bought or sold, not about a being whose essential rights, as a living one, should be taken into account:

The pigoon organs could be customized, using cells from individual human donors, and the organs were frozen until needed. It was much cheaper than getting yourself

cloned for spare parts –a few wrinkles left to be ironed out there, as Jimmy’s dad used to say – or keeping a for-harvest child or two stashed away in some illegal baby orchard.

(Atwood, 2003a, P. 27)

Despite the values and conceptions that may change with the existence of such a creature like the pigoon, it is true that its features would help a lot of people with their health, therefore their life style. Nonetheless, there is a quality that Atwood shows as something dangerous, it is the rapid-maturity gene. This gene, as its name suggests, is one that allows the creature to get bigger in little time, as well as learning faster and better, since a group of neuroscientists grow genuine human neocortex in the brain of some of the specimens. The narrator relates one of the dangers lived by Snowman due to the consequences of the rapid maturity gene and the physical modifications and intelligence it provides to the pigoons:

...one morning he’d woken to find three pigoons gazing in at him through the plastic. One was a male; he thought he could see the gleaming point of a white tusk. Pigoons were supposed to be tusk-free, but maybe they were reverting to type now they’d gone feral, a fast-forward process considering their rapid-maturity genes. He’d shouted at them and waved his arms and they’d run off, but who could tell what they might do the next time they came around?

(Atwood, 2003a, p. 42)

That genetic modification of inserting a modified gene to allow a species to grow faster is an example of how wrong it is to disdain the time in which nature has decided the creatures to be developed, or to die. Moreover, it can also be noted the way this kind of

modification can go wrong, that is to say, how genetically modified features can turn against humans themselves, to the point of reversing the food-chain, as stated by Ku (2006).

To conclude this sub-section, there is one of the most telling passages on genetically modifies animals. The passage is about an argument between Sharon (Jimmy's mother) and Jimmy's father (he is unnamed) after he tells her about the neuro-regeneration project, i.e., scientists who introduce human neocortex tissue in a pigoon. Whereas he celebrates it, she disapproves it because she finds it absolutely unethical. In this passage, particularly, both characters represent a stance on genetic manipulation. Jimmy's father is an enthusiast who believes in what they are creating at the OrganInc laboratory. Although he knows that they take advantage of people's suffering, he tries to disguise it as he says that they are really helping them by giving them 'hope': "We now have genuine human neocortex tissue growing in a pigoon. Finally, after all those duds! Think of the possibilities, for stroke victims, and ..." (Atwood, 2003a, p. 63). On the other hand, Sharon thinks it is not giving hope but taking advantage of people's needs and suffering. That is why she says: "You and your smart partners. Your colleagues. It's wrong, the whole organization is wrong, it's a moral cesspool and you know it." (Atwood, 2003a, p. 64) Moreover, she supports her idea when she tells him that: "You hype your wares and take all their money and then they run out of cash, and it's no more treatments for them. They can rot as far as you and your pals are concerned. Don't you remember the way we used to talk, everything we wanted to do? Making life better for people –not just people with money." Atwood, through Sharon, conceives that way of manipulating the structure of life as something desecrating: "You're interfering with the building blocks of life. It's immoral. It's ...sacrilegious." (Atwood, 2003a, p. 64); on the other hand, she presents Jimmy's father as somebody who does not concern about these issues because he works for companies which only think about profit. That can be seen in the following quotes:

There's nothing sacred about cells and tissue, it's just ..." (Atwood, 2003a, p. 64) and "Anyway it's been paying for your room and board, it's been putting the food on your table. You're hardly in a position to take the high ground." (Atwood, 2003a, p. 64).

When one analyses the quotes above, it can be seen that Sharon condemns those practices repeating that it is 'wrong', also calling it a 'moral cesspool' because they are playing god as they interfere with the natural processes. However, she forgets that she was once part of those people she accuses of transgressing life structure and that she is, in fact, part of the systems she feels disgusted at because she suffers of an addiction to tobacco which is one of the big beasts that we feed every day: "...you're a one-woman emphysema factory, plus you're single-handedly supporting the tobacco companies. Think about that if you're so ethical. They're the folks who get six- year-olds hooked for life bypassing out free samples." (Atwood, 2003, p. 64)

On the one hand, Sharon would incarnate human's hypocrisy when criticizing the machinery and its processes. She is (or was) part of it, she consumes from it, she pollutes it, however, she condemns it as she uses words such as *immoral* or *sacrilegious*. On the other hand, Jimmy's father is also a nature-enemy since his science makes him approach the universe in a strong anthropocentric way. He does not consider the possible consequences upon the nonhuman other or the people around him, he is an absent person in every family aspect. Both sides are attached to a system which is conceived by each one in a very different way. Apparently, as Atwood insinuates, death is the only way out; when Sharon decides to escape because she cannot stand a life made of Machiavellian structures, the CorpSeCorps agents start looking for her and asking Jimmy to tell them about her whereabouts. The last picture the reader witnesses is her death, the end of her fight against the corruption inside the compounds: "No question, it was his mother [...] *Wait*, he wanted to yell, but that was that,

pullback shot, eyes covered again, zap zap zap. Bad aim, red spurts, they almost took her head off. Long shot of her crumpling to the ground” (Atwood, 2003a, p. 303).

