Climate Change Vulnerabilities: Eco-Anxiety and Ethics of Posterity in Alan Gratz's *Two Degrees*

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Abstract

Climate change presents vulnerabilities, epitomized by extreme weather phenomena and enduring environmental transformations that imperil welfare of human existence in the Anthropocene. In his novel Two Degrees (2022), Alan Gratz engages with this existential issue following the trajectories of three youthful protagonists: Akira, Owen, and Natalie. In the backdrop of wildfires in California, polar bear encounters in the Canadian tundra, and a cataclysmic hurricane in Miami, the novel adeptly illustrates the imminent and perilous threats of eco-disasters caused by a rapidly changing environment. The interwoven narratives of Akira, Owen, and Natalie subsequently reveal the imperative for collective action and strategic foresight to avert escalating climate catastrophes and protect succeeding generations from the plight of climate-induced displacement. This contextualizes Two Degrees within the ethical purview of posterity and accentuates the moral obligation to shield future generations from catastrophes. This study examines the portrayal of climate change and its psychological repercussions, specifically focusing on the eco-anxiety experienced by the protagonists. Additionally, it explores how these characters embody the ethical responsibility incumbent upon contemporary generations to confront climate change and safeguard the welfare of posterity. Using the theory of econarratology of Arran Stibbe, this study presents Two Degrees not merely as a riveting narrative but as a clarion call to action, beckoning readers to engage in environmental advocacy and contribute substantively to ameliorating climate change.

Keywords: climate change, eco-disasters, displacement, eco-anxiety, ethics of posterity.

Introduction

Climate change stands as one of the most urgent challenges of the 21st century, threatening the very foundation of human and ecological stability. Characterized by extreme human influence on Earth's geology and ecosystems, the Anthropocene

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examines the necessity of addressing climate change comprehensively. The overwhelming scientific consensus, as represented by the Intergovernmental Panel on Climate Change, views that climate change is predominantly driven by anthropogenic activities, particularly the emission of greenhouse gases (IPCC 12). Reports from the IPCC (2021) emphasize that without immediate and substantial mitigation efforts, the planet will face catastrophic consequences, including rising global temperatures, severe weather events, and disruptions to natural and human systems (19). Pramod K. Nayar in his book *Vulnerable Earth: The Literature of Climate Crisis* rightly observes,

The nonhuman and the non-living are inheritors of an earth that can no longer sustain them, for the new hydro-social order created by humans has recolonized (destroyed) their habitats and their cognitive abilities. When the humans imperially expand their dominions, the nonhuman loses its grounds, so that when the flooding finally occurs, both humans and nonhumans are displaced. (31)

Climate change intensifies social disparities, with its most severe impacts being felt by marginalized groups, including low-income communities, indigenous populations, and those living in developing countries. These groups often lack the resources to adapt to climate changes and are more susceptible to its adverse effects. This disparity shows an ethical imperative to address climate change in a manner that is equitable and just. The political discourse surrounding climate change involves complex negotiations and policy-making on a global scale. Ethical considerations are paramount, particularly the concept of intergenerational justice, which prompts concerns about the ethical responsibilities of present generations to address climate change in order to protect the well-being of future generations. This ethical dimension, often termed the "ethics of posterity," challenges societies to consider their long-term responsibilities and the impacts of their actions on future inhabitants of the planet.

In contemporary novels, climate change has emerged as a dominant theme, reflecting society's growing concerns. Given the urgency and enormity of the problem, literature's role transcends mere reflection; it engages with the ethical complexities and emotional resonances of climate change. Fiction can evoke powerful emotional responses, compelling readers to reconsider their ethical stances and responsibilities toward the environment and future generations. Adeline Johns-Putra explores the theme of intergenerational ethics in contemporary novels, and focuses on the obligation to future generations as a foundation for environmental action (9). Caracciolo similarly argues that the contemporary fiction has the potential to "revolutionise humans' beliefs and behaviours in the present in order to ensure the well-being of humans and nonhumans in the future" (5). Climate change novels often critique traditional, sentimental framings of parenthood and posterity. By using emotional appeal, these narratives challenge anthropocentric viewpoints and identity politics, proposing radical alternatives that emphasize collective responsibility and

