

TIN EXPLOITATION: AN ECOCRITICISM APPROACH IN ANDREA HIRATA'S *RAINBOW TROOPS*

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Abstract

This research was aimed at reflecting how Hirata reveals the tin exploitation in Belitung Island through his debut novel, *Laskar Pelangi*. It is significant and worthy research as it is an effort to raise awareness and understanding of human beings about the importance of nature and the environment, especially awareness for people who have the power to determine nature protection policies and the importance of nature conservation for the preservation of ecosystems for future generations. This research applied the theory of ecocriticism proposed by Gerrard supported by the theory offered by Gutti, Aji and Magaji. This research uses descriptive qualitative in which the data obtained from the novel are analyzed to reveal the process of tin exploitation in Belitung Island. The research results show that tin exploitation in Belitung Island is carried out both in traditional and modern ways. Traditional tools used to mine tin are *phok*, *aichang*, *khaknai* and *kiaw* to make water embankments and shovels to dig soil, while modern tools used to mine tin are machines in the forms of heavy equipment, such as dredgers and excavators. Traditional tin mining activities in Belitung which are carried out without a Mining Business Permit or Unlicensed Mining is also revealed in the novel.

Keywords: Belitung Island; Ecocriticism; Natural Resource; Tin Exploitation

1. Introduction

Nature has long been part of the representation of many literary works. It often becomes not only the background for fictional stories but also the main theme in the literary works. Writers often use nature to convey the atmosphere, image, setting, or major themes in their works. The choice of diction such as water, trees, rivers, waves, clouds, mountains, and other words related to nature shows that nature is used by writers to describe the background or content in the literary works. The existence of the relationship between nature and literary works raises a concept of ecological problems in literature among literary critics. The term ecocriticism is used as a term regarding the concept of literary criticism related to nature and the environment.

If nowadays people are busy raising environmental issues, sea and air pollutions, deforestation, and the extinction of certain species of living things due to the destruction of ecosystems, literary writers have been warning about the importance of friendship

with nature since ancient time, or the importance of returning to nature, especially in the romantic age.

The topic of nature has been mentioned in many literary works since ancient times. Through poetry, drama, fiction, and other literary works, ecocriticism has been shown through literary texts. According to Harsono (2012), ecocriticism has a basic paradigm that every object can be seen in an ecological network and ecology can be used as an auxiliary science in this critical approach.

Many Indonesian writers have made nature and environment an important part of their works. They use natural objects as a medium of language and figure of speech. One of the Indonesian writers, who has made nature as his attention is Andrea Hirata. Hirata in one of his novels entitled *Laskar Pelangai (Rainbow Troops)* vividly explores nature focusing on natural resource exploitation. *Rainbow Troops* is Andrea Hirata's first novel, which was first published in 2005 by the publisher Bentang Pustaka, Yogyakarta. The novel is the first book in the *Rainbow Troops* tetralogy. The next three novels are *The Dreamer*, *Edensor* and *Maryamah Karpov*. In the two years since its publication, September 2005—November 2007, *Rainbow Troops* had been reprinted fourteen times. The novel was able to attract attention and received a lot of praises, even the novel reached a best seller in Indonesia.

In 2008, *Rainbow Troops* was adapted into a film with the same title. The shooting location for the film is Belitung Island, based on the setting of the story in the novel. As a literary work written based on a true story, the author dedicates this novel to his teachers and friends who also become important characters in the novel, namely Ibu Muslimah Hapsari, Bapak Harfan Effendi Noor, and ten of his childhood friends who are referred to as members of "Rainbow Troops". They are called "Rainbow Troops" by their homeroom teacher because of their love for rainbows. As one of the most widely read literary works, this novel is not only often referred to for writing theses but also has developed as a reading with rich literary values.

In addition to the deep messages expressed by Andrea Hirata in *Rainbow Troops*, Hirata describes that Belitung Island is one of the areas that is very rich in natural resources, i.e. tin. Belitung Island is the largest tin producer in Indonesia since the Dutch era, which after independence was taken over by PN Timah which absorbed massive workforce in Belitung in order to maximize the company's activities. However, the bureaucracy keeps the natives from enjoying it, leaving most of them poor and some even unemployed. Most of the men ended up working for the state-owned tin company PN Timah. School-age children from poor households are stereotyped as children who have no future and who will end up working as lowly laborers. Moreover, the natural treasure owned by Belitung Island is not in line with the life of the people in the area who live below the poverty line on average. This is clearly illustrated by Hirata with a description of the existing facilities and infrastructure in Belitung such as education, health, transportation, and others that are far from feasible. In the novel, Hirata also clearly reveals that there has been a massive scale exploitation of tin. He also describes the ecological and social impacts caused by the overexploitation of tin in Belitung Island. He in this case certainly wants to remind on the importance of preserving and protecting natural resources and the need to love the earth with all its natural beauty. He directly invites us as readers to reflect on how beautiful the earth we inhabit and always protect it from greedy passions that destroy it.

