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Population Principle and Natural Theology: The Significance of Malthus for Environmental Ethics

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人口論と自然神学 —環境倫理におけるマルサス理論の意義—

小 口 一 郎

要旨：この論文は、近代の環境意識と環境倫理の成立を、自然神学、Thomas Robert Malthusの人口論、そしてロマン主義の3つの観点から考察するものである。

十八世紀の自然神学は、自然界の隅々にまで神の恩寵が広まっているとし、自然の中に根源的な調和や均衡、そして理想状態への進歩を読みとるものであった。その一方でこの論理は、人間の行為は自然環境に根本的な悪影響を及ぼすことはないという考え方を導き、環境保護意識の発現を妨げることになる。

これに対してマルサスは、人口増加と食料生産の不均衡を証明し、自然界には本質的な不均衡が存在すること、そして人間の努力と道徳的節制によって、この不均衡の悪影響が最小化されると説き、道徳的行為者としての人間の行為が、環境の中で重要な意義をもつと主張した。

本論文はこのマルサスの論理が環境意識と環境倫理の成立を可能にしたことを論じ、ロマン主義文学の環境意識につながる思想として、マルサスの人口論を再定義する。

Keywords: Thomas Robert Malthus, population theory, environmental ethics

1. Introduction

This article aims to investigate the emerging awareness of environmental conservation in modern Britain from the perspective of ethics. The period to be focused on is from the late eighteenth to the early nineteenth century, also known as the age of Romanticism. Three issues closely related to this historical period are examined in terms of their significance for environmental awareness: natural theology, the principle of population proposed by Thomas Robert Malthus and the Romantic literary movement. By looking at these issues in roughly chronological order, the current article traces the foundational development of modern ecological consciousness in England as reflected in philosophical treatises and literary texts around the turn of the nineteenth century.

The impact of Malthus's population theory on modern awareness of the natural environment has been recognised by literary criticism for some time (Bate 39, 47; Kroeber 82-94). While drawing on this recognition, in this study I shall investigate the environmental significance of human moral agency implied in the Malthusian theory of population. I hope that this approach contributes to a better understanding of Malthus in the historical context of emerging environmentalism and to aligning his views with the burgeoning literary movement of Romanticism and its environmental concerns.

The scientific study of ecology has a long history, dating back to the mid nineteenth century in the form of Ernst Haeckel's neologism, *Oecologie* (Worster 192). In the twentieth century, the term was highlighted in the context of rampant pollution and other forms of environmental problems. Some typical cases were reported in Rachel Carson's *Silent Spring* of 1962. Since then, the issue of environmental conservation has been avidly discussed in various quarters, from scientific fields such as biology or physical geography to humanistic disciplines like sociology and philosophy.

Literary criticism was perhaps relatively slow to be aware of the disciplinary significance of environmentalism. It was not until the 1970s that serious critical attention began to be paid to ecological aspects of literature. In 1973, Laurence Goldstein's article "The Auburn Syndrome" discussed the psychology of the poet William Wordsworth facing the loss of trees in his home village of Grasmere. In the following year, Karl Kroeber published an essay, again on Wordsworth, specifically alluding to the term ecology, "'Home at Grasmere': An Ecological Holiness." Joseph Meeker in the same year put forward an explicitly ecological approach in his book *The Comedy of Survival: Studies in Literary Ecology* (Bate 180).

However, it took almost another decade before ecological approaches to literary texts were foregrounded and their interpretive potential was fully appreciated. Jonathan Bate's groundbreaking study, *Romantic Ecology: Wordsworth and the Environmental Tradition* was published in 1991, and this study apparently led to the publication of another important work, Karl Kroeber's *Ecological Literary Criticism: Romantic Imaginings and the Biology of Mind* of 1994. Meanwhile, the term "ecocriticism" gradually secured its place in literary studies, with journal articles, anthologies of critical essays, and of primary literary works related to this critical genre appearing successively. This trend has continued to the present century. The genre of ecocriticism, or environmental literary criticism, has now been recognised as significant presence in literary criticism and its neighbouring fields.

Among a number of issues that ecocriticism has dealt with, this article principally addresses itself to the significant role that Malthus's population theory played in establishing modern

ecological consciousness. I suggested in my recent article, “Erasmus Darwin’s Quasi-Environmentalism,” that the ecological views of eighteenth-century thinkers remained largely in a “quasi” stage because they failed to appreciate the significance of human moral agency in the economy of nature. Specifically referring to the case of Erasmus Darwin, I argued that the strong sway of natural theology over contemporary thinking prevented clear recognition of the environmental impact of human activities. Accordingly human moral responsibility for nature was not given due regard. I stated that these limitations in ethical awareness hindered the formation of a full-fledged environmentalist attitude. On the basis of this assumption, in the current paper I shall investigate the innovative role of the Malthusian theory, arguing that the theory assigned a clear significance to human behaviour in the natural environment and thus enabled a more genuine ecological outlook.

