Vol: 2: Issue: 7 :2026

ISSN3107-6505



International Journal of English Literature and Literary Theories

International Peer Reviewed and Refereed English Journal

INTERNATIONALJOURNALOFENGLISHLITERATUREANDLITERARYTHEORIES (IJELLT)

ISSN: 3107-6505

Vol.:2: Issue: 7 2026.

(International Peer Reviewed and refereed English Journal)

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International Journal of English Literature and Literary Theories

IJELLT
ISSN:3107-6505
Volume: 2 Issue:7 Year:2026

Roots and Robots: Indigenous Food Cultures in the Digital Age

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Abstract: The twenty-first century is known for the transformation of food cultures due to the adoption of AI, digitisation, and data-driven nutrition systems. For indigenous and cultural food traditions, food culture transformation is crucial for technology, and it addresses global challenges such as food insecurity, environmental pollution, and global warming. At the same time, the transformation can destroy the indigenous knowledge related to food cultures and environments. The paper aims to investigate the connection between AI technologies and Indigenous Knowledge Systems through the prism of food-transforming narratives. The study focuses on the analysis of recent research that reveals how innovation and tradition can be combined in order to ensure a better food future. The objective of the research is to find out the connection between AI algorithms and ecological knowledge and also to stress the importance of indigenous practices in the context of sustainable development. An interdisciplinary method, which implies the usage of the theories of ecocriticism, food studies, and digital humanities, is based on the qualitative analysis of literary works like Bewilderment by Richard Powers, The Nutmeg's Curse by Amitav Ghosh, and Birnam Wood by Eleanor Catton. It discusses how food and its transformations, technologies, and culture are depicted in the works, which results in revealing that the transformation of food is described as a dialogue rather than a substitution between traditional and innovative AI. The significance of the study is to analyse that there is no contradiction between technological advancement and traditional practices regarding food.

Keywords: Artificial Intelligence, Indian Knowledge Systems, Food Transformation, Contemporary Literature, Indigenous Food Knowledge, Sustainability.

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Introduction

The essence of food is not limited to biological importance; it also represents cultural significance and ecological value. For centuries, indigenous people have established their own systems of food production using the biodiversity in the region, along with other factors such as the season and ecology of the particular region. The use of sustainable agricultural practices to produce indigenous food such as millets has been meeting the needs of these communities, but globalisation, industrial agriculture, and digitalisation of agriculture have changed all that. There is an immense impact of AI technology in agriculture and food management. The concept of AI technology is used by Various systems such as precision agriculture, predictive systems, irrigation and nutrition management systems, which show potential for the future. The challenge lies in the safety of indigenous cultures with respect to these technologies.

In contemporary literature, there is a concern that is frequently raised in recent works about the connection between technological progress and environmental sustainability. There is a variety of information that can be gathered from literary works about how societies can find harmony between innovation and tradition through food, ecological issues, and indigenous culture. The study analyses the relationship between technologies, including artificial intelligence, and the use of food knowledge in indigenous communities found in literary works such as Bewilderment, The Nutmeg's Curse, and Birnam Wood, and it uncovers the way these works try to foster dialogue between innovation and traditions.

In Food Studies and Environmental Humanities, Scholars have been stressing the importance of using indigenous knowledge for solving present-day ecological problems. In the words of Rosi Braidotti, posthumanism makes people realise the interrelatedness of humans, technology, and the environment as opposed to the anthropocentric approach which dissociates humans from ecological systems (Braidotti 2-3). In the same way, Francesca Ferrando states that posthumanism ensures ethical coexistence by questioning human-centeredness and accepting relational ontology, which includes non-human elements as well as technology (Ferrando 5).

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In the work The Nutmeg's Curse: Parables for a Planet in Crisis, Amitav Ghosh has attracted a lot of attention from scholars due to his critical view of colonialism and the damage done to the environment. Ghosh claims that contemporary problems with the environment are due to the perception of nature as a thing rather than as a living organism. Colonialism reduced the natural landscape into an exploitative object; thus, the bond between the community and nature was lost (Ghosh 31).

