

SCIENCE AS SERVANT OF MAN AND ENVIRONMENTAL CONSTRAINTS IN NATHANIEL HAWTHORNE'S "RAPPACCINI'S DAUGHTER"

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ABSTRACT

This paper examines the concern of man to improve his life condition through scientific experiment in Nathaniel Hawthorne's "Rappaccini's Daughter". Through an investigation of the impact of Doctor Rappaccini's experiments on the fauna and flora, it further explores the environmental constraints upon scientific endeavour. Against the backdrop of the poststructuralist literary approach and ecocriticism, the paper anchors on the assumption that nature places tight constraints on the anthropological strife to better life on the basis of science. Based upon descriptive qualitative method and library documentation, the research findings indicate that research area, subjects, and instruments of any study carried out to improve human life condition should be in accord with environmental sustainability standards.

Keywords: Science, Environment, Poststructuralism, Ecocriticism, and "Rappaccini's Daughter"

INTRODUCTION

Criticism on Nathaniel Hawthorne's "Rappaccini's Daughter" (Abramson, 2011) has mostly stressed the issue of duality of good and evil, ignoring other meanings generated by ambiguities in that short story. Through a deconstructive analysis, this paper investigates the authorial concern with the relationship between science as a cultural act and the physical environment. Through an ecocritical interpretation of this short story, I argue that there is a silence in the story to point out that man's scientific activity must aim at improving his life condition and his surrounding physical environment.

In what follows I approach this argument by first defining science, environment, poststructuralism, ecocriticism, and "Rappaccini's Daughter". In addition, a brief background to the short story is stated in order to trace the author's connection to the 1840s American society and the inspiration of the dichotomy of good and evil which covers up the author ideology of art and science in his writings. Before the discussion and findings section, the research methodology is described to clear up the data collection procedures and analytical procedures.

Concept Contextualization and Theoretical Foundation

According to Stephen Wilson (2002), science is an attempt to understand how and why natural phenomena occur with focus on the natural world. He advances that science like art should be "viewed as a cultural creativity and commentary" and should be "appreciated for its imaginative reach as well as its disciplinary or utilitarian purposes" (3). This is because in

the modern society, science is the centre of the cultural and economic life. Thus science is one engine of culture because it is source of creativity and inspiration and a marker of identity (5). Science in “Rappaccini’s Daughter”, is used to capture the creativity of Doctor Giacomo Rappaccini, a medical researcher in medieval Padua. It is a laboratory of a botanic garden with a pool wherein he cultivates poisonous plants in vases and urns decorated with the highest ingenuity of sculpture and architecture, “fruitful of better pot-herbs than any that grow” in the city of Padua (1143).

This experimentation endangers the surrounding environment. According to Larsson (2011), in its broadest sense, environment is defined as the physical nature including water, air, soil, flora and fauna. It covers “all those elements which in their complex inter-relationships form the framework, setting and living conditions for mankind, by their very existence or by virtue of their impact” (Larson, 2009:169). This definition implies that environment encompasses aspects of the atmosphere, hydrosphere, lithosphere, and biosphere. Focussing on the short story “Rappaccini’s Daughter”, environment is considered from the perspective of ecosystem to delineate, in the sense of Neema Bagula Jimmy (2015), the relationship between human characters and their practices and the fauna, flora, the soil, air and water in the setting, that is Padua where all the story events occur. However, the story develops around two kinds of environment or physical nature: the natural and the artificial. The artificial environment is a toxic garden made by Rappaccini which endangers the species of the surrounding natural environment.

Like the short stories “Dr. Heidegger’s Experiment” and “The Birthmark”, “Rappaccini’s Daughter” encloses the complex operations of scientific ideologies (Resetarits, 2012). Therefore, a deconstructive analysis or poststructuralist criticism is first used to disclose the author’s silent voice of science and nature.