This article also discusses literary Romanticism in connection with Malthus’s views. I shall claim that the philosophical shift in environmental attitude initiated by Malthus finds a comparable development in Romantic poetry. From the perspective of this literary movement, the rise of ecological consciousness will be further clarified.

A brief remark should be in order about terminology before I proceed to the next section. There has been considerable discussion on terminology in environmental studies, leading to increasingly precise definitions of concepts and terms. This article, however, does not go into this side of discussion, as its objective is not to employ fine-tuned terminology to analyse the modern understanding of the environment, but to investigate more broadly how the ethical aspects of human behaviour in nature were recognised by Malthus and his contemporaries. Hence my investigation does not involve, for instance, determining whether a particular view can be characterised as of “deep” or “shallow” ecology. Furthermore, the concepts of environmentalism and ecology, elsewhere distinguished from each other with strict definitions, are employed here interchangeably.

2. The Sway of Natural Theology

Environmental degradation is not a recent phenomenon. Deforestation, for example, was already described in Plato’s dialogue, *Critias*, and in Roman times, agricultural development aggressively cleared the pristine land and inflicted extensive damage on the soil (Harrison 55). Lucretius in the first century describes forests giving way to the cultivating hands of farmers: “. . . day by day they [farmers] made the woods retreat / Ever higher up the hills, surrendering / The place below to tilth” (5. 1370-72).

In Renaissance England, forests were gradually encroached as a source for providing fuel for

growing iron manufacture, and in Tudor times, deforestation was already extensive, with most of the native oaks felled to supply timbers for housing and shipbuilding (Kawasaki 116-20). Even politics were involved in forest deterioration. In the Interregnum, groves in Royalist estates were ruthlessly cut down by the allies of Cromwell (Thomas 218-19). The plight of English forests led to the appearance of the first treatise on tree planting and conservation, *Sylva*, written by John Evelyn in 1664.

The eighteenth century saw a rapid urbanisation typically in and around the capital London. The countryside was transformed by the city's demand for food and other commodities, the introduction of capital-intensive agriculture and deep-pit coal mining, and the construction of roads, canals and railways (McKusick 96). The prime mover of these developments was the Industrial Revolution. The whole of England was under its influence.

However, among philosophical treatises and literary writings, concerns about the natural environment were not very conspicuous. Alexander Pope, envisaging England as a powerful mercantile nation, does not worry at all about deforestation that his capitalist-imperialist vision may entail. In the poem, "The Windsor Forest," trees are described to sacrifice themselves for supplying timbers; they are used for shipbuilding so as to link distant nations for trade (385-86). Optimistic stances such as this are typical of the eighteenth century, the era characterised by a progressivist-expansionist attitude.

Industrial processes, the means of transport and other aspects of modern civilisation are praised by James Thomson's *The Seasons*. In the "Autumn" book of the poem, the human virtue of "Industry" (72) is applauded as it helps to build up civilisation by employing "the mechanic powers" (77), digging "the mineral" (78), taming the power of "fire," (79) and having "the torrent" (80) and the "blast" (80) under control for human use. The cause of serving the modern way of life justifies the axing of "the tall ancient forest" (81) and hewing "the stone" (82).

A notable aspect of Thomson's poem is that it is based on the teaching of natural theology. Especially popular in the eighteenth century, natural theology seeks to demonstrate the existence and benevolence of God from the evidence of the created universe (Sambrook xiii). This inductive logic coexists with that of deduction. It is often the premise of the writers of this genre that God's existence can be known a priori from reason alone, and not necessarily from evidence in the physical world (Eddy and Knight x). Irregularities observed in nature, for instance, need not be regarded as empirical evidence of the negative attributes of the creator. Because the existence of benevolent deity is considered a self-evident assumption that transcends experience, irregular features of the world are justified by logical deduction. Accordingly, diverse aspects of nature observed in the changing seasons are considered to be benevolent signs of the "varied

God" (Thomson, "Hymn" 2).

Importantly, assuming the presence of all-benevolent deity can prevent awareness of irrevocable damage that humanity can inflict on the environment. Since human activities are subsumed under the good intention and harmonious planning of God, they can be understood as fundamentally harmless to nature. No matter how human beings may behave, they cannot give a significant impact on nature, as nature is kept in or led to an optimum condition by the absolute goodness of deity. It should be noted that if the notion of a significant impact on the environment is thus precluded, humans cannot be moral agents of environmental significance. Because they cannot influence the course of nature to a significant degree, they are not responsible for their own action as far as the natural environment is concerned. Human beings under this condition are exempted from environmental responsibility. As I argued elsewhere, for modern consciousness to acquire a truly adequate awareness of the natural environment and its conservation, it has to overcome this *a priori* mindset (Koguchi *passim*).