In this novel, Hirata clearly describes how the exploitation of natural resources, especially the exploitation of tin in Bangka Belitung, has been carried out on a massive

scale and can be considered as overexploitation. This of course has a negative impact on the environment and the social life in the area. Therefore, the researchers feel it is important to conduct this research.

The researchers believe that this research would be able to develop human awareness as well as understanding on the importance of nature as well as environment, especially the awareness of the people who have the power to determine policies on nature protection and the importance of nature conservation for the sake of sustainable ecosystems for future generations. Worster (1993) explains that we are facing a global crisis today, not because of how ecosystems function but rather because of how our ethical systems function. Getting through the crisis requires understanding our impact on nature as precisely as possible, but even more, it requires understanding those ethical systems and using the understanding to reform them. Historians, along with literary scholars, anthropologists, and philosophers, cannot do the reforming, of course, but they can help with the understanding. It is also believed that this research would be significant theoretically and practically. Theoretically, it is useful to develop knowledge about the theory of ecocriticism which is of much use for other researchers to make other researches in the related topics. Besides, it can also be a guide that literary works would be interesting and of much use if analysed using eco-criticism. In addition, it can increase readers' knowledge and insight especially in understanding the ecoliterature in Andrea Hirata's novel, *The Rainbow Troops*. Practically, this analysis is expected to give some recommendations to the readers or other researchers in order to understand green literary works as there are sundry good lessons they can get from reading literary works focusing on natural resources. This research is also expected to give some contributions to people in general that it is very important to sustain natural resources and to avoid overexploitation to natural resources so that the sustainability of natural resources can be possible, and life would certainly be beautiful if human beings can get along well with environment.

To carry out the analysis in this study, the approach used is the ecocriticism approach proposed by Gerrard (2004) who states that ecocriticism includes the study of the relationship between humans and non-humans, human history and culture related to critical analysis of humans and their environment.

2. Literature Review

2.1 Ecoliterature

Ecoliterature is not simply nature's writing. This is not a romantic poem or just a work of fiction or romantic drama. This is not just a literary work that tells about how humans live in the forest, in the mountains or in the beach. In such literary works, writings will only be a realistic depiction, as in other human environments. Ecoliterature describes and digs deeper into the description of how environmental degradation causes people's suffering. It is also about how the exploitation of nature is the result of economic and political exploitation that overturns human life and destroys the environment so that nature or the environment becomes unfit for future life.

Ecoliterature is also known as green literature. Murti (2019) underlines that green literature is different from the literary works that only make nature as the background and its content only, simply aimed worship the beauty of nature. Green literature is further than that. Green literature offers the solution to natural destruction and how humans respond to it. Subramanian (2017) claims that ecoliterature includes the whole gamut of literary works, including fiction, poetry and criticism, which lay

stress on ecological issues. Cli-fi (climate fiction), which deals with climate change and global warming, is logically a sub-set of eco-literature.

Literary works belonging to the ecoliterature genre describe human activities, both individuals and corporations, in treating nature badly and even slowly killing nature. Writers who focus their literary works on ecology use their literary works as an effort to arouse the reader's sense of urgency towards actions to save the environment, or, if they are able to leave a deep impression on humans who are aware of their role in saving the earth. However, writers in the ecoliterature genre maintain that their works are not merely a tool for propaganda, but also carry deep literary values. Ecoliterature writers continue to instill "moral values" that inspire readers to do what is and shouldn't be done to the environment, and this is done in a subtle way through structured "moral" stories.

Many writers are concerned with the destruction of nature and the negative consequences that occur, and this is caused by crimes committed by human beings. One of the negative consequences that occur due to overexploitation by humans on the natural world is the number of ecological species that are threatened with extinction or continue to shrink and some have even become extinct, floods, water, air, and soil pollutions. Illegal large-scale fishing has resulted in the erosion of marine biodiversity. Large-scale deforestation worldwide has led to the displacement of tribal populations and, as a result, the loss of their cultures and languages. Based on the facts about the ongoing destruction of nature, many writers feel the need to focus their literary works on the effects of ecological disasters on the environment and humans; such as how large-scale tribal populations lost their habitat to make way for giant industries, and how human activities were shamelessly insensitive to other living species in the environment.

In the era of industrial development which is increasingly advanced, massive natural exploitation is unavoidable. Recognizing this phenomenon and contemporary issue, green writers who care about the conservation and protection of nature and its resources appear with rich green literature as a form of demonstration and an effort to inspire and remind people about the importance of nature for human life and the dangers of natural damage for human survival and other creatures in this world. Green writer is a term for writers who are determined to call for the protection and preservation of nature. This movement is behind the emergence of ecocriticism. Green literature is a critique of natural exploitation activities and about nature conservation and it seeks to promote nature and protect nature.