Richard Powers' Bewilderment focuses on ecological consciousness through the depiction of relationships between people and nature. One of the most important ethical ideas stated in the novel goes as follows: "Four worthy deeds should be learned. The deed of doing good to all creatures. The idea is to create balance and harmony. The feeling of happiness for the happiness of others, no matter where they live, is expressed. It is also essential to remember that any pain is one's own pain" (Powers 209). These ideas show the importance of the values of ecological empathy, interconnectedness, and joint responsibility. In another part of the book, it is mentioned that "if some small but critical number of people regained a sense of kinship, economics would become ecology" (Powers 257).

Eleanor Catton's Birnam Wood discusses the issues of guerrilla gardening, environmental activism and capitalist exploitation. Agricultural lands are presented in the story as a territory in which environmental values are pitted against technologically based capitalist development. The study focuses on the analysis of a story that touches upon issues of surveillance technologies and corporate interests and therefore raises some relevant questions regarding sustainability, environmental ethics, and food sovereignty (Catton). All these literary sources indicate a growing interest in literature in the relations between technology, food, indigenous knowledge, and ecology. It has been proven that contemporary literature becomes an important arena of imagination of alternative futures based on environmental and cultural resilience.

The study employs qualitative textual analysis, guided by ecocriticism, food studies, and digital humanities. The primary texts, Bewilderment, The Nutmeg's Curse, and Birnam Wood, have been selected since they make meaningful contributions to the themes of environmental sustainability, food production, technology, and indigenous epistemologies. In the research, the presentation of food practices, ecology, agriculture, and technology has been analysed through storytelling. By careful analysis and thematic consideration, consistent patterns in relation to indigenous food knowledge, artificial intelligence, and sustainable development have been recognised and interpreted. The secondary scholarly materials have been considered to provide context to the literary discussion in relation to food security, environmental ethics, and post-humanism.

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The indigenous food system is a system of knowledge that has been generated over many centuries. The system is centred around the concepts of biodiversity, environmental balance, and sustainable use of resources. Unlike modern industrialized agriculture, which usually stresses high production through the use of monoculture agriculture, chemical fertilizers and heavy irrigation, indigenous agriculture is firmly rooted in a symbiotic relationship with nature. It is common knowledge that traditional crops, including millets, pulses, and native grains, consume less water, adapt better to the changes in climate, enrich soil and contribute to biodiversity.

They ensure food security as well as maintain culture and ecology. It is clear that the indigenous peoples have a distinctive perception of food, as for them food is not only a product but an essential part of an ecosystem that includes land, water, plants, animals, and societies.

In The Nutmeg's Curse, Amitav Ghosh states that colonialism has fundamentally changed the way humans relate to nature since it has changed nature from living entities with inherent value to objects of exploitation and commercialization. According to Ghosh, colonization led to the transformation of indigenous environmental views into capitalist ones. In these views, such things as forests, minerals, waterways, and agricultural lands have not been seen as living things but rather as tools of economic exploitation (Ghosh3 1-35). The approach still guides many modern-day agricultural practices, causing climate change, loss of biodiversity, and ecological destruction. Ghosh suggests returning to the indigenous views on nature, which assume that people should be aware of their interconnection with nature and the agency of non-human entities (Ghosh 31-35). The idea can provide a useful framework for sustainable food system creation.

Artificial Intelligence (AI) technology has brought significant changes in today's agriculture by developing precision farming, climate prediction, automated irrigation systems, drones, satellite technology, and personalized nutrition technology. The use of artificial intelligence (AI) technology in agriculture provides numerous advantages for farmers, like analyzing soil quality, predicting weather patterns, optimizing crop production, detecting plant diseases, and minimizing resource wastage. There are many possibilities to enhance agricultural efficiency with such technologies, making agriculture more environmentally friendly and contributing to global food security, especially in areas affected by climate change.