Natural theology was closely related to the science, or "natural philosophy," of its day. Indeed, it was contemporary with and connected to the scientific concept of the economy of nature proposed by the theorist of biological taxonomy, Carl von Linnaeus. Linnaeus wrote a scientific paper on this subject in 1749, and it was translated into English as "The Oeconomy of Nature" ten years later. According to Donald Worster's study, Linnaeus considers the world as a cyclical series of geo-biological interactions. In this rotating wheel of existence, which comprises propagation, preservation and destruction of species, all is evolving but fundamentally nothing is ever changed. Through an intricate hierarchical arrangement in which each species is allotted a place, nature's economy forms an enduring community of peaceful coexistence. Even species striving to multiply beyond their present numbers are part of the benevolent intention of deity. The struggle to increase gives predators indispensable sustenance, and predators, in turn, help to keep a just proportion in population amongst all species. In this economy, humans have a privileged place. Linnaeus states that all the treasures of nature are created by God for the sake of humans. Thus they have the obligation of utilising their fellow species to their own advantage, and they are even entitled to eliminate the undesirables and to multiply those that are useful for them (Worster 36).

From the present-day point of view, population growth can be a serious environmental concern. However, as implied in Linnaeus's harmonious system, natural theology regarded large population as an auspicious sign to indicate the good will of deity. For instance, population growth is considered of positive value by William Paley, one of the most vocal mouthpieces of eighteenth-century natural theology. His *Principles of Moral and Political Philosophy* of 1785

was among the most influential of the philosophical treatises of the time. It was in fact a long-standing textbook at Cambridge University from the late eighteenth to the early nineteenth century.

On the basis of widely accepted utilitarian views, which regard the greatest sum of happiness as the principal goal of moral philosophy and politics, *The Principles* asserts that growth of population is the means of achieving this target:

The happiness of a people is made up of the happiness of single persons; and the quantity of happiness can only be augmented by increasing the number of the percipients, or the pleasures of their perceptions. (587-88)

The “decay of population” is indeed “the greatest evil” (589). Thus the “importance of population” (589) should be given priority over “every other national advantage” (589). This does not mean that Paley entertains a pessimistic view. In his thinking, population increase is the predetermined course of the world, as it is deity’s benevolent intention that there is “the tendency of nature in the human species to a continual increase of its numbers” (590).

The Principles also alludes to the possibility of population exceeding the supply of food:

. . . the population of a country must stop when the country can maintain no more, that is, when the inhabitants are already so numerous as to exhaust all the provision which the soil can be made to produce. (590)

Nevertheless, he finds that this “insuperable bar” (590) “will seldom be found to be that which actually checks the progress of population in any country of the world” (590). This inference is supported both by the fact observed by Paley himself that “the number of the people have seldom, in any country, arrived at this limit, or even approached it” (590), and by his estimation that “[t]he fertility of the ground, in temperate regions, is capable of being improved by cultivation to an extent which is unknown” (590). He even estimates that “the quantity of human provision raised in the island [Great Britain] would be increased fivefold” (591). Excessive growth of population remains too remote a possibility to make a real issue for Paley.

Richard Payne Knight’s 1796 work, *The Progress of Civil Society*, is another document to show the prevalence of the ideology of natural theology. The argument of this long philosophical poem closely follows the logic of the Linnaean economy of nature. The “Contents” of Book 2 argues that, although animal species have “the general and unlimited tendency” (25) to increase, a healthy balance is maintained in the animal kingdom. This is owing to “those that live by destroying others” (25) and to “the universal dominion of man” (25). The text of the poem

elaborates this point:

. . . through the whole the balance to sustain,
 And in proportion'd [sic] bounds each race restrain,
 Each stands opposed to some destructive power,
 By nature form'd to slaughter and devour.

 To fix and regulate this general plan,
 Arose o'er all the moderator man. (2. 5-10, 29-30)

As the growing number of human beings “claim’d increase of food” (2. 37), animals decreased proportionately and “The hunter’s labours less productive grew” (2. 39). However, since human beings had “prospective thought” (2. 43), they eventually attained the ideas of taming and domestication. They then ensnared some “youthful brood” (2. 47) of animals to “copulate and breed” (2. 52) for their use. Some animals became faithful servants and came to “share / The shepherd’s labours” (2. 87-88). Others provided humans with “nutriment” (2. 62).

These processes caused a further growth of human population, which was then to be accommodated by the development of agriculture. From forest fires, humans learned to use fire to clear woodland for pasturage. The use of fire led to the making of metal tools by smelting, and through the use of these “more effective implements” (3. 47), Payne Knight states, “Labour by art was methodized and fed; / And man’s dominion over nature spread” (3. 49-50). Livestock animals together with ploughs began to be used “To trace the furrow, and to turn the soil; / To break the matted turf, and sink around / The limitary ditch, and raise the mound” (3. 62-64).

With the expansion of arable land, the atmosphere was tempered and softened. This brought about a better environment for humanity:

. . . e’en the elements to culture yield,
 And catch the mellow’d temper of the field.

 Hence milder airs from peopled regions rise,
 And earth returns their blessings to the skies;
 Bids softer breezes o'er rich tillage blow,
 And warmer vapours melt the drifted snow,
 Less black the tempests from the mountain scowl,
 And winds less furious from the ocean howl;
 In lighter showers descend the vernal rain,
 And numbing frosts with power less rigid reign. (3. 77-78, 83-90)

Nature and art, or the environment and human society, are here unified in a redemptive vision. The threat of increasing population and other environmental problems are absorbed and neutralised in a world-view that is based on the pre-established harmony of natural theology.