2.2 Ecocriticism

Literary criticism has recently undergone diverse growth. One school of literary criticism appealing most in the world is ecocriticism. Theoretically, ecocriticism grew out of awareness of the interdependence of literature on environment (Harsono, 2012). He further states that ecocriticism has a broad object of study, namely literature, art, culture, and others. Glotfelty and Fromm (1996) define ecocriticism as the study of the relationship between literature and the physical environment. Just as feminist criticism examines language and literature from a gender conscious perspective, and Marxist criticism brings an awareness of modes of production and economic class to its reading of texts, ecocriticism takes an earth-centred approach to literary studies. Kerridge (1998) suggests a broad cultural ecocriticism: The ecocritic wants to track environmental ideas and representations wherever they appear, to see more clearly a

debate which seems to be taking place, often part-concealed, in a great many cultural spaces. Most of all, ecocriticism seeks to evaluate texts and ideas in terms of their coherence and usefulness as responses to environmental crisis. Mambrol (2016) supports the definitions by stating that ecocriticism is the study of literature and environment from an interdisciplinary point of view where all sciences come together to analyze the environment and brainstorm possible solutions for the correction of the contemporary environmental situation. Mambro (2016) further states that ecocriticism investigates the relation between humans and the natural world in literature. It deals with how environmental issues, cultural issues concerning the environment and attitudes towards nature are presented and analyzed. One of the main goals in ecocriticism is to study how individuals in society behave and react in relation to nature and ecological aspects. In line with Glotfelty & Fromm's, and Mambrol's definitions of ecocriticism, Gerrard (2004) states that ecocriticism explores the ways in which we imagine and portray the relationship between humans and the environment in all areas of cultural production, from Wordsworth and Thoreau to Disney and BBC nature documentaries. It is inspired by, but also critical of, modern environmental movements. Besides, Gerrard (2004) claims that ecocritics generally tie their cultural analyses explicitly to a 'green' moral and political agenda. In this respect, ecocriticism is closely related to environmentally oriented developments in philosophy and political theory. Developing the insights of earlier critical movements, ecofeminists, social ecologists and environmental justice advocates seek a synthesis of environmental and social concerns. Furthermore, Gerrard (2004) highlights that from the point of view of academics, ecocriticism is dominated by the Association for the Study of Literature and the Environment (ASLE), a professional association that started in America but now has significant branches in the UK and Japan. It organizes regular conferences and publishes a journal that includes literary analysis, creative writing and articles on environmental education and activism. Many early works of ecocriticism were characterised by an exclusive interest in Romantic poetry, wilderness narrative and nature writing, but in the last few years ASLE has turned towards a more general cultural ecocriticism, with studies of popular scientific writing, film, TV, art, architecture and other cultural artifacts such as theme parks, zoos and shopping malls. As ecocritics seek to offer a truly transformative discourse, enabling us to analyse and criticise the world in which we live, attention is increasingly given to the broad range of cultural processes and products in which, and through which, the complex negotiations of nature and culture take place.

According to Glotfelty and Fromm (1996), some questions that ecocritics and theorists usually ask are how is nature represented in this sonnet? What role does the physical setting play in the plot of this novel? Are the values expressed in this play consistent with ecological wisdom? How do our metaphors of the land influence the way we treat it? How can we characterize nature writing as a genre? In addition to race, class, and gender, should place become a new critical category? Do men write about nature differently than women do? In what ways has literacy itself affected humankind's relationship to the natural world? How has the concept of wilderness changed over time? In what ways and to what effect is the environmental crisis seeping into contemporary literature and popular culture? What view of nature informs U.S. Government reports, corporate advertising, and televised nature documentaries, and to what rhetorical effect? What bearing might the science of ecology have on literary studies? How is science itself open to literary analysis? What cross-fertilization is

possible between literary studies and environmental discourse in related disciplines such as history, philosophy, psychology, art history, and ethics?

Despite the broad scope of inquiry and disparate levels of sophistication, all ecological criticism shares the fundamental premise that human culture is connected to the physical world, affecting it and affected by it. Ecocriticism takes as its subject the interconnections between nature and culture, specifically the cultural artifacts of language and literature. As a critical stance, it has one foot in literature and the other on land; as a theoretical discourse, it negotiates between the human and the nonhuman. Ecocriticism can be further characterized by distinguishing it from other critical approaches. Literary theory, in general, examines the relations between writers, texts, and the world. In most literary theory "the world" is synonymous with society-the social sphere. Ecocriticism expands the notion of "the world" to include the entire ecosphere.

