

University of New England



**Representing “Inner Space”: Psychological Entanglement with Environments
in New Wave Science Fiction**

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Abstract

*The new materialist term “entanglement” refers to the inextricable, mutual, and nondual relationship between humans, nonhumans, and environments within a planetary collective. Overall, new materialist theory has a strong focus on embodiment and material entanglement. Correspondingly, New Wave Science Fiction (SF) novels from the 1960s and 1970s represent different kinds of relations between humans, nonhumans, and environments, but with a striking focus on what J. G. Ballard calls “inner space”. As works of literature with human protagonists, the New Wave SF novels selected for analysis in this thesis—J. G. Ballard’s *The Drowned World* (1962) and *The Drought* (1964), Frank Herbert’s *Dune* (1965), and Ursula K. Le Guin’s *The Word for World is Forest* (1972)—represent not only human/nonhuman material entanglement but also what this thesis refers to as human “psychological entanglement” with the nonhuman world. While this psychological entanglement is notably absent from new materialist theories of entanglement, it is nevertheless represented in the New Wave SF examined. These fictions depict the psyche as entangled with ecological systems. Additionally, this material entanglement with the nonhuman renders the human psyche more-than-human too. To this end, New Wave SF writers depict “psychological entanglement” as an experience of deep psychic contact with “inner space.” The term “contact with inner space”, in the context of this thesis, refers to the fusion of human internal mental states with external environments, including complex ecosystems. This “contact” or entanglement, therefore, possesses both a physical and psychological dimension, and in the four New Wave SF novels analysed in this thesis, it takes multiple forms; including, human contact with inner space, intra-action with environments, symbiosis with ecology and geological time, nonduality with ecosystems, and immanence within forest ecosystems. Ballard, Le Guin, and Herbert’s literary representation of these entanglements reveal how characters psychologically relate to, or experience, particular environmental problems such as climate change, drought, aridity, and deforestation. Therefore, this thesis asks two questions: First, how does the intersection of characters’ contact with inner space in *The Drowned World*, *The Drought*, *Dune*, and *The Word for World is Forest* and new materialist theory of entangled human/nonhuman relations suggest an extension of “entanglement” to include “psychological entanglement”? Second, how do Ballard, Herbert, and Le Guin’s representations of “psychological entanglement” in these New Wave SF novels challenge the rationalist and anthropocentric assumption of a human/nonhuman dualism? By contesting this dualism, these SF writers undermine human exceptionalist thinking long linked to the perpetration of global environmental harms, including climate and deforestation crises.*

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Introduction: Representing “Inner Space”: Psychological Entanglement with Environments in New Wave Science Fiction

He drifted from one pool to another, in the limbos of eternity, a thousand images of himself reflected in the inverted mirrors of the surface. Within his lungs an immense inland lake seemed to be bursting outwards.

—J. G. Ballard, *The Drowned World* (110)

J. G. Ballard’s *The Drowned World* (*TDW*) shows how the protagonist, biologist Dr Robert Kerans’s “entanglement” with an underwater environment collapses the psychological and physical borders of his identity. The new materialist, Serpil Oppermann, explains that “‘Entanglement’ means that everything in life comes into being through a relational process” (“Ecological” 27). All lives and substances are interwoven and undergo a process that grants them existence and agency, defined by “entanglement”. Ballard’s vivid speculation in New Wave Science Fiction (SF) expands *TDW* and *The Drought* (*TD*) characters’ human understandings of their entangled relationship with ecological crisis. For example, Kerans’s lungs are not *like* a lake, they *are* a lake; in the novel, the external environment becomes “inner space”. When the barrier between Kerans’s lungs and the lake bursts, he proves inseparable from water mentally and bodily. His inseparability from water exhibits “contact with inner space” (Ballard, *Guide* 184). Ballard’s description of a “thousand images” of Kerans, reflected by the lake’s surface, demonstrates the psychic dimension of his contact with inner space. Also, this description suggests Kerans’s physical embeddedness in

cosmic waters. In this case, Kerans crosses the human mind/ecosystem barrier by experiencing continuity with the water and a collective human identity. The psychic element of Kerans's surreal union with the lake adds dimension to materialist explorations of entanglement by including the psyche. Ballard's writing affords an understanding of human psychological interrelations with ecology; Kerans's oneness with the lake is an instance of this. Such examples can undermine the rationalist and human-centric ideological assumption of the human/nonhuman dualism that underpins environmentally destructive actions and institutional arrangements by providing alternative realities that allow a reader to reimagine this world. Dualism promotes disconnection from the nonhuman world, whereby this disconnection is a fundamental contributor to ecological exploitation of water bodies, deserts, and forests for profit and power, leading to environmental degradation and climate crises over time on this current Earth.

New Wave SF and “Inner Space”

A number of canonical 1960s and 1970s New Wave SF novels extend knowledge of human relations with nonhumans by imaginatively creating human interior and exterior ecological worlds. Examples of these novels include, Brian Aldiss's *Hothouse* (1962), Anna Kavan's *Ice* (1967), Philip K. Dick's *Do Androids Dream of Electric Sheep?* (1968), and Samuel R. Delany's *Nova* (1968). This thesis focuses on four New Wave SF novels—J. G. Ballard's *TDW* and *TD*, Frank Herbert's *Dune* and Ursula K. Le Guin's *The Word For World is Forest* (*WFW*)—to consider their representation of “psychological entanglement” in new materialist terms. These SF writers create worlds that foreground characters' mental experiences of the “nonhuman” environment. “Nonhuman” refers to the environments of water, oceans, lagoons,

lakes, rivers, deserts, and forests. The selected novels depict contact between humans and ecology to symbolise the growing ecological divides of post-World-War-II international society. Many new materialist theories challenge this binary between humans and nonhumans at material and corporeal levels. While new materialism's renewed focus on the body's materiality collapses the mind/body and mind/matter hierarchies, it raises the question: what happens to our understanding of human and nonhuman consciousness? My analysis centres on SF novels that represent the psychological component of human entanglement with ruined environments undergoing climate and deforestation crises. Ballard characterises the integration of the human interior and ecology as "contact with inner space" (*Guide* 184). New materialist concepts of "agency" and "entanglement" will be applied to interrogate the context of SF characters' surreal psychological merging with the exterior ecological world. While the result of this analysis is a notion of human/environment enmeshment, including mental enmeshment, these SF novelists' representations of "contact with inner space" are vital to contesting the rationalist idea of the human/nonhuman dualism. Such resistance is conducive to human attitudes that deny ecologies' agency or mind. This ontological denial means that humans can exploit ecosystems without consideration for how their behaviours contribute to climate change, drought, aridity, and deforestation on Earth, on the fictional Earths of Ballard, and the other worlds of Herbert and Le Guin.