According to Peter Barry (2002), poststructuralism is a theory that emerged in France in the 1960s propounded by Roland Barthes and Jacques Derrida. Poststructuralism turns from structuralism, crucially with Barthes’ publication of “The Death of the Author” (1968). In this essay, Barthes sustains that a literary work is not determined by intention or context of the author, it is rather a free text that the reader can play on to generate meanings. While structuralism originates from linguistics, especially with the binary theory of sign propounded by Ferdinand de Saussure (Bouquet, 2004) and binary opposites analysis advanced by Claude Levi-Strauss (1963: 132). Jacques Derrida’s contribution to the development of the deconstructive method is associated with his 1966 lecture captioned “Structure, Sign, and Play in the Discourse of the Human Sciences”. In this paper, the author pinpoints the emergence of a new trend in thought which draws from the relativist philosophies of Nietzsche, Heidegger, and Sigmund Freud. These new trends in philosophy break from the god-based platonic view of the world and man-centred renaissance view of the universe to hold that there are no absolutes or fixed point in the universe and that the world is decentred and inherently relativistic. Therefore, there are no granted facts or truth, all are just interpretations. Apart from the above mentioned article, Derrida’s influence to poststructuralism is also captured in his works *L’Ecriture et la difference* (*Writing and Difference*) and *De la grammatologie* (*Of Grammatology*). In these writings, he confirms that a text can be read saying something different

from what it appears to be saying. Hence the necessity of the deconstructive method aims to reveal contradictions and inconsistencies in order to disclose the disunity conveyed throughout its apparent unity.

With regard to applying the deconstructive method in literary criticism, Peter Barry (2002: 73) develops a threefold analysis including the verbal stage, textual stage, and linguistic stage. The verbal phase looks at contradictions or paradoxes in the story creating oddity between what is felt and what is expressed in the text. For the second stage, the deconstructionist deals with the discontinuity of the text. In other words, attention is paid to the lack of unity in tone or point of view. As far as the third phase or linguistic stage is concerned, deconstruction dismantles the ambiguity, reveals the silences of the author and identifies marginalized ideas in order to build knowledge. These three stages can be summarized into two phases, namely the reversal phase which is concerned with the extinction of the power struggle of the binaries and the neutralization phase which looks at uprooting the silent terms from the binary complexity. In this paper, building knowledge stage is based upon the ecocriticism.

Following the assertion of Laurence Buell (1996:1), the ecocritical literary interpretation is “the study of the relationship between literature and the physical environment”. It is an earth centred approach that emerged in the United States of America in the late 1980s and in the Great Britain early in the 1990s. While in the USA, ecocriticism or green studies emerged as critics started studying the celebration of nature, the life force, and the wilderness as depicted in the works of Ralph Waldo Emerson, Margaret Fuller, and David Henry Thoreau; it started in the United Kingdom with the working on the romantic poetry of the 1790s. Gerrard (2012) distinguishes three tropes or sub approaches in green studies, namely pastoral approach, wilderness approach, and ecofeminist approach. The pastoral approach focuses on the dichotomy between urban and rural area. From this perspective the rural is idealized while the urban is demonized. With regards to the wilderness trope, focus is put on the dark character of the physical nature. The wilderness here is linked with the idea of evil. Finally, ecofeminism looks at the relationship between the oppression of the woman and the destruction of the environment orchestrated by man. It is a kind of parallelism between the exploitation of the nature by people and the domination of the woman by man. Later this approach evolved to include other dominated groups based on race or class, thus making this trope diverse and complex. Ecocritics view the physical environment as reality capable of affecting human existence (Gerrard, 2012:1). It is a cultural practice which like a god when mistreated impacts fatally on the human life. In view to analysing the relationship between culture and nature in Rappaccini’s Daughter, emphasis is put on the representation of environment in the short story, the crisis of the environment, the difference of attitudes to physical nature by male characters and female characters, and the parallel between oppression of human characters and ecosystem.

According to *The Norton Anthology of the American Literature* (1989:1083), “Rappaccini’s Daughter” is a short story by Nathaniel Hawthorne that appeared for the first time in the December 1844 issue of *The United States Magazine and Democratic Review*. It was later published in the collection *Mosses from an Old Manse* in 1846. The story is about a medical researcher, Giacomo Rappaccini, who endeavouring to improve the immunity

system of humans, grows a garden of poisonous plants in Padua, a northern Italian city. He uses for experiment specimen his daughter, Beatrice who tending the plants becomes resistant to the poisons, but in the process she herself becomes poisonous to other people, to plants, and animals. Criticism on the short story confirms Hawthorne to have been inspired by an Indian traditional story of a poisonous maiden. In similar vein, Robert Daly (1973:25) argues that in “Rappaccini’s Daughter” Hawthorne alludes to *Gesta Romanorum*, Shelly’s *Conception of Beatrice Cenci*, Milton’s “Paradise Lost”, Bacon’s *Essays*, Keat’s *Lamia*, Dante’s *Inferno*, *Genesis* story of Adam and Eve, Spenser’s *Faerie Queene*, and Ovid’s *Pomona’s Gardens and her Love therein for Vertumnus*. In these allusions, Hawthorne draws the topic of the interference of men on the ground of science to victimize nature and the woman.