In *The Comedy of Survival: Studies in Literary Ecology*, Meeker (1972) introduced the term literary ecology to refer to "the study of biological themes and relationships which appear in literary works. It is simultaneously an attempt to discover what roles have been played by literature in the ecology of the human species." The term ecocriticism was possibly first coined in 1978 by William Rueckert in his essay, *Literature and Ecology: An Experiment in Ecocriticism*. By ecocriticism Rueckert meant "the application of ecology and ecological concepts to the study of literature." Rueckert's definition, concerned specifically with the science of ecology, is thus more restrictive than the one proposed in this anthology, which includes all possible relations between literature and the physical world. Other terms currently in circulation include *ecopoetics*, *environmental literary criticism*, and *green cultural studies*.

In the opinion of Glotfelty and Fromm (1996) regarding various questions commonly asked by ecocritics and theorists, it is clear that there are several questions in a straight line related to literary research as seen in the following:

1. How is nature represented in literature?
2. What might ecological science have in the study of literature?
3. In what ways does literature affect human relations with nature?
4. In what ways and to what effect, does the environmental crisis look into contemporary literature and popular culture? and,
5. How is science itself open to literary analysis?

Based on the idea proposed by Glotfelty and Fromm (1996) above, the researchers conduct a research On Tin Exploitation in Bangka Belitung Reflected in Andrea Hirata's Novel, *Rainbow Troops*.

2.3 Natural Resource Exploitation

Exploitation is the arbitrary or excessive use of a subject for purely economic purposes without considering the sense of propriety, justice and welfare compensation. If the outline is drawn, then exploitation is an action that aims to take advantage or take advantage of something excessively and arbitrarily. The main purpose of exploitation is the use for self-interest which can exploit others beyond the limits of propriety. The main target of exploitation is the control or use to dredge and exploit the potential of resources, both natural resources and human resources. This action results in harm to other parties, both to humans and the environment.

Exploitation of natural resources usually results in severe damage to the environment as well as global warming anomalies and extreme weather. Gutti, Aji and

Magaji (2012) state that exploitation of natural resources is an essential condition of human existence, throughout the history of mankind; humans have manipulated natural resources to produce the materials they needed to sustain growing human populations. This refers primarily for food production and economic development but many other entities from the natural environment have been extracted.

The exploitation of tin in Bangka has been going on for a long time. Historians note that the excavation of tin in Bangka has started from the 1st century. However, this extractive industry started to become massive when Chinese coolies were hired to increase production. For hundreds of years, tin has become a strategic commodity, for hundreds of years the environment has been neglected (Muhammad, 2021). Further, Muhammad (2021) highlights that in the past, Bangka Island had various names, starting from Vanka (Wangka), Monopin, Mayit-Dong, China Bato, and Banka. The names are inscribed on the 1st century Hindu literary book *Millndrapantha* and a Hindu-Buddhist holy book called *Nidessa*. Historian George Cœdès also mentions that before the first century, many sailors from India came to Wangka—in Sanskrit it means lead. So it is strongly suspected that tin excavation has existed in Bangka since the beginning of the first century. After centuries, ancient kingdoms also kept records of tin in Bangka. Like the Sriwijaya Kingdom with the discovery of the Kota Kapur inscription which tells about tin mining on Bangka Island in the 7th century. The use of tin at that time was for bartering media and for inscriptions. However, the tin excavation is still on a small scale with very simple tools.

It was only during the Palembang Sultanate under the leadership of Sultan Mahmud Badaruddin I in the 1730s to 1740s that tin mining on Bangka Island was carried out on a large scale. Miners were imported from China, Siam and Chocin. Instantly the production of tin mines increased dramatically so that the coffers of the Palembang Sultanate increased. The Sultanate employed Chinese people not without reason. In addition to being more disciplined and powerful than the natives, they had an "under" system in mining. They brought hoe technology that was not yet known by the natives in 1733. Because of this success, the Palembang Sultanate brought in more contract laborers from South China, who were brought in waves, especially the Khek people, who were brought in as bachelors who eventually intermarried with the natives. The Sultan of Palembang at that time became the richest man in the east because of the sale of tin. The tins were then sold to the VOC trading partnership. In 1811 the British occupied Bangka. The Palembang Sultanate under Sultan Najamuddin handed over Bangka and Belitung to the British. However, in 1814 the Treaty of London I emerged, requiring England to hand over Bangka to the Dutch Colonial Government so that in 1816 the Dutch took full control of Bangka. Three years later in 1819 the Dutch formed Banka Tin Winning Bedrijf (BTW), a Dutch state-owned tin company as well as selling tin with a brand called BANKA.

The Dutch still took tin miners from the Chinese. It is stated that in 1816 there were 2,528 Chinese miners and 2,123 other Chinese residents who spread across Bangka Island. The Netherlands also made progress on mining mechanization, namely a water pump system with steam power called a locomotive. Then it came the spray power to mine the tin field.

Time passed and the regime changed, Japan entered and took control of Bangka in 1942. The tin mining was taken over by Mitsubishi Kabushiki Kaisha (MKK). But the Japanese era of tin mining is not as sweet as before. Its production experienced a drastic decline because Japan only knew war and was lacking in tin mining matters.