The blessings of population growth also constitute Erasmus Darwin's philosophy. Many of his scientific works are secularised versions of natural theology (McNeil 57). In the philosophical poem *The Temple of Nature*, he describes overwhelming fecundity observed in nature:

Each pregnant Oak ten thousand acorns forms
 Profusely scatter'd by autumnal storms;
 Ten thousand seeds each pregnant poppy sheds
 Profusely scatter'd from its waving heads;
 The countless Aphides, prolific tribe,
 With greedy trunks the honey'd sap imbibe;
 Swarm on each leaf with eggs or embryos big,
 And pendent nations tenant every twig. (4. 347-54)

Darwin goes on enumerating the enormous reproductive power of other species. In addition to plants and insects, he lists snails, worms, frogs and herring. "All these" (4. 367), he claims, "increasing by successive birth, / Would each o'erpeople ocean, air, and earth" (4. 367-68).

The verb "o'erpeople" in the last quoted lines suggests a darker aspect of population increase, and this will be discussed in further detail in the next section of this article. Darwin's stance nevertheless remains optimistic. In a footnote, he writes that an increase in "the number and quantity of living organisations, though many of them exist but for a short time, adds to the sum total of terrestrial happiness" (Footnote to 4. 387; 176). Like his contemporary Paley, Darwin believes in population growth as a means to achieve the greatest amount of happiness. This is reflected in the redemptive vision he holds for a future state of earthly existence: "Life increasing peoples every clime, / And young renascent Nature conquers Time" (4. 452-53).

Darwin, Paley and Payne Knight belonged to very different disciplines: natural philosophy, Anglican Christianity and classical studies. Their views indeed vary. But they seem to have an important assumption in common: the world is presided over by the good will of God, and his nature and purposes are observable by looking carefully at the world's harmonious organisation. It is clear that this framework functions to minimise the impact of anthropogenic harm to nature by reducing it into partial imperfections within a totality which is supported by benevolent deity. Such minor evils can even be thought to enhance the perfection of the world if we adopt the concept of the principle of plenitude, proposed by A. O. Lovejoy. The perfection of the whole, according to this unit idea of the history of ideas, consists in the existence of every possible

degree of imperfection in the parts (211). With all minor imperfections and temporal vicissitudes, the economy of nature can remain a system in which harmony and balance are maintained.

Fundamentally then, nature is free from man-made disruptions, and from this very reason, human beings are not responsible for any significant change in their natural surroundings. No environmental responsibility falls on their shoulders. Human beings, in terms of environmental ethics, are not moral agents of environmental significance, as his action cannot be of consequence in the natural environment. In the heyday of natural theology, ecological awareness and motivation for the conservation of nature were thus precluded from serious consideration. This intellectual situation was to undergo radical change by the arrival of Malthus's population principle.

3. Malthus and the Ethics of the Environment

The harmonious balance of nature's economy postulated by natural theology was destabilised by Malthus. Although his population theory did not completely confute the validity of natural theological views, it undermined some important aspects of this ideology. Malthus's partial demolition of natural theology also helped to establish environmental ethics and modern awareness of environmental conservation. His *Essay on the Principle of Population*, first published in 1798, argues to the effect that an intrinsic imbalance is built in the system of nature, and that human will and actions are indispensable for the stable operation of this system. What human beings choose to do will influence nature's economy, and consequently, human action is accompanied by an environmental impact. This inevitably leads to the redefinition of humanity as moral agents of environmental significance.

The title of the first edition of Malthus's *Essay* includes a reference to "Mr Godwin" and "M. Condorcet." This indicates that the essay is intended as a polemic against these two thinkers, both under the influence of natural theology. In terms of religious beliefs and political allegiance, William Godwin is a very different thinker from the self-acknowledged natural theologian Paley. Yet part of his thinking approximates to Paley's in considering the world in an optimistic light. Godwin's argument is characterised by conviction in human perfectibility, and this notion gives him confidence in a bright future for humanity. In his principal work of the 1790s, *Political Justice*, Godwin seeks to find empirical signs of ever-increasing improvement in social systems and in the human mind, while attempting to demonstrate the same claim by employing deductive logic based on the assumption of human perfectibility. This method of argument, pertaining both to induction and deduction, is similar to that which was employed by Paley's *Principles*.

For Godwin the perfectibility of humanity is an unquestionable fact underlying the general

progress of society: “. . . perfectibility is one of the most unequivocal characteristics of the human species, so that the political, as well as the intellectual state of man, may be presumed to be in a course of progressive improvement” (Godwin, *Political Justice* 1793. 11). No matter what its present conditions may be, humanity will eventually learn to make the right choice and bring their course of action on the right track: “No mind can be so far alienated from truth, as not in the midst of its degeneracy to have incessant returns of a better principle” (29).