New Wave SF representations of "inner space" contradict the assumption of a physical and psychological human/nonhuman dualism. Malisa Kurtz, writing on SF in the 50s and 60s, suggests that Hard SF writers, most notably Isaac Asimov, Arthur C. Clarke, and Robert Heinlein, represent outer space, alien civilisations, advanced technology, and physics principles (201). In his essay, "Which Way to Inner Space?" ("Inner Space" 1962), Ballard argues that Hard SF from the 1950s, and earlier, over-emphasises physical science and outer

reality (102). In a critique of Hard SF's emphasis on outer space, Ballard states that "it is inner space, not outer, that needs to be explored. The only truly alien planet is Earth" ("Inner Space" 103). Ballard suggests that the exploration of physics and space, common in traditional forms of SF, misses the richness of the human unconscious. Ballard, in a *New Worlds Magazine* essay, establishes "inner space" as the "fusion of the outer world of reality and the inner world of the psyche" ("Unconscious" 141, 1966). "Inner space" refers to human interior experiences, such as thoughts, emotions, dreams, memories, visualisations, transformative experiences, trance states, psychic visions, prescience, and anxiety. "Contact with inner space" refers to a human experience of unity with the material world. This contact demonstrates that humans and ecosystems are a mental and physical continuum. In this respect, Ballard highlights that the psyche represents a knowledge gap that SF could fill. Connection with inner space in New Wave SF is a vital notion that bolsters human harmony with ecosystems and allows people access to their innermost being (Ballard, "Unconscious" 141). Importantly, it suggests the psychological overlap of humans and nonhumans, undermining rationalist and anthropocentric ideological notions of a psychic human/environment schism.

1960s and 1970s New Wave SF novels were written and published at the same time as two developments in twentieth century science and politics: first, modern science started to understand the impacts of humans on the environment; and second, the rise of modern environmentalism and environmental activism. Rebecca Evans, in an essay on New Wave SF and the inception of the environmental movement, argues that during the 1960s, public interest in the human treatment of ecologies rose (435). In this decade, environmentalists expressed concern over human ecological impacts, including overpopulation, nuclear waste disposal, deforestation, pollution of the atmosphere, water, rivers, and oceans, and the

application of toxic chemicals to plants (Evans 435). The development of ecological, physical, and meteorological sciences during the 1960s informed the New Wave SF notion of contact with inner space, which alludes to a psychic symbiosis of humans and ecosystems. Evans highlights the overlap of the “historical, thematic, and attitudinal—between two burgeoning fields: modern environmentalism on the one hand, and the emergence of New Wave SF on the other” (434). These fields share the theme of human impacts on ecosystem vitality. The historical connection between these four SF novels and the beginnings of modern environmentalism is a crucial reason for their inclusion in my analysis. As Evans posits, the 1960s environmental movement is interdependent with SF depictions of ecological dystopia (438). This movement influenced New Wave SF’s dystopian predictions of the Earth’s future in Ballard, Herbert, and Le Guin’s work. The pessimism of New Wave SF and environmentalism echoes modern scientific and meteorological discoveries concerning the disastrous global warming trends in the twenty-first century.

SF representations of decaying environments in the Earth’s future draw on the genre’s speculative function. Evans states that “New Wave’s pessimism—as well as certain strands of its qualified optimism—often encompassed possible ecological futures” (438). New Wave SF differs from Hard SF because of its “pessimism” and “qualified optimism” (Evans 438). Ballard, Herbert, and Le Guin’s novels warn fractured relations with ecologies can escalate climate disasters and mass extinctions. Canavan and Robinson, writing on ecology and SF, argue that human consideration of the relevance of estranged future SF worlds to the present is essential to building discourse on climate change in the twenty-first century (x). SF’s vision of a future ecological apocalypse provides new ways of thinking about climate change, as exemplified in this discussion and referenced in Canavan and Robinson’s book (x). The

function of these SF novels is to undermine maladaptive denials of anthropogenic climate change. “Anthropogenic” refers to human actions that contribute to climate change. These denials of climate change are maladaptive, because they suggest there is no reason to ameliorate global warming as it is not caused by humans. SF, generically adapted to imagining futures, provides an alternative view of climate change by imaginatively predicting, and representing, the consequences of maladaptive anthropogenic climate change to ecosystems and society. These shifts in climate are currently afflicting the world, most notably, rising temperatures and sea levels and more frequent cyclones, droughts, thunderstorms, fires, and floods.

Ballard’s *TDW* and *TD* represent a holistic human/water relationship. Human relations with water inform these fictional representations of global warming and drought. However, the rationalist construct of dualistic human/nonhuman relations is partly responsible for fracturing the entanglement of humankind in Ballard’s fictional Earth’s atmospheric and water ecologies. This fractured entanglement is responsible for ecologically exploitative practices and actions by individuals, and collective institutions, that alienate humans from nonhuman systems, contributing to the mistreatment and pollution of water ecosystems. Thus, these actions collectively lead to the natural disasters of global warming and anthropogenic drought in *TD* and *TDW*. Importantly, Ballard undermines the dualistic human/water relationship in these novels by representing characters’ psychic continuity with water bodies. Several characters in *TD* exhibit a spiritual and mental continuity with the draining river, including Charles Ransom, Philip Jordan, Captain Jonas, and Quilter. For example, Ransom notices that “the dream-faced figure of Quilter resembled a demented faun strewing himself with leaves as he mourned for the lost spirit of the river” (Ballard 3). Quilter has a mystical and holistic relationship with the river, which resembles Pagan religious

experience. Throughout the novel, Quilter experiences deep entanglement with the river and water. In addition, Ballard's reference to Quilter as a "dream-faced figure" signals the psychic aspect of his unity with water ecologies. This continuity with water, and water ecologies, closes the human distance from the nonhuman world. New Wave writers fulfil SF's predictive function by revealing that rationalist ideologies obstruct attempts to alleviate climate change, with catastrophic consequences.