Conclusively, the reader is forced to question himself: does Atwood mean that there is no way out of the system? Once genetic manipulation has advanced in a certain level, will it be something we cannot hide from? According to the quotes analyzed in this sub-section, it seems Atwood refuses the idea of manipulating animals just for marketing purposes. However, it is not completely accurate to say that her critical perspective is one that only disapproves genetic modification. For that reason, I will discuss that in further paragraphs.

7.3 Modified Food: Removing the Animality

An *Oryx* and *Crake* reader would be able to confirm that Atwood gives priority, in terms of appearance in the story, to animal GMOs (Genetically Modified Organisms). Nonetheless, the author also provides examples of seeds that are genetically engineered. But what are bioengineered foods? According to Bren (2003), they are plants that have received genetic modifications (gene splicing) in order to have the traits the creator desires. She also states that “the first genetically engineered whole product -a tomato- went on the market in 1994.” (Bren, 2003) It means that we are consuming this type of products for more than two decades, and nowadays some consumers do not even know they are eating fruits or vegetables that have been genetically engineered. Actually, I would dare to say that some of these people are still calling those foods ‘natural’.

The most notable example that Atwood provides of this kind of foods are coffee seeds that grow quite fast:

Until then the individual coffee beans on each bush had ripened at different times and had needed to be handpicked and processed and shipped in small quantities, but the

Happicuppa coffee bush was designed so that all of its beans would ripen simultaneously, and coffee could be grown on huge plantations and harvested with machines. This threw the small growers out of business and reduced both them and their labourers to starvation-level poverty.

(Atwood, 2003a, p. 209)

This passage is a clear example of what time and money mean nowadays. We cannot consider what is best to nature, i.e. soil, air, animal and vegetal species, even for ourselves. According to Landry (2015) when one plants those types of GMOs, there are several things to be considered in terms of environmental impact. Those crops can grow very fast but there are repercussions, that is why she states, in *Challenging Evolution: How GMOs Can Influence Genetic Diversity* (Landry, 2015), that “A major concern of genetically modified organism is that they will cause reduced genetic diversity of plants and animals in the environment” and “If advantageous genes are introduced into GMOs, it may allow them to become more fit than their wild relatives”.

Atwood also shows the reader how the big companies are crushing the small food producers around the world. The reader can note this when she uses terms to draw that big ‘monster’ inside our minds. For example, she describes the great efficiency of those companies and uses a word that serves as an evidence: ‘simultaneously’. This word shows that the companies can do it faster than a small producer. Moreover, Atwood uses words such as ‘machines’ and ‘huge’ to tell the reader that the big producer can make it better and bigger. However, what is the cost of doing it so efficiently?

From an ecocritical perspective, nature suffers a lot of consequences when humans grow genetically modified crops. Furthermore, this way of fast-producing methods also cause detrimental aspects on humans, as Atwood (2003a) describes it, in the passage above, the big

companies are devouring the small grower and tearing them apart. They cannot stand competition so they produce by any means necessary. This means, once again profit is more important than environment's welfare.

Now, I will provide evidence of Atwood's conception of animal food that has been genetically modified. She introduces a quite disturbing creature, which is in the Watson-Crick Institute's laboratory, used to get food from it. This animal is alive but it does not look like a living thing: "What they were looking at was a large bulblike object that seemed to be covered with stippled whitish-yellow skin. Out of it came twenty thick fleshy tubes, and at the end of each tube another bulb was growing." (Atwood, 2003a, p. 237). Crake explains Jimmy that those are chicken parts and the latter seems quite disturbed with the idea of growing only living parts of an animal: "But there aren't any heads, said Jimmy. He grasped the concept – he'd grown up with *sus multiorganifer*, after all –but this thing was going too far. At least the pigeons of his childhood hadn't lacked heads" (Atwood, 2003a, p. 237) he also gives his opinion on those creatures when he says: "This is horrible," said Jimmy. The thing was a nightmare. It was like an animal-protein tuber." (Atwood, 2003a, p. 237). At the end of Jimmy's excursion into one of the Watson-Crick's laboratories, a scientist that is with them (Crake and Jimmy) tries to justify the creation of such a creature:

No need for added growth hormones, said the woman, "the high growth rate's built in. You get chicken breasts in two weeks –that's a three-week improvement on the most efficient low-light, high-density chicken farming operation so far devised. And the animal-welfare freaks won't be able to say a word, because this thing feels no pain.