In 1792, when Godwin was writing his treatise, the French Revolution began to show signs of lapsing into terrorism. Owing to his strong belief in the good side of the human mind, however, he managed to keep positive attitude towards contemporary political developments. Referring to the short period of six years between the completion of the American Revolution and the beginning of the French, he envisages a near future in which “France, the most refined and considerable nation in the world, will lead other nations to imitate and improve upon her plan” (224-25). The 1798 edition of *Political Justice* famously foresees the achievement of an ideal state of society: “There will be no war, no crimes, no administration of justice, as it is called, and no government. Beside this, there will be neither disease, anguish, melancholy, nor resentment. Every man will seek, with ineffable ardour, the good of all” (777).

Godwin’s bright vision of future applies to his discussion on population. The first edition of *Political Justice* alludes to a population principle similar to that which Malthus is to propose in a few years: “There is a principle in human society by which population is perpetually kept down to the level of the means of subsistence” (813). At the same time, though, Godwin thinks of enormous power of production latent in the European soil: “the average cultivation of Europe might be improved, so as to maintain five times her present number of inhabitants” (813). Later in the same work, Godwin extends this view to cover a far distant future and a much greater size of population:

Three fourths of the habitable globe is now uncultivated. The parts already cultivated are capable of immeasurable improvement. Myriads of centuries of still increasing population may probably pass away, and the earth still be found sufficient for the subsistence of its inhabitants. (861)

Like Paley’s natural theology, fundamental doubt about the sustainability of nature and society is precluded from Godwin’s system.

The other target of Malthus’s criticism, Marquis de Condorcet, makes basically the same claim as Godwin. In a work that discusses the perfectibility of society, *Esquisse d’un Tableau Historique des Progrès de l’Èsprit Humain* of 1794, Condorcet asks if the day ever arrives

when population growth exceeds the supply of food. The English translation of 1795, *Outlines of an Historical View of the Progress of the Human Mind*, reads that “When the increase of the number of men surpass[es] their means of subsistence, the necessary result must be . . . a continual diminution of happiness and population” (4). Condorcet’s conclusion, however, is just as optimistic as Godwin’s: “There is no person who does not see how very distant such a period is from us” (346). By the time such a distant time arrives, civilisation will have developed technology that can deal successfully with population growth: “all the human race will have attained improvements, of which we can at present scarcely form a conception” (346).

Malthus contradicts the claims of these two thinkers. His argument is that there is a fundamental disparity between the rates of population growth and increase in the supply of food. A seemingly ideal state of society, as is envisaged by Godwin, is destined to collapse, because rapid growth of population caused by such a state inevitably leads to food shortage. Population, Malthus remarks, “when unchecked, increases in a geometrical ratio” (71), whereas subsistence “increases only in an arithmetical ratio” (71). A number continuously multiplying itself is what Malthus means by “a geometrical ratio,” and this applies in population growth. In contrast, even if we can assume that the whole agricultural produce of a country steadily increases, the rate of increase will merely be “by a quantity of subsistence equal to what it [the country] at present produces” (74). Thus “the human species would increase in the ratio of—1, 2, 4, 8, 16, 32, 64, 128, 256, 512, etc. and subsistence as—1, 2, 3, 4, 5, 6, 7, 8, 9, 10, etc.” (75). This principle is “necessity” (72, 76). Malthus probably uses this term in critical response to the “necessity” of infinite progress that Godwin advances in his argument.

Malthus’s theory thus postulates an ineluctable conflict between population and food supply. In actual terms the conflict takes the form of “checks” that are constantly imposed on population increase. These checks are described as either “preventive” or “positive.” If a “foresight of the difficulties attending the rearing of a family” (89) prevents marriage, it is working as a preventive check. In the first edition of *An Essay*, Malthus is hesitant to articulate what specific preventive checks are actually found operating among people. The second edition describes them more graphically: they are “promiscuous intercourse, unnatural passions” (qtd. in Flew 24), and “violations of the marriage bed” (24), coupled with abortion, or “improper arts to conceal the consequences of irregular connections” (24). Positive checks, are those which repress “an increase which is already begun” (Malthus 93) by bringing about premature deaths among people. Again the second edition is more descriptive: “all unwholesome occupations, severe labour and exposure to the seasons, extreme poverty, bad nursing of children, great towns, excesses of all kinds, the whole train of common diseases and epidemics, wars, plague, and

famine” (qtd. in Flew 23).

Malthus introduces another set of categories to classify population issues: misery and vice. He observes that “all these checks may be fairly resolved into misery and vice” (Malthus 103). My previous paragraph has indicated that many of preventive checks are morally vicious behaviours, and that positive checks and their outcomes fall in the category of misery. With vices and miseries, Malthus’s world picture seems to be very different from the rosy future that Godwin envisages and from the harmonious system of nature that other natural theologists delineate in their works. In Malthus’s view, population will grow until there is enough misery or vice to achieve a state of equilibrium—the Malthusian principle seems to deserve the name that one of his early editors coined: “the Dismal Theorem” (Flew 47).