Jason Moore, in "The Capitalocene", argues that the idea that humans are separate from the world's entangled web displays dualistic thinking (596). The human mental separation from ecosystems, exemplified by Cartesian rationalism, does not encompass the constant interchange of life on Earth ("The Capitalocene" 598). The SF novels examined depict how the rationalist and human-centric notion of a human/nonhuman divide is conducive to an absence of environmental ethics, legitimising destructive control of ecologies. *TDW* represents an Earth where capitalism constructs a psychic human/ecology dualism. Ballard implies that psychological dualisms motivate human mistreatment of the atmosphere. In *TDW*, solar storms enlarge "the Van Allen belts and [diminish] the Earth's gravitational hold upon the outer layers of the ionosphere" (21). Notably, Ballard does not explain why the Earth's gravitation cannot hold onto atmospheric layers, implying this event is anthropogenic. Before the crisis in *TDW*, the mental relationship between humans and ecology was disharmonious. This human/ecology divide is displayed by Ballard's depiction of the submersion of London, and its heritage of paintings and sculptures, symbolising industrial society's decay. *TD* explores how a psychic dualism between humans and water ethically justifies ocean pollution with plastic, because water appears to lack agency or mind. *TD* identifies human ecological exploitation as the cause of the drought. Frank Herbert's *Dune* stresses that a human-centric emphasis on linear financial gain from spice and water

threatens the planet Arrakis's balanced physical and psychic entanglements. Like *Dune*, Le Guin's *WFW* demonstrates how human-centrism severs enmeshment with the planet. In *WFW*'s case the Terran denial of the forest's psychology threatens to dislocate the manifold connections of the Athsheans and their forest.

New Wave SF novels represent the impact of fractured interconnection of humans and nonhumans at a psychological level on ecologies; they relate how restoring these psychic relations could benefit ecosystems both fictional and actual. However, as Paul Rhodes and James Dunk state in their essay, "Eco-Psychology: A Critical Paradigm in Climate Emergency", despite the emergence of modern environmentalism in the 1960s, "ecosystems continued to collapse" (156). The continued degradation of ecosystems suggests "that the core problem [lies] not in the environment but in human psychology" (Rhodes and Dunk 156). The use of the term "psychology", in this thesis, means the human interior experience and also, at times, an environmental form of psychology of water bodies, deserts, and forests. These New Wave SF novels' visionary representations of the psychological elements of anthropocentrism and rationalism deepen our understanding of the mental and anthropogenic aspects of global warming, drought, and deforestation.

Anthropocentrism and rationalism are human-centric philosophical positions that elevate the human above the nonhuman world, cast the nonhuman as "inert" matter, and deny the existence of any force or event not encompassed by an empirical scientific paradigm. Despite promising developments in the modern environmental and climate change movements, humans must reconsider the impacts of dualistic ideologies—comprising of rationalism, anthropocentrism, and instrumentalism—on ecologies. Instrumentalism refers to a view that

humans can exploit ecologies for profit with no repercussions, as these ecologies are considered lifeless material. Together Ballard's conception of "inner space" and the concept of "psychological entanglement", developed in this thesis, reimagine the mental relationship between humans and water, desert, and forest landscapes. These human/ecology relations in SF provide an alternative to dualistic thinking regarding ecosystems that, if not averted, will trigger mass extinctions and the Earth's entropy in SF and reality.

Rationalism and Ecological Crisis

Scientific rationalists view matter as either "inanimate" material without agency (such as water, deserts, and mountains), or "animate" matter with agency (such as humans, animals, and plants). Val Plumwood, in her study *Environmental Culture*, argues that rationalist ideology imposes a reason/nature and human/nonhuman binary on life (21). This rationalist position suggests that "what is genuinely human in the set of characteristics typical humans possess, has been defined oppositionally, by exclusion of what is associated with the inferior natural sphere" (Plumwood, "Nature" 17). Plumwood asserts that rationalists restrict specific attributes to humans by denying those attributes in nature. The rationalist human/nature binary is associated with the idea that humans are rational, creative, and psychological (Plumwood, *Feminism* 110). From this perspective, nature is "passive", "inert" matter with no agency, will, or mind. Rationalism constructs a false physical and mental human/nonhuman dualism. Of relevance to this debate, Emily Moise in her scientific essay, "How did Life Begin", states that recent science supports Darwin's hypothesis that "organic matter", such as bacteria and more advanced animals, like humans, apes, and dolphins, originated from the "inorganic matter" of hot water in deep sea vents or the primordial soup

of the Earth's surface over 3.5 billion years ago (2). Nevertheless, there is no widely accepted scientific explanation of how life originated from inorganic and "inanimate" hot water during "abiogenesis." "Abiogenesis" is the process that creates life at its evolutionary origin, including bacteria and early aquatic organisms such as the jelly amoebae (Moise 1). If creative organisms like humans and advanced animals arose from the seemingly "inanimate" matter of water, then there is no justification for the rationalist construction of rigid human/nature, human/matter, and human/nonhuman dualities.

According to Arianne Conty's essay on new materialist responses to the Anthropocene, the development of the scientific method was aided by the differentiation of "subject and object, nature and culture, mind and matter" (76). Rationalism fuels the separatism of mind/matter and human/nonhuman. In these terms, scientific rationalist and anthropocentric ideologies deny complex relationships between nature and culture, mind and matter, subject and object. This dualistic thinking is associated with the idea that human consciousness is autonomous, self-constituted, and separate from the mindless exterior world (Conty 77). Anthropocentrism is grounded in the dualistic elevation of the human as the prime and active agent when compared to the lesser and inactive nonhuman. As Conty explains, dualistic constructs, including the mind/matter and nature/culture binaries, do not encompass Earth's interconnections (76-77). The idea that environments are "inanimate" material and mindless suggests they do not suffer. Beery et al. state that these divisions are part of ideologies, institutional arrangements, intellectual traditions, and cultural norms preventing human awareness of their presence in nature, thereby widening any human/nonhuman disconnection (472). This disconnection is part of ontological frames, present in late seventeenth and eighteenth century Enlightenment philosophical thought, such as scientific rationalism and anthropocentric ideology (Beery et al. 472). These ideological rifts are the basis of a lack of

concern for human impacts on environments and an absence of human/ecological reciprocity, integral to individual and collective human exploitation of the nonhuman world. An unethical view of nonhuman life has legitimised the exploitation of resources, such as natural gas, coal, oil, minerals, and timber, for consumption and profit in the twentieth century and the early twenty-first century. The result for humankind and the biosphere is an acceleration of global warming, desertification, ecosystem damage, deforestation, and animal extinction.