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ecological consciousness. The discourse of environmental crisis often calls upon the duties of parenthood toward future generations, fostering a sense of transcendence and timelessness, while evoking deep emotions of care and love. For instance, the climate change poem of British poet Ruth Padel's Slices of Toast (2007) effectively evokes parental concerns, transitioning from memories of colder winters to anxieties about future disruptions. Padel writes, "I think my daughter, my daughter, how is she going to deal with this?" (55-56). This shift from planetary concerns to personal ones illustrates the pervasive readiness to think of environmental issues in terms of posterity. However, the concept of posterity as a justification for environmental action presents significant ethical challenges. The elision of the non-human environment with human posterity often overlooks the conflicting needs among diverse human and non-human populations. This rhetoric, along with its underlying ethics, situates the complex and often unresolvable issues of environmental responsibility within the reassuring framework of parental love and duty, attempting to transform the unknowable into the knowable. Johns-Putra notes that framing posterity as parenthood blends environmental duties with parental norms, offering an ethical approach while simplifying complex climate issues (Johns-Putra 6). Moreover, conventional fictional techniques should not be dismissed as inadequate for addressing climate change. Fiction's ability to provoke emotional engagement can challenge readers to reconsider their relationship to the future. By presenting compelling, emotionally charged narratives, literature makes abstract and often overwhelming issues of climate change more tangible and immediate, fostering deeper ethical reflection. Literature thus becomes a crucial medium for engaging with the ethical imperatives of climate change, urging readers to reflect on their responsibilities to both current and future generations.

The intersection of literature and climate change has garnered significant academic attention, with numerous studies exploring how literature reflects and addresses the complexities of environmental issues. A foundational work in this field is Adeline Johns-Putra's Climate Change and the Contemporary Novel (2019), which posits that contemporary novels have the potential to challenge readers emotionally and ethically, urging them to reconsider their relationship with the future (Johns-Putra 5). Similarly, Mathilde Dutrieux argues that the modern novel must evolve to incorporate the collective and global scales of climate change, as demonstrated in her analysis of Amitav Ghosh's writings (73). These works present the novel's role in making the abstract and often overwhelming issues of climate change tangible and immediate, fostering deeper ethical reflection. Another significant contribution is Ursula K. Heise's Sense of Place and Sense of Planet (2008), which examines how literature can cultivate a sense of global environmental awareness. Heise's analysis emphasizes the importance of narrative in shaping environmental consciousness and examines the novel's potential to bridge the gap between personal experience and global environmental crises (208). In Living Oil: Petroleum Culture in the American Century (2014), Stephanie LeMenager explores the cultural and literary representations of oil and its centrality to modern life. LeMenager argues that literature can illuminate the environmental

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and social impacts of fossil fuel dependency, contributing to a broader understanding of climate change (7). Her work explores the potential of literature to critique contemporary energy practices and advocate for sustainable alternatives.

Eco-anxiety, the persistent fear of environmental catastrophe, has emerged as a significant focus in literary studies, as authors and scholars explore the psychological effects of climate change. Glenn Albrecht's notion of "solastalgia," which describes the distress resulting from environmental transformation, has been crucial in shaping our understanding of climate-related emotions (45). In his Postcolonial Witnessing: Trauma Out of Bounds (2013), Stef Craps argues that literature can provide a vital space for expressing and processing eco-anxiety, offering readers a way to navigate their fears and uncertainties about the future. Works like Barbara Kingsolver's Flight Behavior (2013) and Richard Powers' The Overstory (2018) exemplify how contemporary novels depict characters grappling with eco-anxiety, using their narratives to explore the emotional and psychological dimensions of environmental crises. These stories not only reflect the pervasive sense of dread but also encourage readers to confront their own environmental anxieties and consider their roles in addressing climate change. In Anthropocene Fictions: The Novel in a Time of Climate Change (2015), Adam Trexler examines how novels capture the pervasive anxiety surrounding climate change and its uncertain future. Trexler explores the genre's ability to evoke a deep emotional response, making readers more aware of their environmental impact and responsibilities.