Japan lost in World War II in 1945. Allied troops landed in Bangka via Muntok in 1946. The Dutch, on the back of the Allies, tried to regain control of the tin mining. Banka Tin Winning Bedrijf re-started the exploitation of tin in Bangka.

Wars occurred everywhere, including in Muntok to Pangkal Pinang during the chronic phase of the Indonesian revolution. The Dutch gave up control of Indonesia. Tin mining was also handed over to the Indonesian government in 1953. The Dutch tin company was merged at that time, its name changed to PN Tambang Timah Bangka and later became PT. Timah Tbk in 1976.

Entering the era of President Suharto, Muntok became a tin smelting center. This commodity has become a strategic item with strict safeguards. Anyone who smuggles or takes tin illegally would be imprisoned. In those days, people could not mine because all things related to tin mining in Bangka were fully controlled by PT. Timah Tbk. until the times changed when Suharto no longer served as President of the Republic of Indonesia in 1998. Tin mining appeared everywhere. Anyone can mine freely and the term unconventional mining that is not managed by the state appears. This is because tin is no longer a strategic item.

Many people became rich suddenly because of tin. The gardens that were previously used as agricultural land and plantations were replaced by tin mining in the 2000s. A lot of land that has turned into under pits can be found everywhere. Whoever had money at that time can be sure that he must be a miner. Mining businesses mushroomed at the beginning of the reform era.

The proliferation of tin miners was accompanied by strict regulations issued by PT. Timah Tbk related to tin disposal and reclamation waste. However, this rule was ignored by the people who did a lot of tin mining activities, and did not make waste disposal. As a result, tin waste was dumped into rivers, and ex-mining lands that were no longer producing were left alone. In fact, ex-tin minings of PT. Timah Tbk that had been reclaimed were also reopened by illegal miners.

Mining activities from the beginning of the reform until now have made almost no new tin fields. Even if there is a new mine, it does not necessarily produce a lot of tin. Many miners are having a hard time because their mining land is no longer producing. This has caused tin mining to be no longer in demand as it is in its heyday at the beginning of the reformation. Because land is already difficult, a new phenomenon has emerged in Muntok, namely mining at sea or known as floating mining. Most of them are immigrants from Palembang who have the ability to dive to find tin locations in the ocean. However, this activity is opposed by fishermen because it interferes with their livelihoods.

The old miners are aware of this difficult time. Some of them have turned their former mines into tourism, plantations, agriculture, restaurants and fish ponds. In addition to trying to do alternative businesses, some miners believe that this is a solution to preserve the previously damaged environment. Another solution to overcome the current problem of tin mining in Muntok is to take advanced minerals that are disposed of in tin waste (tailings). It is believed that the price of the secondary minerals is much more expensive than tin. These advanced minerals include Quartz, Zircon, Rutile, Ilmenite, Siderite, Xenotime, Monazite, and Tourmaline. They are called associated minerals because these minerals were formed simultaneously with the geological process of the formation of cassiterite (SnO₂). In the washing process, separation is carried out based on specific gravity so that the associated minerals are caught in groups according to their specific gravity. The mineral Monazite, for example, is a reddish-

brown mineral consisting of phosphates containing rare earth metals as sources of cerium and thorium. This mineral contains radioactivity which can be used for electric car batteries.

The presence of investors with renewable technology is believed to be able to accommodate these associated minerals. If this is implemented, it is believed that it will have a good impact on the environment because tin waste is not wasted. It is hoped that in the future the community will have new jobs as seekers of these minerals.

3. Research Method

This research is designed to obtain the answers of tin exploitation in Andrea Hirata's novel, *Rainbow Troops*. The research method used in this research is structural analytical approach by reviewing the literary research to provide research data. The technique used in this method is library research, where all possible information in and literary review having relation to the study were collected and taken as sources of information. The method used in analyzing the data is descriptive qualitative method in which the results of the analysis are in the forms of words and sentences since the result is not numeral data. To obtain the necessary data, the researchers read the whole of the novel carefully and repeatedly. The essential data are taken from the comprehension of narrative, dialogues, and thinking of the author which is stated in narrative of *Rainbow Troops*, translated by Angie Kilbane from *Laskar Pelangi* by Andrea Hirata (2009), published by Benteng Pustaka, consisting of 307 pages.

4. Discussion

Belitung Island which is part of the Sumatra island is the richest island in Indonesia, perhaps even in the world. The hidden treasure that makes Belitung Island the richest island is a flowing treasure, namely tin.

THE SMALL island of Belitung is the richest island in Indonesia, probably even in the world... Deep under the swampy land, a treasure flowed: tin. Blessed tin. A handful was worth more than dozens of buckets of rice (Hirata, 2009: 17).