Research Methodology

The study is qualitative in nature and the inductive method was used to carry out it. Library documentation method was used to collect data. The primary data were obtained from the short story “Rappaccini’s Daughter” (1846) written in *The Norton Anthology of American Literature, Volume 2, 3rd Ed.* Secondary data were collected from periodicals, textbooks, and internet. Concerning data collection and analytical procedure, the short story was read repeatedly, deconstructed thanks to the poststructuralist literary criticism. The author’s hidden ideology to promote science for the service of humanity was discussed based upon ecocriticism. Following the aims and hypothesis, pertinent notes were taken from both the primary and secondary data sources. They were then discussed in the light of the theoretical frameworks. In addition, they were descriptively analysed and conclusions were drawn.

Discussion and Findings

This section aims at deconstructing the short story “Rappaccini’s Daughter” in order to point out Hawthorne’s ambiguous idea of science. It further attempts an ecocritical approach of the short story in bid to discussing the author’s apprehension of genuine knowledge and its import in environment.

Hawthorne’s Hidden Ideology of Science Promotion

Many critics have underlined duality and ambiguity in Hawthorne’s short story “Rappaccini’s Daughter”. According to Roy Male (1957:1), the main concern of the short story is the dual nature of humanity embodying good and evil. While Martin (2006) points to a dualism of good and evil, Lois A. Cuddy (1987) highlights the duality of nature and society in “Rappaccini’s Daughter”. With regard to duality, but from a different perspective, Edward A. Abramson points out the complexities of morality in “Rappaccini’s Daughter”. “Rappaccini’s Daughter” encloses many paradoxical phrases and opposition instances which highlight the author’s undecidability on the issue of science. This can be discerned through the application of Peter Barry’s three-stage deconstructive method, that is verbal stage, textual stage, and linguistic stage. Firstly, in the verbal stage, the author uses oxymoron, such as the title ‘La Belle Empoisonneuse’ (1143), Eden of the present world’ (1145), Eden of poisonous flowers (1155), and ‘shattered fountain’ to suggest a kind of complexity in nature. The word ‘Eden’ is used metaphorically to suggest

degradation of nature by scientific research activities. He uses paradox or self-contradictory statements, such as 'to give the chamber habitable air'(1143), 'it is said he distils these plants into medicines that are as potent as charm' (1143), 'a face singularly marked with intellect and cultivation, but which could never, even in his more youthful days, have expressed much warmth of heart'(1143), 'in spite of his deep intelligence on his part, there was no approach to intimacy between himself and these vegetables existences' (1144), 'my life might pay the penalty of approaching it so closely as circumstances demand,[...] this plant must be consigned to your sole charge' (1145), 'flower and maiden were different and yet the same, and fraught with some strange peril in either shape' (1146), 'he cares more infinitely for science than for mankind' (1147), 'he would sacrifice human life, his own among the rest, or whatever else was dearest to him, for the sake of adding so much as grain of mustard seed to the great heap of his accumulated knowledge' (1150), 'but so pervaded with an expression of piercing and active intellect, that an observer might easily have overlooked the merely physical attributes'(1150), 'poison was her element of life' (1156), 'pass on, then, through the world, most dear to one another, and dreadful to all besides!' (1156). These paradoxical instances are indication of slippage of the language in the author's tackling way of science and nature. There is too much linguistic floating to shape the ambiguous tone that hides the authorial ideology of promoting science capable of achieving environmental equilibrium and sustainability.