(Atwood, 2003a, p. 237)

Before going deeper into the analysis of this passage, it is relevant to remind the reader that in this novel, Jimmy represents a person who is fond of animals. This can be seen when he used to go to OrganInc farms when he chanted to the pigoons “Pigoon, balloon, pigoon, balloon” (Atwood, 2003a, p. 25) in order to pacify them. Furthermore, he demonstrates his love to animals when story describes his relationship with Killer, his rakunk pet: “His secret best friend was Killer. Pathetic, that the only person he could really talk to was a rakunk.” (Atwood, 2003a, p. 67). Thus, it is important to know Jimmy’s affections and concerns on animals because in the relevant passage, already shown, Jimmy plays the role of an ecocentric-like person since he considers chicken as thinking beings. When he asks about the head and what those things are thinking, he demonstrates his and the author’s ecocentric perspective (which is something weird in him) on the significance of an animal. Then he describes what he sees as *horrible*. This can give a clue of what Atwood thinks about this type of animal treatments and their genetic modification in laboratories, where profit is the scientists and companies’ main goal.

The analysis of the ChickieNobs could be sorted into 3 aspects: *Genethics*, animality, and production/profits. I consider the ethical issues in this passage are quite evident, Jimmy’s disgust is the voice of people who consider that nature should keep its naturality, obviously if we exist we modify it with our footprint, however, if humans modify the genetical structure of an animal to the point of deleting its most basic brain functions, such as the ability of feeling pain, we are now discussing how humans have forgotten the natural purposes of everything, only considering the thing that can make profit to them, not only an economic one but also in terms of their vagary. As Galbreath (2010) implies, the consumers do not want blood and parts that remind them that killing was necessary for them to eat an animal product. Therefore, those whims of humans can be pleased by altering animal’s structures. In this case, this animal is just flesh, no limbs, no eyes, no ears, just what it takes to grow big

breasts, thus taking advantage of everything from it. The price of doing so, it that the animal has been deprived from its ‘animalness’ i.e., what makes him an animal being, significant in its own point of view and for nature per se.

7.4 Pharmaceuticals: Exterminating all Diseases, Creating New Ones.

Pharmaceutics has been related to genetic engineering in certain ways such as *pharming*, which is “The use of crops as biological factories” (Kraemer, 2012) i.e., the possibility of bioengineering animals or plants in order to create pharmaceutical aids for the public. However, the passages to be analyzed in this sub-section are not specifically about genetically engineered pharmaceuticals, instead I decided to analyze the ethics behind pharmaceutics in the story. As I explained in the sub-section 7.2, Crake reaches his goal using the BlyssPluss pill as a means to pave the way for the Children of Crake. Nevertheless, what did it take to make the BlyssPluss project real? The passages hereunder present how Crake accomplished his goal of creating the foresaid pill.

Before doing everything Crake did, he tried to understand how the compounds and their companies work. It was when he understood that HelthWyzer was doing more than everybody thought. He realized that sometimes the hero has to create his own enemies to be recognized as the protagonist. The following passage confirms that HelthWyzer was providing medicines for all the diseases, but they were also creating new ones for the sake of their business:

Listen, this is brilliant. They put the hostile bioforms into their vitamin pills – their HelthWyzer over-the-counter premium brand, you know? They have a really elegant delivery system – they embed a virus inside a carrier bacterium, *E. coli* splice, doesn’t get digested, bursts in the pylorus, and bingo! [...] Naturally they develop the

antidotes at the same time as they're customizing the bugs, but they hold those in reserve, they practice the economics of scarcity, so they're guaranteed high profits."

(Atwood, 2003a, p. 247)

Here we can see how anxious is Crake with this discovery, he has found out how the business of pharmaceutical companies work, and apparently, he agrees. One of the reasons is the way he conceives it, so clearly and he even refers to that as something *brilliant*. One cannot find evidences of disapproval in his words, even knowing that his father was murdered because of his knowledge of this Machiavellian plan. Consequently, he decides to do the same but not for starting his own business but for exterminating humankind. HealthWyzer *modus operandi* was his muse. Instead of placing E. Coli into his pills, he decides to insert a hemorrhagic and assassin virus in order to get what he wanted.

Here, we have an ethical discussion which can be led by a bookcase called *The Ethics of Pharmaceutical Industry Influence in Medicine* (Haque & De Freitas, 2013) which explains certain issues on pharmaceutical ethics. The first one is that there is always a conflict of interests. They say that the pharmaceutical companies usually incentive and influence both the customer and the physicians, that is because it gives them a huge amount of profit but the patient needs are also important, they expect to receive safe and effective medication from these companies (Haque & De Freitas, 2013). Haque and De Freitas also state that despite the objectives of the pharmaceutical companies, "the primary ethical interest within medicine should be the maximization of the health and wellbeing of patients." Moreover, when one refers to deceiving the customer, it is important to consider that "In principle, this behavior is regulated by drug administrations, which typically work to ensure that drug marketing not be false or misleading, as well as that it always include drug risks presented in a balanced manner." (Haque & De Freitas, 2013)

Evidently, Crake did not respect any of the ethical principles here proposed in the bookcase published by the UNESCO. As the reader could see in sub-section 7.1, the BlyssPluss pill is a deceive by Crake's brilliant mind. He sold the pill with an additional ingredient, a virus and since his marketing campaign does not mention it, it could be considered as a pharmaceutical fraud. On the other hand, in order to perfection his pharmaceutical creation, he experimented with poor and desperate people who needed money:

"Where do you get the subjects?" he said. "For the clinical trials?" Crake grinned. "From the poorer countries. Pay them a few dollars, they don't even know what they're taking. Sex clinics, of course – they're happy to help. Whorehouses. Prisons. And from the ranks of the desperate, as usual."