The ethics of posterity, or the moral responsibility toward future generations, is a recurring theme in environmental literature. Adeline Johns-Putra's exploration of intergenerational ethics examines the importance of considering long-term impacts and obligations in environmental decision-making (Johns-Putra 13). This theme is prevalent in works like Kim Stanley Robinson's The Ministry for the Future (2021), which envisions a future where current actions are explicitly tied to the well-being of future generations. Climate change novels often critique the traditional, sentimental framings of parenthood and posterity. They challenge readers to move beyond anthropocentric viewpoints and consider broader ecological responsibilities. This rhetorical move shows the ethical challenges of balancing current needs with those of future generations. Literature's engagement with the ethics of posterity also critiques the simplistic narratives of parental care, revealing the ethical inconsistencies and complexities involved in truly equitable and just environmental stewardship. By presenting radical alternatives and emphasizing collective responsibility, contemporary environmental literature encourages a more nuanced and ethical approach to climate change.

Alan Gratz's novel *Two Degrees* exemplifies the potential of literature to address climate change effectively. The book follows the lives of three young protagonists—Akira, Owen, and Natalie—each facing eco-disasters across different regions. These narratives illustrate the pervasive and varied impacts of a

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changing climate. Through their stories, Gratz presents the urgency of collective action and the ethical responsibility of contemporary society to safeguard the welfare of posterity. *Two Degrees* does not merely evoke sympathy for its characters; it critiques the anthropocentric perspective dominating climate discourse. By focusing on the interconnectedness of human and non-human systems, the novel challenges readers to expand their ethical considerations beyond human concerns, fostering a more holistic and inclusive approach to environmental action. It questions the adequacy of traditional parental responses to climate change, and suggests that radical alternatives might be necessary to address the complexities of the Anthropocene. This paper aims to analyze how Alan Gratz's *Two Degrees* contributes to this discourse, particularly through its depiction of ecoanxiety and the ethics of posterity.

Alan Gratz utilizes intervoven narratives to deepen the reader's engagement with the themes of climate change, a technique that aligns closely with Arran Stibbe's theory of econarratology. Econarratology, as Stibbe posits, explores how narratives can shape perceptions of environmental issues by engaging readers emotionally and ethically (15). Gratz's narrative structure not only serves this purpose but also reinforces the interconnectedness and urgency of the climate crisis. The novel's alternating storylines present the experiences of three protagonists—Akira, Owen, and Natalie—across different geographic locations, each facing distinct manifestations of climate change: wildfires in California, polar bear encounters in the Canadian tundra, and a hurricane in Miami. This technique illustrates Stibbe's concept that stories can make abstract environmental issues more tangible and relatable (184). By weaving together these narratives, Gratz explores the global nature of climate change, reflecting Stibbe's idea that narrative structures can present the interconnectedness of environmental phenomena. The constant shift in focus from one protagonist's crisis to another mirrors the relentless and pervasive nature of the climate emergency and creates a sense of urgency that is essential for catalyzing reader's engagement and action. Furthermore, the personal stories of Akira, Owen, and Natalie embody Stibbe's assertion that narratives have the power to evoke empathy and ethical reflection. Through their diverse yet connected experiences, readers are invited to empathize with those most affected by climate change, particularly the younger generation who will inherit the consequences of today's environmental decisions. This aligns with the ethical dimension of econarratology, which emphasizes the moral responsibilities towards future generations. The narratives also facilitate a deeper understanding of the socio-economic disparities portrayed by climate change. Gratz's characters, coming from various backgrounds and facing different challenges, exemplify Rob Nixon's argument (2011) that narratives can expose the unequal impacts of environmental degradation on vulnerable populations. By presenting these stories side by side, Gratz fosters a holistic view of climate change that encompasses both human and ecological dimensions.