Secondly in the textual stage, the author uses contradictions in tone, narration, and ideas. In this discontinuity, he combines statements and ideas which are opposed to one another. At the beginning of the story, Lisabetta describes the garden of Rappaccini as strange but later she leads Giovanni into the garden. Giovanni is in many instances is warned against Beatrice and her father, but he does not give importance to the warning. Beatrice is destined to the fatal garden and jovially delights in the task, but at the end of the story, she expresses her regret of being polluted by the toxins of the plants. In the early paragraphs of the story, Baglioni confirms himself to act in accordance with professional medical rules, but at the end of the story, she administers a heroic antidote to a patient. He first asserts his concern to care more for humanity discrediting Rappaccini, but at the end of the story, he jubilates at the death of Beatrice. Beatrice is strong and beautiful with a poisonous nature, but the medicine prescribed by Doctor Baglioni kills her at the end of the story. Rappaccini is silent at the beginning, but at the end of the story, he rises to explain how his science has worked through the life of his daughter. Baglioni gives an antidote to Giovanni to cure him of poison, but the story ends in surprise with Giovanni poisonous while Beatrice is dying at the spot. Focussing on the protagonist, Beatrice, the story starts with scientific tone in the botanic laboratory, develops through love tone, and ends with a spiritual tone. The narrator asserts that Padua is a barren city let alone that garden of Rappaccini, but later demonstrates that the garden is polluted. This disunity in the text indicates the persistence of the idea of science promotion, though masked and silenced.

Finally, for the linguistic phase of deconstruction, there are moments in the short story where there are masks of language communication, that is, inability to say something where everything is said, incapacity to do something where everything is done. In fact, Hawthorne is masking the idea of science

promotion and natural constraints while emphasising it through the Baglioni's point that science must be servant of humanity. He insists in the following statements: 'He cares infinitely more for science than humanity' (1147), his exclusive zeal for science (1147). Though this concern seems silent because of ambiguous situations, the author finally discloses it by giving victory in a way to Rappaccini while mocking at Baglioni's professional jealousy. He ridicules Baglioni who jovially exclaims, 'and is this the upshot of your experiment?' (1162) while his potion is the source of tragedy. Rappaccini's botanic laboratory though first satirised as fatal and demonic is proved in the denouement to have strengthened Beatrice's immunity. But some improvement would have been done to inoculate the poisonous character of experiment subjects. The author contends that the medical discovery is still noxious to the ecosystem. Hence many scientific innovations and renovation of botanic experimentation must be done in accord with scientific ethics and rules taking into account the harmony and equilibrium in nature.

Scientific Researcher as Servant of Humanity

Hawthorne's view for science in "Rappaccini's Daughter" is that science be at the service of man and his environment. Science must follow the philosophy of art as championed by Plato in *The Republic* (1991). Scientific research, like other cultural art forms, must aim at improving the ecosystem where humans live with strong ties with the fauna, flora, and inanimate organisms. On the one hand, science must advocate nature purification. On the other hand, scientific research should make sure of avoiding potential danger to the ecological system.

Hawthorne attacks scientific attempts that cause nature degradation. He disapproves the garden of Rappaccini, an adulteration of the natural flora. He ridicules the botanic garden whose marble and soil garniture fountain, plants, shrub, herbs, in vases, urns, garden-pots all planted in the pool. The botanic experimentation with high garden sculpture and architecture used, though attractive with its greenery pasture and watery verdure is polluted. This is due to the fact that, as Uroff (1972) contends, Rappaccini violates scientific research principles in his choice of research subjects, area and procedures. Like Josef Mengele and other Nazi doctors who did unethical research, Rappaccini's botanic laboratory experimentation is noxious, subjective, with lack of control of experiment area, instruments, and subjects (Dyal, 2001). Likewise, Baglioni's conservative attitude and his jealous reactions in the scientific field of medicine is against his career as academic and professional medical doctor. Using human beings as subjects in medical experimentation is a vice which is condemned by the scientific ethics of the *Nuremburg Code*. Brenzo (1976) links these dramatic forfeits with the victimization of the woman by men for the greed of science and love. Thus the woman and the nature are destroyed by man's desires. From an ecofeminist perspective, there is a parallel adulteration of the physical nature and the female character. In this story, while Lisabetta is a servant in charge of sanitation in a decay building, Beatrice suffers further in the toxic garden. This point is captured by the author through his equation of flowers and woman. He admits that there is 'analogy between the beautiful girl and the gorgeous shrub' (1148). The same issue of adulteration of nature and woman is also depicted by Hawthorne in "Heidegger's experiment", and the "Birthmark" where women are victimized by men twice by their greed for

science and love (Rice, 1879). The author's point, here, is that scientific knowledge should not be a dark manipulation of the fauna and flora, it has rather to be a good management of the ecosystem to better human conditions through objectivity, ethical experiments, with a good control of research factors and material.