(Atwood, 2003a, p. 349)

One can notice that Crake says that those test procedures are usually applied on poor and desperate people. Thus, in this passage (and in the story) he embodies the mad scientist who does not care about the possible consequences on the environment or the people who shares this planet with him. He is the counterpart of Jimmy, both are egotistic in their own way, which means all humans are in certain aspects. However, Crake is the knowledge, the geniality, and the power, whereas Jimmy represents the other side, the creativity in terms of arts and language, the concern in terms of the environment, the voice that tells you that something is wrong but then you finally accept being part of it.

The paragraphs above attempted to achieve the first objective of this work: to collect and to analyze the clues that insinuate Atwood's critical perspective on genetic modification and related issues. Now, in order to respond the question *What is Atwood's critical perspective on genetic modification in the dystopian novel Oryx and Crake*, which is the

second objective of this monograph, I decided to continue the analysis and interpretation in order to complement what I have already done so far.

In the first place, based on the ecocritical analysis made to the relevant passages in *Oryx and Crake*, I can state that Atwood's critical perspective on genetic modification in this story is one of disapproval, denouncement, and warning when it represents a deadly danger to life on our planet and profit to big companies. For example, the Crakers seem to be a good idea: the greatest solution to save the planet. However, behind the Children of Crake the reader can find several aspects that may tell a different story between the lines.

The first problem is that they are too naïve; as a result, they are not able to protect themselves from the dangers released by the chaos caused by the Jetspeed Ultra Virus Extraordinary (the virus encysted in the BlyssPluss pill). Atwood, certainly, shows their defenselessness in the following passage: "Despite their irritating qualities – among which he counts their naïve optimism, their open friendliness, their calmness, and their limited vocabulary – he feels protective towards them" (Atwood, 2003a, p. 180). Thus, if Snowman had not been there to protect them, they could have died soon.

On the other hand, the disadvantage described above is not that relevant when one takes into account Crake's hidden agenda; i.e., his secret plan to make the Crakers thrive. In the first chapters of the book, the reader can notice that Snowman complains about what Crake had done without knowing what it was: "Crake! He yells. Asshole! Shit-for-brains! [...] You did this!" (Atwood, 2003a, p. 12). The reader can infer that it was something really bad since civilization has been destroyed and the only human being alive is Snowman.

Another evidence of Crake's secret plans is when, almost at the end of the story, Atwood unveils what he had done when Snowman describes what was inside the BlyssPluss pill: "...I am able to report that the JUVE virus was made here in the Paradise dome by

splicers hand-selected by Crake and subsequently eliminated, and was then encysted in the BlyssPluss product.” (Atwood, 2003a, p. 404). This genetic modification introduced to destroy humanity is condemned by Atwood when she shows a miserable Snowman trying to survive, living on a tree, and blaming his old friend.

Atwood also disapproves what Crake did while she shows his unethical behavior (see *Pharmaceutics: Exterminating all Diseases, Creating New Ones*) when approving pharmaceutical companies’ business, saying that their modus operandi is “brilliant” (Atwood, 2003a, p. 247). It is evident that he does not care and through his speech the author also denounces how these companies test their products. According to her, pharmaceutical companies test their products on people “from the poorer countries. Pay them a few dollars, they don’t even know what they’re taking. Sex clinics, of course – They’re happy to help. Whorehouses. Prisons.” (Atwood, 2003a, p. 349). Thus, the gene splices created by these pharmaceutical groups are a clear evidence of a lack of respect towards nature because they are creating new diseases (Atwood, 2003a, p. 247) only to obtain more profit from the sales.

Another example of Atwood’s denouncement is the arrogance of scientists who managed to alter the genetic structure of species in order to create new ones. In the story (see *Bioengineered Animals: Scientists Playing God*) she talks about a god-like feeling (Atwood, 2003a, p. 57) described by the scientists who were crossing species and creating splices just for fun. Moreover, the creation of specimens just for marketing is an opportunity Atwood takes to question science and its pedantry towards nature. Atwood calls science to the stand when she confronts Jimmy’s parents’ thoughts on genetic modification. In sub-section 7.2, I presented the argument between Sharon and Jimmy’s father in order to analyze the expression the author uses through Sharon’s speech. This woman represents the voice of an environmental activist who is tired of the companies that take advantage of people’s suffering by taking their money and swindling them (Atwood, 2003a, p. 64). Thus, this is another

passage that makes it evident that Atwood is against genetic modification when it is used solely for economic purposes because, as she has argued in different contexts, scientists cannot just interfere with life structure just to make some people richer. In my opinion, species have evolved according to nature's cycles and processes and, apparently, the profit taken from modifying genes has broken the link between humans and nature because now we feel we have the power to create, destroy and modify nature.