However, as I suggested earlier in this section, some aspects of the Malthusian doctrine do not radically depart from the ideology of natural theology. For Malthus, too, the benevolent guiding hand of divinity, which natural theology presupposes *a priori* and attempts to demonstrate inductively, is an important assumption. The first influential thinker to use the phrase the “struggle of existence” (84), Malthus entertains an evolutionary view of the natural world, and its ultimate focus is on the development of the human mind. The world, for him, is “the mighty process of God . . . for the creation and formation of the mind” (202). God’s benevolent purpose and intention are “to awaken inert, chaotic matter into spirit, to sublimate the dust of the earth into soul, to elicit an ethereal spark from the clod of clay” (202). Everything in the world is subordinated to this evolutionary plan of God.

For the development of the mind, physical and mental exertion is essential. Painstaking exertion, to be sure, leads to the production of material wealth and worldly good, but its final purpose is, as Malthus states, “to create mind” (204). On the other hand, Malthus thinks that human beings are by nature “inert, sluggish, and averse from labour, unless compelled by necessity” (205). Their only incentive to exertion is the avoidance of evil (Santurri 322), i.e. pain or suffering. By referring to Locke’s psychological theory, Malthus writes that “the endeavour to avoid pain rather than the pursuit of pleasure is the great stimulus to action in life” (204). The imbalance of population growth and subsistence is a design of God that provides an incentive to get human beings busy: “To furnish the most unremitting excitements of this kind [that rouses humans into action], and to urge man to further the gracious designs of Providence . . . it has been ordained that population should increase much faster than food” (204-05). Partial evil thus brings about “a great overbalance of good” (205) in the formation of mature intellect. “Want has not unfrequently given wings to the imagination of the poet, pointed the flowing periods of the historian, and added acuteness to the researches of the philosopher” (203-04).

Moreover, as Edmund N. Santurri points out, difficulties other than the problem of population growth are also regarded as stimulating the human mind to intellectual and moral development. Such difficulties include the obscurity of metaphysical subjects, arcane religious issues and the incompleteness of human knowledge of the natural world. Even the infinite variety of nature serves to facilitate mental development, because variety makes it possible to receive the vast number of impressions needed to awaken the mind from its material slumber, whereas uniformity and perfection cannot have the same degree of awakening power (Santurri 322).

The same logic can explain the positive significance of moral evil. Malthus claims that “moral evil is absolutely necessary to the production of moral excellence” (210). It is essential for the formation of a mature mind to see moral evil and feel “disapprobation and disgust at it” (210). Observing that “ardent love and admiration of virtue seems to imply the existence of something opposite to it” (210), Malthus concludes that the perfection of human character “could not be generated without the impressions of disapprobation which arise from the spectacle of moral evil” (210). Because he accepts the view that partial evil and irregularity contribute to the perfection of the world, Malthus can be considered as subscribing to the principle of plenitude (Lovejoy 211; Santurri 322), which is also shared by Paley and other natural theologists.

Malthus’s population principle is thus characterised by heterogeneity. On one hand it acknowledges the existence of fundamental imbalance, evil and irregularity in the world. With population imbalance inhering in nature, the economy of nature is not perfectly cyclical and harmonious as previously imagined by Linnaeus. On the other hand, the unfortunate aspects of the world are destined to be eventually subsumed under the theory’s final cause: the full development of the human mind by the benevolent guidance of deity. In the process of the mind’s development, the theory also affirms the significance of voluntary human actions in countering the negative aspects of the world. Providential harmony, considered by Paley as existing in the current state of the world, is reconceptualised by Malthus into a temporal process of gradual improvement, in which human endeavour is assigned a crucial role. Malthus’s revision of natural theology’s world picture entails, as will be discussed later in this article, an important theoretical significance for the formation of environmental ethics.

The second edition of Malthus’s *Essay* introduces the concept of “moral restraint.” Logically, moral restraint belongs to the category of preventive checks, as it means postponement of marriage on the basis of rational decision until a man “has a prospect of supporting his children” (Malthus, “Revised Edition” 126). Malthus also emphasises its ascetic side in his definition: “restraint from marriage which is not followed by irregular gratifications” (qtd. in Flew 25). Nevertheless, moral restraint is not merely the exercise of continence. It involves Malthus’s

central notion on the development of the human mind.

Santurri rightly claims that, for Malthus, an important form of mental development is the acquisition of the capability of reasoning from cause to effect. Such an ability manifests itself as foresight, or the power to determine the probable results of contemplated acts. A rational human being is one who exercises foresight, and creating such rational beings is the fulfilment of God's grand plan (Santurri 323). Malthus's argument suggests that moral restraint can only be expected from individuals who have attained the capability of reasoning. From this height of intellectual development only, it is possible to infer benefits that moral restraint can bring and tragic outcomes that lack of such restraint will entail. If moral restraint is operating in a given community, this means that members have achieved a mature level of mind that enables foresight as well as prudence based on such foresight. While being a representative form of human action that counters the intrinsic imbalance of the world, moral restraint is also a sign of development in human rationality.