Ecopsychology is a theoretical framework that helps describe the representation of psychological human/nonhuman separatism in the SF texts under analysis. One of the most influential ecopsychologists, Theodore Roszak, defines “ecopsychology [as] the name most often used for [the] emerging synthesis of the psychological (here intended to embrace the psychotherapeutic and the psychiatric) and the ecological” (“Psyche” 4). Ecopsychological synthesis aims to mend a division between the human mind and material nature. Andy Fisher asserts that the human/nature dualism is continuous with binaries fundamental to Western society, examples being inner/outer, psychology/material, and human/nonhuman (9). Like Plumwood and Conty, ecopsychologists argue that the mind/matter binary ideologically underpins unethical attitudes toward environments that justify ruthless ecological exploitation. Fisher argues that the Western individual’s inward retreat and estrangement from society and ecology is the basis for ecological exploitation (9). Furthermore, Fisher suggests that the schism between human psychology and the external world reinforces the idea that environments are mindless. Hence, Roszak claims that the dislocation of human psychology from the exterior environment is a pathology that contributes to a lack of ecological responsibility in the current world (*Voice* 3). This human psychic dislocation from ecosystems is the ideological justification for the unethical exploitation of ecology. The consequence of these ecologically exploitative attitudes, practices, and actions is

environmental catastrophe. New ideas, such as “psychological entanglement”, counter this trend by unsettling the rationalist, anthropocentric, and instrumental assumption of a human/nonhuman dualism.

Agency and Entanglement in New Materialism

This thesis places new materialist theories of material entanglement in the context of New Wave SF representations of the psychic connection between characters and planets, comprising the fictional Earth, Arrakis, and Athshe. Nick Fox and Pam Alldred argue that a critical characteristic of new materialist theories is their emphasis on the material (1). New materialists do not consider human interiority separable from matter, and therefore do not analyse the unconscious directly. According to Conty, new materialism highlights that human psychology is part of the external world’s materiality (74). This theoretical tradition challenges modern dualities, such as mind/matter, casting the nonhuman as “inert” (Conty 74). Applying new materialist concepts to Ballard, Herbert, and Le Guin’s dramatisation of contact with inner space, reveals that entanglement can incorporate human and ecological psyches. For example, in *Dune*, Paul dreams “of an Arrakeen cavern, silent people all around him moving in the dim light of glowglobes” (Herbert 5). Paul’s dreams of Arrakis on Caladan displays a mental interrelation that traverses planets. His experience is a dream, demonstrating the psychic element of contact with inner space. In addition, it incorporates dim light, which is the material component of this psychic contact. SF writers’ expansion of the human mind to ecology, in describing relations with inner space, undermines the narrative of a solely material human/ecosystem link. Also, these New Wave SF novels represent the agency of landscapes that appear unreactive to humans; these landscapes include oceans,

lagoons, deserts, and forests. The result is a re-articulation of humans and ecologies' mental and physical enmeshment. The interplay of new materialist entangled relations and SF depictions of contact with inner space, suggests an extension of entanglement to psychology. Theories of entanglement, that incorporate distinct human and ecological psyches, encompass human/nonhuman relations better than existing new materialist theory.

New materialists describe how humans might reimagine themselves as having agency and experiencing entanglement, with the nonhuman in material ways, as an alternative to the notion of human/nonhuman separatism. Prominent new materialist theorists critical to this analysis include Vicki Kirby, Stacy Alaimo, Karen Barad, Vinciane Despret, Donna Haraway, Jane Bennett, Serpil Oppermann, William E. Connolly, and Bruno Latour. As discussed in more detail in the next chapter, Fox and Alldred argue that "new materialism is a term ascribed to a range of contemporary perspectives in the arts, humanities and social sciences that have in common a theoretical and practical 'turn to matter'" (1). New materialism, as a theoretical position, crosses several research fields. Tobias Skiveren claims that new materialism signals a shift from poststructuralist theory on texts and signification to the physical, biological, and chemical sciences, and the material (192). For example, Karen Barad is a new materialist theorist who incorporates Quantum Physics in her work. While Donna Haraway is a new materialist, postmodernist, and feminist theorist, drawing on biological science. Furthermore, new materialists emphasise that all matter is physical, living, and possesses agency (Fox and Alldred 1). This matter includes organic animals and plants and inorganic technology, geologies, and chemical elements. According to Connolly, new materialist theory is defined by extending agency to material environments, decentring of the category of the human, and also the idea that human entanglement with environments co-produces agency through "intra-action" (400-401). The new materialists Diana Coole and

Samantha Frost outline that new materialism stresses the interdependence of humans and the Earth's materials (1). This theoretical perspective highlights the participation of humans, cultures, and ecologies in a process that co-constitutes their agencies and bolsters planetary vitality.

Four interrelated new materialist concepts are crucial to the theorisation of these processes: “agency”, “agential”, “intra-action”, and “entanglement”. The Belgian philosopher of science, Vinciane Despret argues that the co-evolvments and dependencies of agents, beings, and species grant them agency (44). In this way, “agency” refers to life’s ability to react and act upon other life. Any nonhuman agent, such as environments or animals, has agency if they mutually affect other agents (Despret 44). In sum, agency is a mutual process; human impacts on environments and environments’ impacts on humans give one another agency. “Agential” refers to humans or nonhumans who possess agency and become entangled with one another, including water, lagoons, oceans, deserts, and forests. Expanding on her definition of “entanglement”, Oppermann argues that the universe is an undivided whole consisting of entangled and intra-acting natural and cultural forces (“Ecological” 26-27). Moreover, the engaging new materialist theorist Jane Bennett states that “entanglement” means that environments are inside the human body and consciousness (116). Barad argues that “intra-action” refers to a dynamic of forces, including entities, continually influencing one another in inseparable and collective relations (*Meeting* 141). She contends that entities’ specific intra-actions consist of a flow of agencies (“Posthumanist” 817). The processes of enmeshment and intra-action reveal that humans are inextricable from all life forms. This thesis aims to expand these new materialist theories of agency and entanglement by applying them to human and ecological psychologies in New Wave SF.