Scientific Ecosystem Restoration and Ecologic System Demands

The scientific hybridation operated in the botanic laboratory of Rappaccini is horrible because it pollutes all incoming people with poison. The story portrays the human mind diligently trying to perfect nature. In fact, Rappaccini experimentally assumes that "all medicinal virtues are comprised with those substances which we term vegetable poisons" (1147). With this hypothetical contention, Rappaccini cultivates poisonous plants and produces new varieties of poisons. This idea to restore human nature is disapproved by another doctor in the faculty of medicine at the university of Padua. This research for a new management of ecosystem is founded on his belief in homeopathic approach about nature of disease and forms of cure (Uroff, 1972: 63). His opponents represented by Dr. Baglioni, support the allopathic approach of medicine which is in vogue at the time Hawthorne writes his story and accuses him of lack of valid methodology and purporting to subvert the natural ecosystem by artificial physical environment (Stripling, 2005). This is because his garden destroys the biocenosis. Beatrice experimented in the laboratory is polluted and noxious to insects, reptiles, flowers, and human beings. But the author approves the positive impact of the experiment for personal beauty and strength of Beatrice and the greenery aspect of the city. Of this Beatrice confirms;

"it is no marvel, therefore, if the sight of my father's rare collection has tempted you to take a nearer view. If he were here, he could tell you many strange and interesting facts as to the nature and habits of these shrubs, for he has spent a life-time in such studies, and his garden is his world. (1153)

Above all, Hawthorne celebrates the scientist's eager interest in changing the world for better. While the weakness is attributed to using human research subject, subjective method to elicit medical findings, and uncontrollable research instruments and area, the garden, as Rosenberry mentions "gives to Giovanni a picture of an exciting laboratory of experimental science" while using Beatrice is simply professionalism to "pass the torch to the new generation" (1960: 40). This is an indication that in policy of ecosystem management, as John Donne sustains, "no man is an island" (Meditation XVII) all the scientific disciplines have to work hand in hand to restore to the environment with its natural beauty. That is why the author satires the Massachusetts society whose lack of scientific ethics impacts on the ecosystem (Cuddy, 1987: 39). In his dramatic monologue, Baglioni is jealously determined to 'thwart' (1157) Rappaccini's scientific efforts to privilege old rules of the medical profession. This suggests the authorial view to change mentality and favour innovation in this campaign of improving human condition and his surrounding environment. At the end of the story, Beatrice regrets her life wholly spent in exclusion from the society while her father exults of joy to triumph over the status quo favoured by other medical professors. This difference in reaction ensures the science's environmental

constraints. It corroborates with Daly's assertion that Hawthorne draws from previous literature to argue that man's strife to perfect nature is barred by the interference of natural phenomena and the diversity of human desires and thus results to the destruction of the natural purity (1973).

CONCLUSION

In "Rappaccini's Daughter", Hawthorne's silent view to advance science as engine in transforming the world is depicted through a complexity of ideologies. The story's undecidability is sensed by critics who depending on approaches and perspectives of their writings have variously pointed to ambiguity and duality. This analysis has adopted Jacques Derrida's deconstructive strategies and Peter Barry's deconstructive analysis steps and thus has revealed through a reversal phase powerful struggle of binaries in "Rappaccini's Daughter". This was achieved through the application of verbal and textual analysis methods. Upon this binary logic, metaphors, paradox, oxymoron, contradiction, and discontinuity through tone and style were examined to reveal and extinguish the author's undecidability about his silent view of science and nature. Furthermore, through neutralization, analysis at the linguistic level shows that the author's use of irony demonstrates his point that any scientific endeavour though aiming at bettering humanity and natural environment is hampered by the greed of man. This conflict is in part due to the natural order and mentalities of people in the place where the researcher intends to carry out his experiment. In addition, as result of the ecocritical interpretation of the short story, special attention must be paid to the overall function of the ecosystem, that is all humans, fauna, and flora should be taken into account by the scientific research. Thus following such environmental sustainability standards is what makes science servant of man.

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