Having reviewed Malthus's theory in comparison with natural theology, we can see the relevance of his population principle to environmental awareness. In the view of natural theology, human behaviour is given a limited significance within the economy of nature. In Paley's universe, population growth is equivalent to the increase of happiness, and because of "the tendency of nature in the human species to a continual increase of its numbers" (590), humanity proceeds in the direction of general happiness. The European soil, according to Paley, has such an enormous potential for food production that the "insuperable bar" (590) to population, imposed by food supply, "will seldom be found to be that which actually checks the progress of population" (590). Although population growth theoretically entails its own problems, in actual terms, they do not constitute disruptive factors. Nature is full of signs of benevolent deity, and whatever the increase of population may be, a constant increase of happiness is guaranteed. There is scarcely any room for individual human beings to have an adverse effect on the food-population situation, and by extension, on the economy of nature.

Population growth is not a problem for Payne Knight either. Darwin also sees the prolific reproductive power of nature in a positive light. Godwin agrees with Paley as far as population and food supply are concerned. Overpopulation and food scarcity are only theoretical to him. "Myriads of centuries" (861) from now, sufficient subsistence will still be available. On the Continental side, Condorcet's optimism corroborates Godwin's claim. Population problems, if at all, could materialise only in a very distant future. Even then, scientific improvements might well sort them out. Human beings, from these optimistic thinkers' perspectives, do not shoulder responsibility for the environment. For no matter what they may do, they cannot influence

nature's economy in a significant way. Nature is always on the right track. Human activities are not strong enough to destabilise its course. Humanity remains local, innocuous and insignificant.

In the Malthusian world, by contrast, human beings are significant players. Nature according to Malthus contains a fundamental imbalance in the form of the population principle. Population would rapidly outgrow the supply of food if checks upon it were removed. In actual human communities, stability appears to be attained, but it is at the expense of the happiness, health and lives of people, as population tends to grow until there is enough misery or vice to achieve equilibrium. In order to obtain a harmonious world order, exertion on the part of human beings is indispensable. Urged by the powerful stimulus in the form of the population principle, mankind pursues various courses of action to "support a more extended population" (206). They are also expected to exercise moral restraint to help to recover population balance. Malthus thus understands human exertion as a significant factor for the management of nature's economy. Human beings, in other words, bear responsibility for the harmonious operation of the natural-human environment. Clearly in this respect, Malthus departs from the tradition of natural theology.

Hence, in the Malthusian world, human beings can be regarded as moral agents responsible for the environment. In one of the seminal works of environmental literary criticism, Karl Kroeber observes that "Malthus's argument . . . is that human beings . . . ought to recognize their responsibilities in relation to the facts of natural reproduction and subsistence" (88). He also comments that "the question of individual responsibility is not ignored even in a world seen as operating according to rigorous naturalistic principles" (88). The current article's argument is in a sense an extension of these brief remarks by Kroeber. My reading of Malthus, as well as my discussion on natural theology in the previous section, has delved into the argumentative potential of Kroeber's proposition.

A great divide exists between the nonchalant attitude towards nature of eighteenth-century natural theology and ethical concerns about the environment in the present era. I have indicated that Malthus can be placed in the transition between these two attitudes. We owe a great deal to this population theorist: awareness of the integral part that humanity plays in nature's economy and of the responsibilities human beings bear in this dynamic but unstable environment.

4. Malthusian Aftermath and the Romantics

Malthus's view of population attracted a great deal of contemporary attention. The success of the first edition of *An Essay* led to a subsequent series of revised editions and republications. The second edition was out in 1803, followed by the editions of 1806, 1807 and 1826. In 1823 he

was invited to contribute an article on “Population” for the *Encyclopaedia Britannica*. This was republished separately as *A Summary View of the Principle of Population* in 1830. Widely quoted and discussed, his propositions became dominant theoretical formulations on population in the nineteenth century.

Paley in his later years was influenced by Malthus. In his last major work, *Natural Theology* of 1803, he accepts Malthus’s population principle, approving of his central concepts of “the geometrical progression” (261) of population and the arithmetic increase of food supply. Paley also affirmatively alludes to Malthus’s refutation of Godwin’s perfectibility theory.

However Paley does not simply concede to the claim of the younger population theorist. *Natural Theology* makes efforts to avoid some of the ruthless outcomes of Malthus’s principle by containing it within a framework presided over by benevolent Providence. In order to do so, Paley turns to intellectual, social and aesthetic happiness, as its degree is not dependent on the supply of provisions: “those [sources of happiness] which flow from a mild . . . government . . . those which spring from religion; those which grow out of a sense of security; those which depend upon habit of virtue, sobriety, moderation, order; those, lastly, which are founded in the possession of well directed tastes and desires” (262). Augmentation of collective happiness in society is the principal interest of this utilitarian thinker. As long as Paley is sure that the increase of some aspects of happiness is not restricted by food supply, he can circumvent the most serious consequences of the Malthusian theory.