Contact with Inner Space and Psychological Entanglement

New Wave SF representations of contact with inner space suggest an inextricable and psychic enmeshment of humans and ecologies in ways that allow us to isolate the core features of new materialist entanglement, such as “agency” and “intra-action”. SF authors explore the inseparable relationship between the human psyche and external ecology, as contact with inner space. Fox and Alldred state that according to new materialists while “human epiphenomena such as imagination, memory and thoughts; [are] not themselves ‘material’, such elements have the capacity to produce material effects” (1). When new materialists investigate these entanglements, they do not stress life’s mental aspects, but the inseparability of psychology and matter. The new materialist emphasis on how human thought and memory have “material effects” reveals an overemphasis on materiality. Even when new materialists mention psychology, they foreground its bodily effects rather than treating it as a distinct part of the world requiring analysis. This restriction of entanglement to material life and objects, including human bodies, ecologies, and buildings, neglects the marked participation of the mind in human/nonhuman relations. The absence of a separable interrogation of human and nonhuman interiority in new materialist entanglement theory means it cannot fully challenge the psychic human/ecology dualism. Nonetheless, human contact with inner space in SF includes the psychological element of entangled relations. This is in addition to the physical element already incorporated in new materialism. As such, New Wave SF representations of characters’ relations with inner space suggest a potential extension of new materialist analysis to include the psyche. By considering the psyche, new materialist theory would encompass a

crucial aspect of human relations with the nonhuman world, revealing the human/ecology dualism as a rationalist and anthropocentric construct.

SF characters' contact with inner space reveals humans and nonhumans' physical and psychic relationality. As a thought experiment, applying the physical and mental relations in Ballard's notion of contact with inner space to new materialist theories of material relationality invites an extension of entanglement to psychology. Notably, the intersection of SF depictions of relationality and new materialism suggests "psychological entanglement." This idea highlights humans and ecosystems' reciprocal, inextricable, material, and psychic symbiosis. "Psychological entanglement" helps contest rationalist and anthropocentric conceptions of the human/nonhuman binary, underpinning the individual and institutional disconnections from ecosystems contributing to ecological manipulation and deterioration. Re-occurring examples of SF depictions of "psychological entanglements" include human contact with inner space, intra-action with ecologies, symbiosis with landscapes and time, and transformative and psychic nonduality with environments. This thesis will analyse the mental aspects of enmeshment manifest in the selected New Wave SF works and address how they help subvert anthropocentric ideological conceptions of human/nonhuman duality.

Objectives and Thesis Question

One thesis objective is to establish how the interweaving of New Wave SF representations of contact with inner space, and new materialist ideas of entangled humans and environments, suggest a psychological form of entanglement. To address this objective, examples of

“psychological entanglement” will be outlined for each of the four New Wave SF novels analysed. Another key objective is to explain how New Wave SF representations of psychic entanglement challenge rationalist, anthropocentric assumptions of a dualistic human/nonhuman relationship. This divided interconnection is an ideological underpinning of peoples’ disregard for environmental forms of agency and psyche, thereby justifying exploitation of what are considered “inert” ecologies. The consequence of dualistic thinking is ecological crises, including climate, drought, aridity, and deforestation crises. The four SF novels, selected for analysis, predict—and allegorise—ecological disasters in psychological as well as physical ways. Such texts, Carol Hovanec argues, warn “of ecological catastrophe, often using other planets in other galaxies to offer theoretical case studies of what might happen in the future if humanity continues to exploit the environment” (84). SF writers anticipate extreme ecological catastrophes to heighten the impact of their fiction on readers and draw attention to evolving problems like global warming. The New Wave SF under investigation shows that the new materialist narrative of these crises must include human and nonhuman interiority to address the centrality of the psyche, in the future Earth and exoplanets’ entanglements.

The idea of dual physical and “psychological entanglement” complements new materialist theories of human relations with the nonhuman by including the mind. Thus, the thesis will address two questions: First, how does the intersection of characters’ contact with inner space in *TDW*, *TD*, *Dune*, and *WFW* and new materialist theory of entangled human/nonhuman relations suggest an extension of “entanglement” to include “psychological entanglement”? Second, how do Ballard, Herbert, and Le Guin’s representations of “psychological entanglement” in these New Wave SF novels challenge the rationalist and anthropocentric assumption of a human/nonhuman dualism? To answer these questions, I will analyse how

each SF novel depicts human “psychological entanglement” with landscapes; in particular, water, desert, and forest landscapes respectively, as applicable. SF representations of “psychological entanglement” provide an alternative to rationalist, anthropocentric, and exceptionalist theorisation of human/nonhuman dualism. Specifically, exceptionalist reasoning elevates the human subject as active and agential, while denying environments’ psychology, vitality, and agency. This dualistic construction is intrinsic to a lack of concern for ecologies, because they are considered “inert” and inferior in comparison with the human subject. Therefore, exceptionalist thought is conducive to the mistreatment of ecosystems in New Wave SF, by the emission of chemicals and fossil fuels into the atmosphere, plastic pollution of oceans, and logging. The result is environmental degradation, climate change, and deforestation over time.

Chapter Outlines

This thesis consists of this introduction, five chapters, and a conclusion. While the first chapter outlines the features of new materialist theory and SF literary criticism, the remaining four focus on a SF novel and ecological disasters. In this first chapter, I review the literature on new materialist entanglement, intra-action, the material-discursive, and assemblages. This literature review provides historical context for 1960s and 1970s New Wave SF and modern environmentalism. It also explains that the rationalist notion that ecologies are “inert” and lack psychology constructs the human disengagement from the nonhuman that underlies ecological catastrophe. In addition, it highlights how J. G. Ballard and Colin Greenland’s concept of inner space applies to the SF novels under discussion. Using SF criticism, and new materialist theory, to analyse these New Wave SF representations of human/nonhuman

relationality suggests an extension of entanglement to psychology. The chapter concludes with the argument that SF representations of the enmeshment of human consciousness and water, desert, and forest landscapes privilege an alternative to rationalist ideas of a human divide from the nonhuman.