Recent literature suggests that it is important not to treat technology as a completely independent solution to environmental problems. In Bewilderment, Richard Powers shows that technological development should be based on compassion, ecological responsibility, and ethics. In his novel, Powers uses numerous literary techniques to prove that it is essential not only to be compassionate towards other people but also to show our love to nature and all forms of life. The narrator says, "There are four good things worth practising. Being kind toward everything alive" (Powers 209). The statement implies the moral aspect with the idea of ecological ethics when scientific development goes hand in hand with compassion toward human and nonhuman creatures. Instead of the idea of technological superiority over nature, Bewilderment offers the idea of innovation to make people more responsible for environmental protection.

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Powers contends that sustainability can only be achieved through the restoration of the lost connection between humanity and nature. On the theme of interconnectivity in nature, the author hypothesizes that "if a sufficient number of people regain the sense of interconnectedness, their economic activities would comply with ecological laws" (Powers 257). The statement is both strong and convincing, in the sense that it goes against the existing economic systems in which more importance is placed on profits than on nature. Here, the author is implying that technological inventions such as AI can only have positive contributions in society, provided they work in accordance with the ecological values that see humanity as a part of nature.

In Birnam Wood, the discourse receives even more attention due to the fact that agriculture is described as the field of struggle between activism, capitalism, and technological innovations. Specifically, the book describes a group of activists that uses guerrilla gardening as one of the ways of sustainable farming and land management. Thus, the activism that is performed by the characters of the book can be perceived as a resistance movement that opposes privatization and commoditization of natural resources in capitalism. Indeed, according to the book, technological innovation can have an economically exploitative aspect if it does not have any ethical component (Catton). Hence, many problems related to food sovereignty, ecology, and the ownership of agricultural resources are discussed in the book. While new technologies may improve agricultural efficiency, sustainable food systems can be created only through collaboration and knowledge.

There are some examples showing that contemporary ecologies embrace technological innovations and integrate Artificial Intelligence with traditional knowledge of indigenous ecology. The benefits of artificial intelligence include weather and soil forecasting, effective irrigation, pest identification, resources optimization, and decision-making processes. On the other hand, the knowledge of the indigenous population includes generations of experience accumulated by these populations with regards to environmental sustainability, culture preservation, biodiversity maintenance, and sustainable agriculture. It is impossible to obtain such knowledge using just the algorithmic approach. In other words, AI and indigenous knowledge of food can become a holistic model for creating sustainable food systems. Instead of eliminating traditional agriculture, AI can enhance indigenous agriculture and optimize it while taking into account traditional ecological and cultural knowledge of these communities.

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The current academic works envision a world wherein scientific discoveries and time-tested ecological wisdom go hand-in-hand as against coming into conflict with each other. It is clear from the writings of Amitav Ghosh, Richard Powers, and Eleanor Catton that it is not just scientific advancement that matters, but also reestablishing the ethical connection between man and nature which is key to environmental sustainability. From the literary pieces written by these writers, it becomes clear that the

future of food security will hinge upon the integration of AI with ecological wisdom.

The evolution of food culture in an age of artificial intelligence provides various challenges and benefits to human beings. Although technological advancements are providing solutions for critical issues related to humanity, like food security and environmental destruction, they should not overlook the indigenous food wisdom and ecology. The analysis of Bewilderment, The Nutmeg's Curse, and Birnam Wood indicates that modern literary works consider the transformation of food as the conversation of technological innovation and indigenous ecology. It should be noted that modern literary works indicate that only through the integration of technological innovation and indigenous knowledge of environment could the future be sustainable. It can be concluded from the analysis that millets, traditional agriculture, and indigenous food wisdom can be valuable assets in solving environmental problems today. Thus, sustainable food in the future depends on the cooperation of technological and cultural knowledge rather than the domination.

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