The Malthusian perils of overpopulation are also taken up in Darwin’s *Temple of Nature*. Like Paley, Darwin tries to contain this potentially pernicious aspect of the organic world within the optimistic view of natural theology. In the fourth book of the poem, he describes extraordinary population increase among living things and checks operating on it in a manner similar to Malthus:

So human progenies, if unrestrain’d,
By climate friended, and by food sustain’d,
O’er seas and soils, prolific hordes! would spread
Ere long, and deluge their terraqueous bed;
But war, and pestilence, disease, and dearth,
Sweep the superfluous myriads from the earth. (4. 369-74)

Although these checks seem to be tragic events in the evolution of organisms, Darwin does not lay emphasis on this negative side of nature. He is satisfied as long as “every pore of Nature teems with Life” (380).

Darwin’s dismissal of the tragic consequences of the Malthusian principle is made possible

by his belief that death is only a transition in the progress of the organic world. Even “when a Monarch or a mushroom dies” (4. 383), in a few hours “Alchemic powers the changing mass dissolve” (4. 386), and new life springs up in innumerable buds and insects. Furthermore, some living things, after death, disintegrate and become part of the soil, forming “MIGHTY MONUMENTS OF PAST DELIGHT” (4. 450). Dead organisms do not lose the happiness they have felt while living. Their happiness continues to exist by being commemorated in mountains and other landforms. Hence, not just population growth but also resultant sufferings and deaths turn out to be positive elements in Darwin’s view of life. The benevolent guiding hand of nature leads the Darwinian world to ever higher stages in the face of the Malthusian dismal theorem.

While recognising the Malthusian imbalance of population in nature, Paley and Darwin assume the presence of a mechanism that maintains the health of nature’s economy. In this world-view, human beings are not vital players that can influence the course of nature. Their actions not having an environmental significance, human beings cannot be responsible for the economy of nature. Quite clearly, human efforts for environmental conservation do not make sense in the Paleyan-Darwinian world. The potential impact of Malthus’s theory is thus considerably blunted in these authors. Where then should we look for the signs of Malthusian aftermath and its environmental legacy?

This may sound odd, but in my view the Romantics can be regarded as important inheritors of Malthusianism. It has been known that the Lake School poets were hostile to Malthus’s theory. Although the complexity of Wordsworth’s reception of Malthus has recently been uncovered by Philip Connell (41-62), it still remains a common critical agreement that Wordsworth was basically opposed to Malthus’s “false philosophy” (Wordsworth, *Prelude* 1805. 12. 76). In addition, Coleridge’s verdict was that Malthus’s *Essay* was “exceedingly illogical” (1. 517) and it “had not confuted” (1. 517) Godwin or Condorcet as it purported to do. The reaction of Wordsworth and Coleridge to Malthus seems to be outright negative.

It is nonetheless worth consideration that Wordsworth’s and Coleridge’s attitude to the environment has affinities with Malthusian philosophy, not least in their understanding of human influence on nature. Like Malthus, the two poets think that human activities can seriously affect the environment, and this understanding is presumably related to their concern with the natural environment.

Kroeber proposed interpreting Wordsworth’s semi-autobiographical lyric “Nutting” as an expression of “a proto-ecological attitude” (62). The poem describes irrational destruction of a pristine forest nook by a nutting boy. According to the critic, this description expresses “the shame of an individual’s careless ravaging of the natural environment” (62). The poem,

recognising that human action can give rise to harmful consequences in nature, foregrounds ethical issues about human relationship to the environment. The poem's narrator remarks at the ending, "I felt a sense of pain when I beheld / The silent trees and the intruding sky" (50-51). The guilt about the senseless ravaging of vulnerable nature is intensified by this silent reprimanding from the near-transcendental realm. Having inflicted irrevocable damage on nature, the nutting boy is held accountable for his action. Young as he is, the boy can be thought of as a moral agent of environmental significance.

Literary criticism has read Coleridge's poem, *The Rime of the Ancient Mariner*, as "a parable of ecological transgression" (McKusick 44). The central episode of the poem is the killing of an albatross by the protagonist old mariner. After this pivotal action, the mariner and his shipmates go through severe ordeals: heat waves, drought, starvation, the shipmates' insanity and their eventual death. Hardship continues until the mariner blesses the beauty of mysterious water-snakes swimming around the ship. The mariner's conduct can be compared to that of Wordsworth's nutting boy. The man destroys the bird, or the spiritual essence of nature, and this action invites catastrophic consequences on himself and the human community he belongs to. The mariner has symbolically injured the natural environment, and, as well as undergoing physical suffering, he must bear ethical responsibility for it. The poem, involving a moral agent of environmental significance in the person of the mariner, can thus be called a genuine ecological parable.

It is clear from these readings that Wordsworth and Coleridge have gone beyond the providential world picture of natural theology. In their poems, human action cannot be accommodated in nature's economy, and owing to human presence, the natural environment is subject to disharmony, imbalance and potential destruction. Having examined Malthus, we can see that the poets' views are similar to that of the population theorist. Wordsworth and Coleridge certainly did not think that they had beliefs and outlooks in common with Malthus. In an important sense, however, the three men made similar contributions to environmental awareness and ecological ethics, which have proved vital legacies to later generations.

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