The second chapter focuses on *TDW's* allegory of the future impacts of contemporary global warming on Earth. Kate Rigby and Plumwood explain that the rationalist culture/nature dualism and psychic human/nonhuman rift are the ideological foundations of an ethical disregard for the nonhuman. They examine the link between the notion that ecologies lack a mind and the domination of the material world. In contrast to this dualist framework, *TDW* represents human symbiosis with lagoons, lakes, oceans, the jungle, and the sun as material and psychological entanglement. Towards the conclusion of *TDW*, Kerans's transformative nonduality with water and the atmosphere collapses the borders of his identity in another form of enmeshment. The rationalist view that humans have a psyche and the environment lacks agency and psychology constructs a human/nonhuman dualism. The result of this dualism is a view that water and atmospheric ecologies lack agency, or psychology, and so can be, legitimately, exploited and weakened. The consequence of this human perspective is climate crisis and flooding in *TDW*. Characters' psychological interconnection with water deconstructs destructive planetary divisions between humans and nonhumans.

Exploring climate change from another angle, the third chapter centres on *TD's* representation of how human pollution of oceans with plastics leads to a global anthropogenic drought. *TD* warns humankind that climate change could worsen and result in aridity, rather than in *TDW's* high temperatures and flooding. In this chapter I outline how in

an essay on ecology vacuum and Ballard, Edita Jeroncic and Brian Willems note that a person's fixity in their present context encompasses *TD*'s protagonist Ransom's mental response to the drought (11). Ransom's fixity in the present refers to his embeddedness in the temporal and spatial context of the desert he exists in, with no possibility of escape. His total fixity in time and acceptance of the drought are features of "modulation". Steven Shavero outlines that "modulation" is an intensive force that occurs in a vacuum (16). Modulation allows "intensive effects", where indivisible properties shift (Jeroncic and Willems 11). One intensive effect is Ransom's psychological entanglement with the desert vacuum. Additionally, *TD* represents absolution in time, wherein Ransom experiences symbiosis with a timeless desert. Like *TDW*, *TD*'s nondualist forms of psychic enmeshment reveal an alternative to human/nonhuman schisms, in this case, a pervasive, future, arid Earth.

The fourth chapter focuses on *Dune*'s representation of human cultural and psychological entanglement with Arrakis's desert, while providing an analysis of an exoplanet's crisis. The native Fremen conserve Arrakis's ecological balance of humans, scarce water, desert, sandworms, and spice. The Atreides and off-worlders' anthropocentric manipulation of water and spice, for financial gain and political power, endanger planetary balance. Importantly, the Fremen, water, spice, desert ecology, and geological time are culturally and psychologically interlinked. Leonard Scigaj, writing on technology and ecology in *Dune*, proposes that Paul experiences an equilibrium between his interior and the external environment within the moment as "prana" (348). Paul's "prana" allows him to contact the inner space of water, desert, and geological time as an exemplar of psychic entanglement. "Prana" is similar to the process of modulation in *TD*. *Dune*'s balanced cultural and psychological enmeshments undermine the rationalist idea of a human mental divide from the nonhuman and human-centric actors' manipulation of water and spice systems.

The fifth chapter analyses *WFW*'s representation of the Athsheans' cultural, psychological, and holistic unity with the exoplanet Athshe's forest. There are parallels between the forest of *WFW* and the deserts of *Dune*. The novel centres on Athsheans' symbiosis with their shared unconscious roots in the forest as they dream. This symbiosis is a mental entanglement, because it occurs during dreams and allows the Athsheans' unconscious unity. French postmodern philosopher, Gilles Deleuze's conception of immanence proves useful; it illuminates the Athsheans' existence within the forest's consciousness (*Immanence* 26-27). The natives' immanence in the forest is an example of psychic enmeshment. The cultural and psychological dimensions of the Athsheans' embeddedness in the forest are crucial to Athshe's balance. The Terrans' anthropocentric and destructive control of human/ecology relations for economic and political dominance endangers Athshe's interconnections.

Significance and Relevance

These New Wave SF novels predict future ecological catastrophes on fictional Earth, Arrakis, and Athshe, warning the contemporary world that unstable human relations with ecology inevitably degrade environments and societies. Ballard's *TDW* and *TD* extrapolate climate change into Earth's future, Herbert's Arrakis is an allegory for the Earth's ecosystem imbalance in *Dune*, and Le Guin employs Athshe as an allegory for forest extinction and disharmony in *WFW*. I selected these novels for analysis because their use of extrapolation and allegory, makes them historically relevant to contemporary ecological problems like global warming. A rationalist and anthropocentric human/nonhuman dualism suggest that environments are not alive and therefore do not require ethical treatment. This maltreatment

includes water pollution, the destabilising of the Earth's atmospheric shield from sun radiation, and exploitation of resources. These attitudes, practices, and actions result in environmental catastrophes in SF. My literary analysis addresses how psychological ideas present in New Wave SF model human responses to complex ecological harms, such as climate change, aridity, and logging. Likewise, new materialism models humanity's relation with these disasters by emphasising reciprocal, material, and nondual entanglements of humans and nonhumans. Yet, new materialist theory only encapsulates the physical element of processes of human intra-action with the nonhuman. This theoretical stance does not treat the psychological element in processes, like intra-action, as requiring a distinct discussion within entanglement theory. As such, responses to these crises informed by new materialist theory are restrictive because they disregard the psychological disconnections pervading this world. SF writers' exploration of how the mental embeddedness of humans and ecosystems is vital to the Earth's health could prompt new materialist critics to extend their interpretive strategies of ecological ruin to explicitly incorporate the mind in an actual world context.

As the global ecological situation worsens, a different response to environmental entropy that acts beyond the material is required. New Wave SF's psychic representations of future history is one approach to this problem. Providing this alternative approach, Ballard's critical concept of contact with inner space refers to the psychological and the physical continuum of humans and the environment, as shown in the novels discussed. Significantly, my thesis intervenes in new materialist theory by extending its notion of entangled and material human/nonhuman relations to SF characters' contact with inner space. This theoretical and fictional interchange shows that entanglement could incorporate human and ecological consciousness. Nevertheless, this thesis does not address the psychic elements of environmental life, instead, focusing on the psychological interdependence of humans and

nonhumans. In short, SF representations of psychological entanglement is relevant to the contemporary moment because it assists in deconstructing rationalist, anthropocentric, and instrumental conceptions of the psychic human/environment binary dividing and degrading the actual Earth. This thesis complements the new materialist theory of relationality by including human and nonhuman psychology, so it can address the complexity of the Earth's rifts within the context of catastrophes of climate change and plant extinction. New Wave SF psychological entanglement in *TDW*, *TD*, *Dune*, and *WFW* indicates an extension of new materialist contestation of the material aspect of human/nonhuman dualism, espoused in rationalist ideology to the equally crucial psychological aspect. The result undermines human exceptionalist thought in contemporary and fictional worlds integral to ethical unconcern for the nonhuman world and human/environment disconnection. This lack of ethics legitimises ecologically destructive actions and attitudes. A status quo human approach to ecosystems, characteristic of the post-Enlightenment era, has contributed to climate, drought, aridity, and deforestation crises and imbalances.