The last aspect that I will consider to support my interpretation is the fact that food genetic modification began several years ago, specifically in 1994 (Bren, 2003), and Atwood is aware of this. She denounces, in *Oryx* and *Crake*, the possible maltreatment of some species, such as chickens, which might be suffering at huge poultry farms all around the world. In the novel here analyzed, Atwood insinuates that, maybe, they are even modifying their chickens to have no head or limbs (Atwood, 2003a, p. 237); this would be a more efficient way of producing chicken meat because there is no waste and it does not seem like an animal to the consumer. Atwood describes this possibility (see *Modified Food: Removing the Animality*) as something *horrible* through Jimmy's voice. That description makes her disgust and disapproval quite evident within the story.

Concluding and taking into account that one of the main aspects of an ecocritical reading is to consider how nature is represented in the story, I must say that the representation of nature throughout the story is one that shows two sides of it. In the first place, nature could be conceived as something 'malleable'. This can be noticed through all the passages already analyzed in this work where nature is not independent from society but something that can be changed at human's will. On the other hand, after the chaos nature exists by itself. The lack of human interference provides calm and harmony:

On the eastern horizon there's a greyish haze, lit now with a rosy, deadly glow [...]
The offshore towers stand out in dark silhouette against it, rising improbably out of
the pink and pale blue of the lagoon. The shrieks of the birds that nest out there and
the distant ocean grinding against the ersatz reefs of rusted car parts and jumbled
bricks and assorted rubble sound almost like holiday traffic.

(Atwood, 2003a, p. 3)

This contrast is to show what Atwood denounces in order to warn us; i.e., if we continue with
our consumerism, disrespect towards nature, and our anthropocentrism we will disappear;
nature will not because it does not need society to be. It does not need to be socially
constructed in order to create and to continue its existence. Instead, we do need nature and the
link that we are supposed to have with it.

Conclusions

The main purpose of the present work was to find evidence of Atwood's critical perspective on genetic modification in her speculative-fiction novel *Oryx and Crake*. What I found through the reading, and an ecocritical re-reading of the story, is that the language used and Atwood's ecocentric way of telling the story are evidence of the author's discontent with genetic modification when it is meant to make profit out of maltreating nature. Throughout *Oryx and Crake*, the reader can notice how genetic modification (when its main purpose is profit without caring about nature) rules the society depicted in the story and the way its citizens conceive life and humanity itself. In the story, people think they could be immortal because they can have unlimited organs for transplantation, and they also conceive food as something that has to be tasty, no matter where it comes from.

From my point of view, it is important to compare what I found to the findings of previous analyses of *Oryx and Crake*. For example, Bouson (2004) states that through *Oryx and Crake* Atwood tries to show that this era of advanced scientific manipulation and control may lead us to a catastrophe. On the other hand, I consider that human greed has contaminated science and knowledge. This contamination has created an uncontrolled manipulation of ourselves and the things that surround us, leading us to an unavoidable self-destruction as seen in Atwood's novel. However, as Atwood (2003b) states while explaining and describing his Speculative fiction, these thoughts are just a *what if?*

Another work that can be compared to mine is the one written by Séverac (2012). I may say that I agree with the author when she states that, through *Oryx and Crake*, Atwood wants to move the reader "in order to make things change" (Séverac, 2012). That is what I expressed when I interpreted Atwood's novel (as seen in chapter 7) because I believe Atwood's main purpose is to warn the reader, and people in general, about the things that

might happen if we continue trusting companies that only think about profit and not nature's welfare. In the same way, Faure (2015) says that Atwood "calls for a change", that is to say, that she does not approve the way society, in the story, manages the power of controlling and manipulating nature. Thus, it can be stated that my interpretation of *Oryx and Crake* is in agreement with Faure's. As one can see, other readers have also interpreted Atwood's *Oryx and Crake* as a denouncement, disapproval, and warning of genetic manipulation for economic purposes.

From my point of view, analyzing *Oryx and Crake* is to find out that there are several problems in the way humans are applying scientific knowledge. That is to say, today marketing is ruling several aspects of our lives. The current philosophy is to consume regardless of the environmental cost.

On the other hand, after studying *Oryx and Crake* and the ideas behind the relatively new field of ecocriticism, I find that Atwood's literary work could be the object of further analysis. For instance, an eco-phenomenological approach could be followed in order to study environmental ethics in the story. The eco-phenomenological relation between humans and their interaction with the physical world can be seen in works like *Heidegger and Eco-Phenomenology: Gelassenheit as Practice* (Harvey, 2008), where the author attempts to demonstrate and clarify the applicability of Heidegger's thought for environmental ethics.

Additionally, my analysis, being the first one of its kind at Escuela de Ciencias del Lenguaje, could be conceived as one that, to a certain extent, constitutes a springboard for further literary research from a new paradigm, namely ecocriticism, in our immediate academic context. It is my intention to invite all the students and scholars who are interested in an ecocritical approach to literature to consider the importance and significance of literature in terms of the environment. What a writer is able to do through literature is

something powerful, because he or she may change the way a reader conceives himself through other species, and through alternative realities.