Belitung is so abundant in tin that it is considered like a tower of prosperity that rises on the Malacca Peninsula. The amount of tin in Belitung is also likened to the ocean waves that keep crashing onto the beach. If someone puts their arm into a shallow alluvial surface, or even almost anywhere, and when the arm is pulled it will sparkle since it is smeared with tin. Therefore, when it is viewed from offshore, Belitung Island will look radiant because of the shiny tin. The tin content in Belitung Island is so famous throughout the world that it is well known as *Island of Tin*.

Famous throughout the world for its tin, it was written in geography books as *Belitung, Island of Tin* (Hirata, 2009: 17).

The exploitation of tin which constitutes a natural resource in Belitung Island is described in Andrea Hirata's *Rainbow Troops* in a massive scale, and it has been carried out for a long time. Based on the historical records and available evidences, tin mining in Belitung has been carried out since the time of the Sriwijaya kingdom in power in Palembang. In the early times, the processes and equipment used to exploit tin in Belitung were still very simple and traditional. In the early days of tin exploitation in

Belitung, the mining workers are said to be Chinese-Malays who were first brought to Belitung by the Dutch to be tin laborers.

The Chinese-Malays, as they sometimes are called, have lived on the island for a long time. They were first brought to Belitung by the Dutch to be tin laborers. Most of them were Khek from Hakka, Hokian from Fukien, Thongsans, Ho Phos, Shan Tungs, and Thio Cius. That tough ethnic community developed their own techniques for manually mining tin. Their terms for these techniques, *aichang*, *phok*, *kiaw*, and *khaknai*, are still spoken by Malay tin prospectors to this day. (Hirata, 2009: 24).

This is clear evidence that tin mining on Belitung Island has been carried out for a long time because the tin mining tools carried out by the Chinese at that time were categorized as archaeological finds. The quotation also shows that the mining techniques in those days were still manually carried out by Chinese-Malays who had lived in Belitung Island for a long time. Since the mining workers in those days were Chinese-Malays so that the techniques as well as the mining tools used were also in Chinese terms such as *aichang*, *phok*, *kiaw*, and *khaknai*. *Aichang* are twigs, leaves, and branches that are used to seal the gaps of the *kiaw* so that water does not escape. *Phok* is a place to collect water in traditional tin mining installations made by miners. *Kiaws* are woods for making water reservoirs measuring two or three meters and the size of a grown man's arm. After the tin ores are washed, there is a leached mud called *khaknai*.

Andrea Hirata also explains in detail how the modern tin exploitation process in Belitung is carried out. The exploitation of tin in Belitung is carried out by a company called PN Timah. PN stands for *Perusahaan Negara*, or state-owned company, *Timah* means tin.

That great natural resource was exploited by a company called PN Timah. PN stands for *Perusahaan Negeri*, or state-owned company, *Timah* means tin (Hirata, 2009: 18).

Every day, the tin miners must work from early in the morning to evening. The tin miners who work in PN live like puppets controlled by a puppet master called a siren. Every day at exactly 7 am, the silence of the village will be disturbed by sirens wailing from the PN headquarters. The roar makes the village noisy, and it is a call to the PN tin miners to start their activities in the PN. The tin miners quickly emerge from every corner of the village to line up along the side of the village road and jump into the backs of the trucks that would take them to the dredges.

... they lived like puppets—controlled by a small and comical but very powerful puppet master called a siren. At seven o'clock every morning, the stillness shattered. The siren roared from the PN central office. Immediately, PN coolies bustled about, emerging from every corner of the village to line up along the side of the road, jumping and jamming themselves into the backs of trucks which would bring them to the dredges (Hirata, 2009: 23).

The term for tin workers who are said to live like puppets controlled by a siren instead of a puppet master is not an exaggeration because when the clock strikes five in the evening, the sirens shriek once again. The sound of the siren is a sign that the

working time for the coolies is over. The coolies will disperse to return to their respective homes. They are like ants fleeing from their burning anthills. That is their daily activities, and these activities last for hundreds of years.

... when the clock struck five, the siren shrieked once again. The coolies dispersed to go home like ants fleeing a burning anthill. And that's how it went on, for hundreds of years (Hirata, 2009: 23).

The exploitation of tin resources, which is a source of wealth for its managers and executive workers, is inversely proportional to the lives of coolies in PN. They live in such poor conditions since the economy of the coolies in PN is very bad. The families of the coolies in PN every day can only eat with a menu that is all cheap and of course with poor quality as Hirata emphasizes, "Their meals were accompanied by bickering, husbands complaining about the menu—always the cheapest fish for breakfast, lunch, and dinner. (Hirata, 2009: 23).

The economic power of Belitong Island is dominated by the staff of the PN living in the Estate. The businessmen who received concessions from the tin exploitation in Belitong live in Jakarta, and the conspirators who take bribes are none other than politicians. But the coolies certainly do not know the people behind the conspiracy. They sit prosperously on the highest throne in the most exclusive class and they are the people who enjoy the greatest benefits from the wealth of the Belitong island. These businessmen and politicians used to visit Belitong to see the massive tin exploitation that has been destroying the island's environment, and from the expressions on their faces, the coolies could read it clearly that they probably have forgotten that there are tin workers who have contributed much to their prosperity, and most probably they never think that the coolies strive for their life there.