Chapter One: Literature Review: New Materialist

Entanglement and SF Contact with Inner Space

My study will use new materialist theory to articulate how human entanglement with water, desert, and forest environments in New Wave Science Fiction (SF) novels is physical and psychological. It suggests that humans and nonhumans form a material and psychic continuum. The four New Wave SF works under analysis in this thesis, provide examples of psychological entanglement. In addition, these entangled relations subvert the scientific rationalist and anthropocentric assumption of a human/nonhuman dualism—a core contributor to climate change, drought, aridity, and deforestation. As noted in the thesis introduction, I read foundational texts of New Wave 1960s/1970s SF—J. G. Ballard’s *The Drowned World* (TDW) and *The Drought* (TD), Frank Herbert’s *Dune* and Ursula Le Guin’s *The Word for World is Forest* (WFW)—through the lens of new materialist theory. 1960s New Wave SF emerged alongside the modern environmental movement; it speculated on how ecological crises imperil society, ecosystems, and debase human psychology. Ballard’s concept, “contact with inner space”, also suggests human mental inseparability from environments, echoing new materialist entanglement. Nevertheless, the new materialist notions of relationality overemphasise the world’s materiality, while often reducing human interiority to the physical. In contrast, placing entangled relations in the context of SF depictions of contact with inner space, reveals “psychological entanglement”. “Psychological entanglement” encompasses the multiplicity of Earth’s interrelations. New Wave SF represents “psychological entanglement” to deconstruct rationalist human/nonhuman

dualisms. Deconstructing these oppositions is important, for they are the basis of a disregard for the ethical consequences of damaging environments' agency and psychology. This attitude justifies the exploitation of the natural world, which over time contributes to environmental deterioration. The accumulated deterioration of water and forest ecosystems is conducive to climate and deforestation crises.

Historical Context of SF and Inner Space

Hard SF exists within a 1950s context of widespread confidence that science and rationalist thought can solve the actual Earth's ecological and sociological problems. David Higgins, in *New Wave Science Fiction*, argues that the idea—that humans can understand the world through rational thinking and scientific observation—underpins Hard SF (8). Malisa Kurtz states that rapid scientific and technological progress defined Hard SF and the 1950s (203). Hard SF themes include space exploration, alien civilisation, space travel, the rules of physics, future warfare, and advanced technology. In addition, Kurtz notes that the optimism of 1950s Hard SF reflected “larger socio-cultural trends during this time, specifically in relation to the shared perception amongst governments, scientists, and the public that global advance was wedded to American cultural and technological advance” (209). An example of this progress is the United States (US) and Soviet Union's competition in a space, military, and nuclear arms race from the 1950s to the Soviet Union's fall in 1991. Partly due to this competition, the US underwent significant economic transformation, technological growth, military expansion, and the development of scientific knowledge. In this case, 1950s Hard SF's “techno-optimism” promoted US technological advances (Kurtz 209). This form of SF does not encompass the impact of US imperialist expansion and technological development

on environments. Hard SF writers' emphasis on how technological progress and rationalism will create a progressive utopia is blind to the ecological drawbacks of US development (Higgins 8). Hard SF heralds the possibility of a progressive and technological future for Earth in the twenty-first century, particularly in affluent democracies in Europe, North America, Australia, and New Zealand.

A canonical example of Hard SF's themes of outer space, advanced technology, and sciences, like physics and astronomy is Issac Asimov's *Foundation* (1951). This novel is a fictional representation of scientific development, and the progress of industrial society, relevant to the contemporary world. In *Foundation*, Asimov writes that within a spacecraft a person can move "through hyper-space" and "traverse the length of the galaxy in the intervals between two neighbouring instants of time" (4). Asimov's exploration of a technology that allows extremely fast human movement through "hyper-space" exemplifies the Hard SF focus on space physics, civilisation's progress, technological advances, and the stretching of temporality. His writing is located within an optimistic 1950s American context, characterised by the expansion of scientific knowledge, technology, and wealth without limit. In this respect, Asimov's SF stresses the value of scientific observation and a galactic utopia based on science in *Foundation*. However, the human use of advanced space technology to colonise the galaxy in SF echoes the US imperial conquest of developing countries' resources and people in South and Central America, Africa, and Asia during the twentieth century. Asimov's blinkered orientation to the wonders of technology and space transport suggests his limited vision from a rationalist perspective and a corresponding blindness to ecological connectedness. Asimov and other Hard SF authors explore the potential of new technologies and science. Yet, their stories do not encapsulate the detrimental impact of

technological change on the environment, society, and human mental and physical health in the twentieth century and beyond.

Hard SF's lack of consideration for the human psyche and for how technological development impacts ecologies, means it does not encompass the physical and mental dimensions of environmental crises. Kurtz argues that Hard SF's focus on the benefits of technology and scientific rationalism for the future reflects a narrow 1950s utopian model (202). In a like way, Ballard had claimed in his essay "Which Way to Inner Space" that "the degree of interest inherent in the rocket and planet story—with its confined physical and psychological dimensions and its limited human relationships—is so slight as to make a self-sufficient fictional form based on it almost impossible" (101). Ballard implies that SF novelists must consider the psychological to remain relevant in a world defined by complex interrelations of society, economies, the unconscious, and ecology. Hard SF highlights the material dimensions of the environment rather than the psychological. Ballard values fiction that expands Hard SF's "confined physical and psychological dimensions" to the human interior. Similarly, writer and essayist John Priestley posits that Hard SF's representation of science, advanced technologies, and space exploration fails to encapsulate the impacts of these technologies on the unconscious (712).

Hard SF neglects how the severed link between science, civilisation, technology, and the mind harms ecologies. Recognising Hard SF's disregard of human mental continuity with ecosystems is necessary, as the physical and psychic human/nonhuman schism foment a lack of environmental ethics. An absence of ethics is conducive to peoples' ignoring the impacts of individual and collective actions on ecologies. This lack of concern for the consequences

of mistreatment of water, desert, and forest ecosystems is intrinsic to environmental degradation. Ballard's notion of contact with inner space in the SF genre, addresses Hard SF's deficit of environmental and psychological content by emphasising the unity of human and nonhuman consciousness.