Finally, the relevance of Atwood's novel *Oryx and Crake* in the current society is huge since people's consumerism is leading humanity to a dead-end where self-extermination awaits. This kind of thought and approach might be considered as trite naïve rebel eco-militancy; however, the kind of reflection presented in this monograph is just an invitation to think in a more ecocentric way, and stop thinking that human issues are the most important on this planet and that we rule Earth. Even though we control certain aspects of nature, we cannot completely destroy it because it is nature the one that houses us, not the way around. We can destroy ourselves if we continue on the road we are now. Now it is zero hour, time to go.

List of References

Works Cited

- Atwood, M. (1973). *Travels Back*. Mclean's, 86 (1), p. 31.
- Atwood, M. (1980), "Preface", *The Edible Woman*. London: Virago, p. 8.
- Atwood, M. (1982). Northrop Frye Observed. *Second Words: Selected Critical Prose* 1960, 82, 398-406.
- Atwood, M. (2003a). *Oryx and Crake*. New York: Nan A. Talese.
- Atwood, M. (2003b). Perfect storms: writing Oryx and Crake. *Margaret Atwood Oryx and Crake*.
- Atwood, M. (2005). *Moving targets: writing with intent, 1982-2004*. Toronto: Anansi.
- Atwood, M. (2011). *In other worlds: SF and the human imagination*. New York: Nan A. Talese/Doubleday.
- Atwood, M. (2013, November 7). *Green Policies*. Retrieved February 01, 2017, from <http://margaretatwood.ca/green-policies/>
- Atwood, M. E. (2016, June 09). It's Not Climate Change-It's Everything Change. Retrieved January 14, 2017, from <https://medium.com/matter/it-s-not-climate-change-it-s-everything-change-8fd9aa671804#.g736a5pd8>
- Bagula, N. (2015). Ecocritical Approach to Literary Text Interpretation. *International Journal of Innovation and Scientific Research*, 18(2), 369-378. Retrieved January 15, 2017, from <http://www.ijisr.issr-journals.org/>

Barry, P. (2002). *Beginning theory: an introduction to literary and cultural theory*.

Manchester: Manchester University Press.

Bergthaller, H. (2011, December 28). What is Ecocriticism? Retrieved January 14, 2017, from <http://www.easlce.eu/about-us/what-is-ecocriticism/>

Bhalla, A., Bhangu, J. P. K., & Singh, M. (2014). Margaret Atwood's *Oryx and Crake*: an Ecocritical Approach. *International Journal of Research*, 1(10), 765-772.

Bouson, J. B. (2004). "It's Game Over Forever": Atwood's Satiric Vision of a Bioengineered Posthuman Future in *Oryx and Crake*. *The Journal of Commonwealth Literature*, 39(3), 139-156.

Bradbury, R. (1953). *Fahrenheit 451*. New York: Ballantine Books.

Bren, L. (2003). Genetic engineering: The future of foods?. *FDA consumer*, 37(6), 28-34.

Buell, L. (2005). *The future of environmental criticism: environmental crisis and literary imagination*. Malden, MA: Blackwell Pub.

Bukerman, O. (2006). Atwood sign of the times draws blank. *The Guardian*, Retrieved *Guardian*. Retrieved from

<https://www.theguardian.com/world/2006/mar/06/topstories3.books>

Butler, C. (Interviewer) & Stevenson, R. (Interviewee). (1999). *Oral History 2* [Interview transcript]. Retrieved from Johnson Space Center Oral Histories Project Web site: http://www11.jsc.nasa.gov/history/oral_histories/oral_histories.html

Food and Drug Administration. (2009). Guidance for industry: presenting risk information in prescription drug and medical device promotion. *Silver Spring, MD: Author*.

Full Bibliography (2003). Retrieved January 14, 2017, from <http://margaretatwood.ca/full-bibliography-2/>

Galbreath, M. (2010). (Un)Natural Bodies, Endangered Species, and Embodied Others in Margaret Atwood's *Oryx and Crake*. (Thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts.) Retrieved from http://etd.fcla.edu/CF/CFE0003227/Galbreath_Marcy_L_201008_MA.pdf

Galbreath, M. (2010). A Consuming Read: the Ethics of Food in Margaret Atwood's *Oryx and Crake*. In *Florida Gulf Coast University's 2nd International Humanities and Sustainability Conference, Fort Myers, Florida*.

Genesis. (2014, May 19). In *New Revised Standard Version*. Retrieved January 15, 2017, from <https://www.biblegateway.com/passage/?search=Genesis1%3A28&version=NRSV>

Genesis. (2014, May). In *New Revised Standard Version*. Retrieved January 15, 2017, from <https://www.biblegateway.com/passage/?search=Genesis2%3A15&version=NRSV>

Gibson, G. (1973). *Eleven Canadian novelists*. Toronto: Anansi.

Griffiths, A. (2004). Genetics according to *Oryx and Crake*. *Canadian Literature/Littérature canadienne: A quarterly of criticism and review*, (181), 192-195.

Gudorf, C. E., & Huchingson, J. E. (2010). *Boundaries: A Casebook in Environmental Ethics*. Georgetown University.