The economic strength of Belitong Island was dominated by the Staff living in the Estate. The businessmen receiving concessions from the tin exploitation lived in Jakarta, and the conspirators receiving bribes were none other than the politicians. But we didn't know these underhanded, behind-the-scenes people or where they lived. They sat prosperously on the highest throne in the most exclusive class. They were the biggest benefactors of the riches of our island. The businessmen and politicians often visited Belitong to see the massive tin exploitation destroying the island's environment. The expressions on their faces led me to believe that they might have forgotten we existed (Hirata, 2009: 23).

Besides, there is also a description of illegal tin exploitation in Belitong. Illegal mining is carried out by local residents or a group of people coordinated by certain parties without official permission. Such activities usually use simple tools and are usually referred to as Unlicensed Mining. Mining is said to be without a permit because in carrying out its business, the means of production, the use of materials and the distribution of mining products to trade do not have an official permit from the government. Illegal tin mining activities in Belitong had long been carried out by illegal miners who could also be said to be tin thieves who carry out tin mining clandestinely.

There were in fact many abandoned shacks on the slopes of the mountain, and they made great secret hideouts for tin thieves. The

illegal prospectors dug up tin from the mountain and sold it to smugglers disguised as fishermen at the mouth of the Linggang River. The tin was then sold in Singapore. The unauthorized prospectors built shacks and sometimes disguised their mining sites with agricultural fields (Hirata, 2009: 114).

The lines above clearly depict that the illegal miners in carrying out their illegal activities set up huts around the mountain where they carry out their tin illegal mining activities. They used to act like workers in the fields, and disguise their mining sites with agricultural fields. This means that they do not return to their homes for days when carrying out their illegal mining activities. Illegal miners dig for tin deep in the mountain slopes and sell it to smugglers who usually disguise themselves as fishermen in the Linggang River of Bangka Belitung. Thieves and tin smugglers are a very old profession in Bangka Belitung. They used to sell the tin to Singapore. This illegal or unlicensed tin mining activity has existed since the *Kheks* people came from mainland China to officially dig for tin in Belitung in order to work on concessions from the company.

Stealing and smuggling are very old professions. These criminal activities—criminal, of course, from PN's point of view—have been around since the *Kheks* were brought to Belitung by the Dutch to be mining coolies back in the seventeenth century (Hirata, 2009: 114).

In the above lines, it is also stated that the two illegal activities, stealing and smuggling tin, are professions that have been carried out since the 17th century. This kind of activity is of course an act against the law because it does not pay taxes and does not have a Mining Business Permit.

Actually, the risks faced by these illegal tin miners are very hard. If they are caught, the punishment is very painful and inhumane. PN Timah always conducts sweeps and raids to places where they suspect illegal mining activities have occurred, and if PN Timah succeeds in catching the illegal tin miners and illegal tin smugglers, they will be treated very harshly and inhumanely. Illegal tin miners and illegal smugglers who are caught will be treated as if they were perpetrators of subversive crimes. Those caught as illegal miners in the mountains where they are mining will be charged as tin thieves and those caught in rivers or at sea where they are smuggling will be considered as pirates.

PN treated unauthorized prospectors and smugglers very harshly, inhumanely. The prospectors' and smugglers' actions were regarded as subversive criminal acts. In the peaceful mountains where the prospectors were seen as thieves, and on the sea where the smugglers were seen as pirates, the law didn't apply: If they were caught, their heads were blown off on the spot with an AK 47 by rancid beings known as the "tin special police." (Hirata, 2009: 114).

The excerpt above vividly shows the description of the barbaric treatment carried out by the Tin Special Police. The illegal tin miners who are caught will be punished without going through a judicial process, and it is not uncommon for those caught to have their heads blown up with AKA 47 by rancid humans named the Tin Special Police.

Apart from traditional or conventional exploitation, this novel also clearly describes how modern exploitation is carried out on a large scale by PN Timah. The modern tin exploitation is carried out throughout the day; from morning to night. This evidently proves that tin exploitation has been carried out in a modern and large-scale manner. Evidence that the tin exploitation has been carried out in a modern way is a narrative about the use of electrical energy, and the exploitation is carried out on a large scale can be proven by the narrative that the exploitation of tin is carried out throughout the day, from early morning until late at night.

The tin shone late into the night. Large-scale tin exploitation constantly took place under thousands of lights using millions of kilowatts of energy. If seen from the air at night, Belitong resembled a school of comb jellies glowing brightly, emitting blue light in the darkness of the sea; by itself, small, gleaming, beautiful and abundant (Hirata, 2009: 17).