Eco-Anxiety in *Two Degrees*

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The psychological responses of the protagonists to eco-disasters are central to the narrative of *Two Degrees* and illustrate the theme of eco-anxiety. Akira's experience with the wildfire is a key example, reflecting a deep psychological distress. Her awareness of the "red flag warnings" and the implications of climate change are juxtaposed against her father's dismissiveness, presenting her internal conflict and fear. Akira's anxiety is encapsulated in her thoughts about the increasing severity and frequency of wildfires due to climate change, reflecting a broader social anxiety:

...but it seems like there aren't any "little fires" anymore, Akira thought. Not since the temperature of the earth had risen nearly two degrees, and the hotter air and longer droughts had sucked the moisture out of everything, making California a tinderbox. Now almost every fire was a megafire that burned up half the state. And it was all thanks to humancaused climate change. (Gratz 3)

Akira's frustration is evident when her father dismisses her concerns: "Climate change is real, and we're causing it. Which means we have a responsibility to do something about it." (Gratz 10). This tension presents the generational divide in the perception of environmental threats, exacerbating her eco-anxiety. Her fear and helplessness are further depicted when the wildfire encroaches: "Akira squeezed her eyes almost all the way shut and put her free hand out to feel where she was going. She felt heat to her right, and went left. She heard crackling and popping to her left, and went right" (75). The novel conveys eco-anxiety through immersive storytelling, placing readers in the midst of environmental disasters. The rapid escalation of the fire and the vivid descriptions of the landscape burning amplify the urgency and reality of climate change impacts. For instance, the novel describes how quickly the fire spreads, emphasizing the relentless nature of environmental disasters: "Akira saw flames spreading through the forest around them. The fire leapt from tree to tree, almost like a squirrel" (71). Akira's fear and guilt about not alerting authorities sooner are shared with the readers, making her eco-anxiety palpable. This technique is reminiscent of Richard Powers' The Overstory, which uses interconnected narratives to draw readers into the urgency of ecological collapse, enhancing emotional engagement with the climate crisis.

Owen's storyline provides another profound depiction of eco-anxiety in *Two Degrees*. Owen's enthusiasm for his family's business and his positive interactions with tourists reveal a surface level optimism. However, his acknowledgment of the diminishing sea ice and its impacts on polar bears hints at a latent anxiety about the future. Owen's experiences with the changing environment and the dire consequences for wildlife, such as polar bears, reflect his deep concern. Gratz describes how Owen stared at the vast expanse of melting ice, feeling a knot of fear tighten in his stomach. The sight of a starving polar bear searching for food made him realize the severity of the situation (30). This scene illustrates Owen's growing awareness and anxiety about the rapidly changing climate. His encounters with the altered migration patterns of polar bears and the

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increased presence of these animals in human-inhabited areas paint a picture of a fragile ecosystem on the brink. The recurring mention of melting sea ice emphasizes the urgency and concern, making the eco-anxiety palpable to readers. This portrayal echoes the psychological responses found in Jeff VanderMeer's *Annihilation*, where characters exhibit profound eco-anxiety in the face of ecological disaster.