Habeeb, G., & Habeeb, D. (2012). Eco-Critical Theory or E-Theory: Some Newer Perspectives. In *Proceedings of National Seminar on Postmodern Literary Theory and Literature*. Retrieved January 15, 2017, from https://www.academia.edu/2485497/Eco-Critical_Theory_or_E-Theory_Some_Newer_Perspectives

- Hammond, C. (1979). A Margaret Atwood Interview. *Concerning Poetry*, 12, 73-81.
- Haque, O. S., & De Freitas, J. (2013). *The ethics of pharmaceutical industry influence in medicine*. Retrieved from <http://www.unesco-chair-bioethics.org/wp-content/uploads/2015/09/The-Ethics-of-Pharmaceutical-Industry-Influence-in-Medicine.pdf>
- Hengen, S. (2006) Margaret Atwood and environmentalism. In *the Cambridge Companion to Margaret Atwood* (p.75), Cambridge, UK: Cambridge University Press.
- Howarth, W. (1996) Some Principles of Ecocriticism. In *the Ecocriticism Reader: Landmarks in Literary Ecology* (p. 69), Athens: University of Georgia Press.
- Howells, C. (2006). *The Cambridge Companion to Margaret Atwood*. Cambridge, UK: Cambridge University Press.
- James, C. (2010). A global overview of biotech (GM) crops: adoption, impact and future prospects. *GM Crops*, 1(2164e5698), 8e12.
- James, C. (2011). Global status of commercialized biotech/GM crops: 2011, Volume 43 of ISAAA Brief. Ithaca, NY: ISAAA.
- King, R. C., Standfield, W. D., & Mulligan, P. K. (2006). Transgene [Def. 1]. In *A Dictionary of GENETICS* (7th ed., p. 451). New York: Oxford University Press.
- King, R. C., Stanfield, W. D., & Mulligan, P. K. (2006). Eugenics [Def. 1]. In *A Dictionary of GENETICS* (7th ed., p. 150). New York: Oxford University Press.
- King, R. C., Stanfield, W. D., & Mulligan, P. K. (2006). Recombinant DNA technology [Def. 1]. In *A Dictionary of GENETICS* (7th ed., p. 376). New York: Oxford University Press.

Knowles, T. G., Kestin, S. C., Haslam, S. M., Brown, S. N., Green, L. E., Butterworth, A., ... & Nicol, C. J. (2008). Leg disorders in broiler chickens: prevalence, risk factors and prevention. *Plos one*, 3(2), e1545.

Kraemer, K. (2012). Farming for Pharma. *Lab Times*, (4), 38-40. Retrieved January 29, 2017, from http://www.labtimes.org/labtimes/backissue/LT_2012_04.lasso

Ku, C. H. (2006). Of Monster and Man: Transgenics and Transgression in Margaret Atwood's "Oryx and Crake". *Concentric: Literary and Cultural Studies*, 32(1), 107-133.

Landry, H. (2015, August 10). Challenging Evolution: How GMOs Can Influence Genetic Diversity [Web log post]. Retrieved January 29, 2017, from <http://sitn.hms.harvard.edu/flash/2015/challenging-evolution-how-gmos-can-influence-genetic-diversity/>

Le Guin, U. K. (2009). The Year of the Flood by Margaret Atwood. *The Guardian*. Retrieved January 15, 2017, from <https://www.theguardian.com/books/2009/aug/29/margaret-atwood-year-of-flood>

Margaret Atwood Interview [Interview by M. Rothschild]. (2010, December 2). Retrieved January 14, 2017, from <http://www.progressive.org/news/2010/12/152719/margaret-atwood-interview>

Margaret Atwood Interview [Interviewed by K. Hammond] (1979). *Concerning Poetry*.

Mosca, V. (2013). Crossing Human Boundaries: Apocalypse and Posthumanism in Margaret Atwood's *Oryx and Crake* and *The Year of the Flood*. *AltreModernità: Rivista di studiletterari e culturali*, (9), 38-52.

Neugebauer, A. (2014, March 24). *What Is Speculative Fiction?* Retrieved January 15, 2017, from <http://annieneugebauer.com/2014/03/24/what-is-speculative-fiction/>

Nicholl, D. S. (2003). *An introduction to genetic engineering*. Cambridge: Cambridge University Press.

Nørgaard, N., Montoro, R., & Busse, B. (2010). *Key terms in stylistics*. London: Continuum International Pub. Group.

Oates, J. C. (1978). Margaret Atwood: Poems and Poet. *The New York Times*, p. 43.

Oxford University Press. (2000). Dystopia [Def. 1]. In *Oxford Dictionaries | Our story, products, technology, and news*. Retrieved January 15, 2017, from <https://en.oxforddictionaries.com/definition/dystopia>

Oxford University Press. (2000). Utopia [Def. 1]. In *Oxford Dictionaries | Our story, products, technology, and news*. Retrieved January 15, 2017, from <https://en.oxforddictionaries.com/definition/utopia>

Rueckert, W. (1978). Literature and Ecology: an experiment in ecocriticism. In *The Ecocriticism Reader: Landmarks in Literary Ecology* (p. 105), Athens: University of Georgia Press.