Exploitation of tin that is carried out at night certainly consumes a very large amount of electrical energy. The millions of kilowatts of electrical energy needed for lighting the tin exploitation is of course included in the effect of wasting too much electrical energy due to the exploitation of tin.

In addition to using millions of kilowatts of energy for lighting during the tin exploitation process at night, heavy equipment is also used to exploit tin.

PN operated 16 dredges. The enterprise absorbed almost the entire island's workforce. It was a pulsing vein with a complete power monopoly over the whole island of Belitong (Hirata, 2009: 18).

The dredger used resembles a bowl. The bowl is made of steel and the steel bowl of the dredger never seems tired of digging and continues to dig Belitong soil. So crazy is their work that they are described as "like giant, greedy snakes that knew no exhaustion" (Hirata, 2009: 18).

The dredges' steel bowls never stopped digging into Belitong's soil. They were like giant, greedy snakes that knew no exhaustion. They were as long as football fields, and nothing could stand in their way. They smashed coral reefs, took down trees with trunks the size of small houses, demolished brick buildings with one blow, and completely pulverized an entire village. They roamed over mountain slopes, fields, valleys, seas, lakes, rivers and swamps. Their dredging sounded like roaring dinosaurs (Hirata, 2009: 18).

In the above lines, it is clearly described that the time setting for tin exploitation is carried out by PN Timah from day to night. In addition, the setting of the place is where the tin exploitation takes place, namely in seas, rivers and swamps. In addition, the background of the atmosphere is also described where it is stated how noisy the tin exploitation process in Belitung is. The lines above also describe the atmosphere of the tin exploitation process using a simile figurative language "sounded like a roaring dinosaurs". Based on the figurative language, it can be seen that tin exploitation activities carried out in a modern way using heavy equipment produce loud and scary sounds, like hearing the voices of a herd of dinosaurs. From this description, it can be clearly concluded that the emphasis that the author wants to make is that the tin

exploitation carried out by the Timah District Court in Bangka Belitung is really carried out in a modern and massive manner.

Furthermore, the modern tin mining process is described by the advanced process of the mined tin ores, namely the tin ores will be smelted with a modern smelting machine into tin. The work of the process requires a lot of labors so that the work is carried out not only by men but also by women from local villagers.

PN employed the males of this tribe as coolies to haul sacks of tin from washing stations to ferries in ports. The ferries would then bring the tin to melting factories on Bangka Island. The women were employed as tin sack weavers. The men and women occupied the lowest stratum among laborers in Belitung... (Hirata, 2009: 64).

The excerpt above contains an overview of the follow-up process after the tin has been extracted. The washed tin ores will be put into tin sacks. The tin sacks used are products made by female workers who sew tin sacks. Then the workers will carry the sacks filled with tin to the ship at the port and will then be sent to the tin smelting factory located on Bangka Island. It clearly describes how PN Timah employs both men and women from the local villagers. Men are employed as coolies to transport tin sacks from the washroom to the ferry at the port, while women are employed as weavers of tin sacks. It is also clear that both men and women from the local village only work as rough coolies, and occupy the lowest strata among workers in Belitung.

5. Conclusion

Based on the results of the discussion, it is seen in the novel that the process of tin exploitation in Belitung is carried out both in traditional and modern ways. Traditional tools used to mine tin are *phok*, *aichang*, *khaknai* and *kiaw* to make water embankments and shovels to dig soil, while modern tools used to mine tin are machines in the forms of heavy equipment, such as dredgers and excavators. Then it is also known that there are traditional tin mining activities in Belitung which are carried out without a Mining Business Permit so that it is an unlawful act. This activity is known as Unlicensed Mining. Based on environmental ethics, it can be seen that the novel *Laskar Pelangi* describes the ethics of anthropocentrism which considers nature as an inanimate object to be owned, enhanced, consumed, and disposed of. In addition, it can be seen that the novel *Laskar Pelangi* not only contains positive values about the importance of education and fighting for ideals but also discusses the importance of being wise in utilizing natural resources so that the environment is maintained. It shows how the process of tin exploitation is carried out, what equipment is used to exploit tin, and what impacts are caused by the tin exploitation on living things and their environment.

From an ecological point of view, the novel *Laskar Pelangi* not only tells about the exploitation of tin that occurred in Belitung and its consequences, but also describes the flora and fauna that live in Belitung and their environmental conditions. Based on the analysis, it can also be concluded that the novelist, Andrea Hirata, has sensitivity in capturing the ecological atmosphere around him which is then poured into the novel *Laskar Pelangi*. The situation and condition of tin exploitation in Belitung are vividly described in the novel. It can surely open eyes as well as the hearts of readers and the government to be wiser in managing natural resources so as not to damage the environment and also maintain the survival of the ecosystem. Hirata narrates the exploitation of tin in slick and convincing ways since he narrates not only a physical

setting but also through a psychological setting or a setting that illustrates a certain atmosphere so that it affects the emotions of the readers.

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