Natalie's obsession with weather is a direct response to her anxiety about hurricanes. Her constant vigilance and preparedness reflect a psychological state shaped by the trauma of past storms. Two Degrees describes her meticulous tracking of weather patterns and collection of weather instruments: "Natalie had become obsessed with weather. She'd started keeping a weather journal, where she wrote down the daily high and low temperatures, the cloud formations, the wind speeds, the amount of sunshine and rain" (48). This behaviour indicates her underlying fear and need for control in an increasingly unpredictable environment. As Hurricane Reuben approaches, Natalie's panic and preparedness further illustrate her eco-anxiety. Her detailed list of preparations, from securing the house to stocking up on essentials, demonstrates her heightened state of alert. Natalie felt a familiar panic rising as Hurricane Reuben approached. She remembered the chaos of past storms and knew she had to be ready for anything (52). This urgency and her reaction to the impending disaster present the psychological impact of living in a climate-affected world. The trauma from past hurricanes, particularly Hurricane Irma, has left a lasting impact on Natalie's psyche. Her recollections of Irma's destruction reveal deep-seated fears. She could never forget the terror of Hurricane Irma, when the roof had been torn off. It haunted her every time a new storm was on the horizon (56). This persistent anxiety and the behavioural changes it induces are indicative of eco-anxiety, a growing concern in a world facing frequent and severe climate events. The novel's descriptive narration conveys the intensity and destructiveness of hurricanes, evoking a sense of dread in readers. The sky turned an ominous shade of green, and the wind howled like a beast. Trees bent under the force of the gale, and debris flew through the air (231). This vivid imagery helps readers experience the anxiety that the characters feel, bridging the gap between fiction and the real-world impacts of climate change.

Furthermore, *Two Degrees* emphasizes the increasing frequency and strength of hurricanes as a consequence of climate change. Hurricanes were getting stronger and more frequent. It was a sign that the planet was changing, and not for the better (54). By drawing this link, the novel reinforces the theme of eco-anxiety, emphasizing the urgency of the climate crisis and its psychological toll on individuals and communities. The story also portrays the broader community's struggles, illustrating how eco-anxiety is a shared experience. The collective anxiety of waiting for the storm and the depiction of neighbors who cannot afford to evacuate due to financial constraints describe the widespread nature of this fear: "Most of the people in her neighborhood couldn't afford to leave. They were holed up in their houses already, preparing to ride out the storm (51). This communal

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aspect of eco-anxiety emphasizes the pervasive and indiscriminate nature of climate change's psychological impacts. In connecting such experiences of ecoanxiety to broader literary contexts, *Two Degrees* aligns with other significant works in climate fiction. P.K. Nayar, in *Vulnerable Earth: The Literature of Climate Crisis* (2021), explores how literary texts portray human and environmental vulnerabilities caused by climate change, describing the urgent need for equitable solutions. This intersection of personal and communal eco-anxiety resonates with the broader discussions in contemporary literature about the psychological and ethical imperatives of addressing climate change. Similarly, Amitav Ghosh's *The Great Derangement* discusses the literary struggle to convey the enormity of the climate crisis, intensifying the psychological burden on those aware of these issues. Through its vivid, character-driven storytelling, *Two Degrees* makes the abstract concept of eco-anxiety palpable, enhancing readers' emotional engagement with the climate crisis, much like Richard Powers' *The Overstory*.

Ethics of Posterity in Two Degrees

The ethics of posterity in *Two Degrees* centers on the ethical duty of present generation to address climate change in order to safeguard the well-being of future generations. This theme is woven throughout the narrative and in the epilogue, exploring the importance of collective action, sustainability, and ethical stewardship. In *Two Degrees*, the theme of moral responsibility is intricately woven through the characters' actions and decisions. The protagonists—Akira, Owen, and Natalie—each demonstrate a profound sense of responsibility for future generations. For instance, Akira's commitment to documenting the effects of climate change and educating others shows his awareness of the long-term impact of their current actions:

To do that, we invited a bunch of kids from all over the world who went through their *own* climate disasters last year to come here and tell you *their* stories. I hope you'll listen to what they have to say and think about how you can make a difference for the future. (Gratz 336)

This notion aligns with Adeline Johns-Putra's emphasis on intergenerational ethics, where she posits that literature serves as a vehicle for exploring our obligations to future generations. The novel also calls for collective action, highlighting that individual efforts, while significant, must be part of a larger, coordinated response to climate change. Natalie's involvement in community efforts to mitigate the impact of natural disasters demonstrates this collective ethos: "...we're all together on this island we call Earth, and we're the only ones who can save it" (336). This reflects Arran Stibbe's concept of econarratology, which suggests that narratives can shape our understanding of environmental issues and inspire collective action. The novel vividly portrays the strategies and foresight necessary for protecting future generations. Akira's meticulous planning for wildfire evacuation describes the importance of preparedness and proactive