Séverac, A. (2012). *Manipulation and Dystopia in Oryx and Crake*. Université Stendhal, Grenoble.

Shewry, T., Glotfelty, C., & Fromm, H. (1996). *The ecocriticism reader: landmarks in literary ecology*. Athens: University of Georgia Press.

Staines, D. (2006). Margaret Atwood in her Canadian context. In *The Cambridge Companion to Margaret Atwood* (pp. 12-17), Cambridge, UK: Cambridge University Press.

Sterling, B. (1989, July). Slipstream. *SF Eye*, 5.

Thompson, L. B. (1997). *Scarlet letters: Margaret Atwood's The handmaid's tale*. Toronto: ECW Press.

Xenotransplantation [Def. 1]. (2006). In *Merriam-Webster*. Retrieved January 20, 2017, from <https://www.merriam-webster.com/dictionary/xenotransplantation>

Works Consulted

Arias, L. A., & Arias, C. A. (2015). *Personajes Nocivos: La naturaleza a través del lente de la ecocrítica. Una mirada a La Historia de Horacio* (Unpublished master's thesis). UniMinuto. Retrieved January 15, 2017, from http://repository.uniminuto.edu:8080/jspui/bitstream/10656/3364/1/THUM_AriasGerenaCarlos_2015.pdf

Atwood, M. (1972). *Survival: A Thematic Guide to Canadian Literature*. Toronto: Anansi.

Atwood, M. (1985). *The Handmaid's Tale*. Boston: HoughtonMifflin Company.

Banerjee, S. (2013). Towards' feminist mothering: oppositional maternal practice in Margaret Atwood's *Oryx and Crake*. *Journal of International Women's Studies*, 14(1), 236.

Berg, P., Baltimore, D., Brenner, S., Roblin, R. O., III, & Singer, M. F. (2013, May 17).

Summary Statement of the Asilomar Conference on Recombinant DNA Molecules.

In *Summary statement of the Asilomar conference on recombinant DNA molecules*. Retrieved January 15, 2017, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC432675/>

Bula, G., & Bermúdez, R. (2009). *Alteridad y pertenencia: lectura ecocrítica de María y La Vorágine* (Master's thesis, Universidad de la Salle, 2009). Bogotá: Universidad de la Salle.

Burgess, A. (1972). *A clockwork orange*. Bramsen & Hjort.

- Collins, S. T. (2010). *The Hunger Games*. New York: Scholastic Press.
- Dror, S. (2014). *The ecology of dystopia: an ecocritical analysis of young adult dystopian texts* (Master's thesis, Thesis / Dissertation ETD, 2014). Vancouver: University of British Columbia.
- Dunlap, A. (2012). Eco-Dystopia: Reproduction and Destruction in Margaret Atwood's *Oryx and Crake*. *Journal of Ecocriticism*, 5(1), 1-15.
- Harvey, S. R. (2008). *Heidegger and eco-phenomenology: gelassenheit as practice*. (Doctoral dissertation, Washington State University).
- ISLE Journal. (n.d.). Retrieved January 29, 2017, from <https://www.asle.org/research-write/isle-journal/>
- López, M. (2006). *Lectura Ecocrítica de la Obra de Charles Ferdinand Ramuz* (Master's thesis, UNED, 2006). Madrid: UNED.
- Orwell, G. (1955). *1984*. New York: New American Library.
- Rilling, T. R. (2015). *Gabriela Mistral ante la pérdida del vínculo entre ser humano y naturaleza. Una lectura ecocrítica* (Master's thesis, Universidad Austral de Chile, 2015). Valdivia: Universidad Austral de Chile.
- Roth, V. (2012). *Divergent*. London: HarperCollins.
- Slovic, S., Rangarajan, S., & Sarveswaran, V. (2015). *Ecocriticism of the global South*. Lanham, MD: Lexington Books.
- Snyder, K. V. (2011). "Time to go": The Post-apocalyptic and The Post-traumatic in Margaret Atwood's *Oryx and Crake*. *Studies in the Novel*, 43(4), 470-489.

Te Ahukaramū Charles Royal, 'Kaitiakitanga – guardianship and conservation - Understanding kaitiakitanga', Te Ara - the Encyclopedia of New Zealand, <http://www.teara.govt.nz/en/kaitiakitanga-guardianship-and-conservation/page-1> (accessed 15 January 2017)

Trexler, A. (2015). *Anthropocene fictions: the novel in a time of climate change*. Charlottesville: University of Virginia Press.

Wu, J., Platero, A., Sakurai, M., Sugawara, A., Gil, M., Yamauchi, T., . . . Izpisua, J. (2017). Interspecies Chimerism with Mammalian Pluripotent Stem Cells. *Cell*, 168(3), 473-486. <http://dx.doi.org/10.1016/j.cell.2016.12.036>

Zapf, H. (2016). *Handbook of Ecocriticism and Cultural Ecology*. Berlin: De Gruyter Mouton.