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measures. She realizes that it is about survival now, and for those who come after us (276). This sentiment resonates with the ethical imperatives highlighted in the narrative, emphasizing the moral duty to safeguard the environment for posterity. The ethical imperatives in the novel are further highlighted through the characters' reflections on their responsibilities. As Owen states, "Planet Earth is our home" and we owe it to those who will inherit this planet to leave it better than we found it (348). This notion is echoed in the works of environmental ethicists like Christopher Preston, who argue for a moral framework that considers the rights and well-being of future generations (211).

In the epilogue of Two Degrees by Alan Gratz, Akira's reflections and actions poignantly explore the ethics of posterity, though the treatment remains somewhat simplistic. As Akira prepares to speak at a Kids Against Climate Change rally, her sense of responsibility reflects a broader generational anxiety about the future of the planet. However, her decision to confront her fears and speak out against climate change, despite her personal trauma from the Morris Fire, tends to idealize the moral imperative to act now for future generations, glossing over the complexities involved in such ethical decisions. The notion of the ethics of posterity, which posits that the current generation must safeguard the environment for future generations, is highlighted through Akira's speech. She addresses the severe impacts of climate change and the pressing need for action, and examines the intricate relationship between humanity and nature, offering a rather straightforward challenge to the audience to assume responsibility for the planet's future. Gratz's portrayal of Akira's resolve to "get on with fixing things" (341) despite overwhelming challenges does reflect a commendable ethical commitment. Her story, intended as a poignant reminder of the long-term stakes in the fight against climate change, risks reducing this global crisis to a matter of individual willpower, sidestepping the broader systemic issues at play. Similarly, Natalie's closing speech at the rally, which emphasizes the dire consequences of a twodegree Celsius rise in global temperatures, is a powerful call to action and reflects the conventional climate activism rhetoric. While she shares her feelings of being overwhelmed by the enormity of climate change, the idea that "nobody has to do everything, but everybody has to do something" (Gratz 355) offers a comforting resolution to the collective anxiety surrounding this issue. Natalie's appeal for governmental action, while urgent, is undercut by the somewhat romanticized reference to her childhood fantasy of Mariposa, symbolized by the near-extinction of the Miami blue butterfly. This evocative metaphor presents the complex sociopolitical dynamics involved in climate change advocacy. The concept of "two degrees of separation" (364), meant to illustrate the interconnectedness among rally participants and the global consequences of temperature rise, is another striking metaphor. While the intention is to emphasize shared responsibility, the narrative effectively examines the importance of collective action in addressing existential threats. The epilogue's message is clear and urgent, and it is further enriched by exploring the diverse challenges and solutions involved in the fight against climate change.

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Conclusion

Two Degrees by Alan Gratz, thus, stands as a poignant narrative that intertwines the pervasive concerns of eco-anxiety with the profound ethical obligations towards future generations. The novel adeptly portrays the psychological turmoil experienced by its characters in the face of environmental crises, thereby mirroring the broader social anxiety over climate change. The characters in the novel possess a "blend of cognitive knowledge, ethical commitment to future generations, and faith in the ability of people to change things," which drives them to confront the immediate and long-term consequences of climate inaction (Goodbody 48). More than just a cautionary tale, the novel challenges readers to confront the immediate and long-term consequences of climate inaction. By weaving together the personal and the collective, Gratz emphasizes that addressing climate change is not merely an option but a moral imperative. The novel's portrayal of environmental degradation and its impact on the characters serves as a stark reminder of the urgency with which we must approach climate action, urging readers to embrace their responsibility towards ensuring a livable planet. Through its compelling narrative, Two Degrees transcends the realm of fiction, becoming a crucial commentary on the ethical responsibilities we hold towards posterity in the age of climate crisis.

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