New Wave SF reorients Hard SF's emphasis on rationalist science and technological optimism onto predictions of an emerging ecological apocalypse in line with the environmental movement. As mentioned in the introduction, Rebecca Evans argues that policy changes, activism, cultural events, and subversive writing characterised the 1960s and 1970's environmental movement (435). These elements of environmentalism included the publishing of Rachel Carson's *Silent Spring* (1962), an influential ecocritical work of the 1960s illustrating the impact of pesticides on ecosystems, the release of John Brunner's *Stand on Zanzibar* (1968), which echoed public concern over rising population, the establishment of the National Environmental Policy Act in the US parliament in 1969, and the founding of Greenpeace in 1971. Alongside the ecological movement, New Wave SF draws attention to the danger that destructive behaviours and greed poses to ecosystems. Evans claims that this movement draws on New Wave SF's dystopianism: "environmental advocates produced a variety of speculative writing that, like so much dystopian fiction, warned of what was to come" (436). Environmental thought and New Wave SF form a network of ideas centred on future human relations with ecology. In addition, New Wave SF illuminates the early stages of planetary crisis and how they can impact Earth.

This study foregrounds Ballard, Herbert, and Le Guin's exploration of emerging dystopia, climate crises, and deforestation. These novelists have been selected because they investigate

global warming and planetary imbalance relevant to actual-world disasters and plant and animal extinctions. All three represent the enmeshment of humans with ecologies, including water landscapes, deserts, and forests. Significantly, New Wave SF writers were active in the 1960s and 1970s when scientists, activists, and novelists expressed concern over developing environmental dangers.

Le Guin, Herbert, and Ballard use extrapolation and allegory in their 1960s and 1970s fiction to warn humans of coming threats to the future Earth's ecosystems. Sherryl Vint, in an essay on gender and matter, asserts that SF prompts readers "to imagine not only how the world might be otherwise but indeed to recognize how it is more and other than some customary ideas might suggest" (361). Vint proposes that SF writers extend agency to matter and explore human and nonhuman participation in relational processes like entanglement to shift readers' understanding of the world (361). She implies that SF extends the human imagination beyond traditional thought to encompass the psychological aspects of the world. New Wave SF contests prevailing notions of reality, identity, and the nonhuman by projecting contemporary problems into the future. Ballard's projection of climate disaster on a dystopian future is a feature of New Wave SF. In *TDW*, Ballard extrapolates from the 1960s to the twenty-second century to allegorise the future effects of climate change on the Earth. Ballard exposes the apocalyptic impacts of global warming on civilisation, psychology, and ecology. His depiction of global warming is relevant to the escalating effects of rising temperatures and sea levels and more frequent fires, thunderstorms, cyclones, droughts, and floods in the present. In *TD*, Ballard extends his version of his 1960s Earth into the twenty-second century to signal how severe drought endangers ecologies and humankind. In *Dune*, Herbert projects the arid ecosystems of Earth onto a desert world Arrakis to illustrate the fragile balance of a planet's elements. Likewise, *WFW* extrapolates, from the 1970s Earth to

an exoplanet Athshe, to suggest that logging and ecological deterioration can lead to global plant extinction. These three novelists allegorise to alert contemporary readers to the destructive effects of inaction on global warming, drought, aridity, and deforestation.

SF writers actively shape our understanding of environmental change by illustrating future histories of planetary disasters. Emma Armstrong, writing on SF and the Anthropocene imagination, posits that SF engages current ecological anxieties by reframing humans in the context of future environmental crises, such as climate change (7). SF prompts readers to rethink their relationship with the nonhuman at a time when action on climate change cannot avert hazardous global warming (Armstrong 8). Importantly, the postmodern philosopher Fredric Jameson argues that SF's function is "not to give us 'images' of the future—whatever such images might mean for a reader who will necessarily predecease their 'materialization'—but rather to defamiliarise and restructure our experience of our own present" (151).

Contemporary humans cannot grasp the extent of ecological crises because of their embeddedness in threatened ecosystems. Nevertheless, SF writers defamiliarise readers with consensus reality by envisioning the present as the past of their future vision. These visions provide readers spatial and temporal distance from the modern world. So, SF restructures readers' perception of the contemporary by providing insight into the drawbacks of current environmental practices, such as the burning of fossil fuels, plastic pollution of oceans and rivers, and mass logging. Moreover, Jameson argues that a function of SF is to psychologically prepare readers for the effects of future social and ecological ruin on themselves (151).

SF depictions of relationality often include nonhuman and human psychologies to anticipate the psychic effects of escalating climate change and forest extinction. SF's predictive function provides readers with a critical separation from their environmental context, revealing how a dysfunctional human/nonhuman relationship fosters a widespread disregard for ecosystems' life, agency, and psyche. This disregard promotes ecological exploitation for profit and blindness to the human position within the nonhuman world undergoing climate disasters and extinctions.

The 1960s historical and psychological context of New Wave SF informed Ballard, Herbert, and Le Guin's depictions of contact with inner space and ecological catastrophe. Priestley argues that "the myths and characteristic dreams of our age ... may be the first rumblings of the volcano that will overwhelm us" (712). Priestley's reference to overwhelming volcanic rumbling asserts that historical context can shape art via its influence of myth and dreams. In this case, New Wave SF and the fast technological, psychic, and social changes of the 1960s are inseparable. Priestley's reference to a "volcano" means that this rapid psychological change transforms society in destructive and reinvigorating ways. This transformation could encompass increasing human destruction of the ecological world. The shift to which Priestley refers takes form in the creative arts, that is, painting, music, film, and fiction, including SF.

A writer of New Wave SF, Colin Greenland, outlines that SF writers' emphasis on outer space in their representations changed to an orientation to inner space due to disasters that devalued consensus reality during the 1960s (57-58). These events form the historical context

of New Wave SF, examples of which are the testing and use of atomic weapons in remote Pacific atolls, the development of communications technologies, experimentation with psychedelic drugs, and the waning of the great religions (Greenland 57). The erosion of objectivity and the rise of inner space are features of 1960s cultural change and political events (Greenland 201). As a feature of this social change, Higgins claims that the emergence of psychology, as a discipline, in the mid-twentieth century and 1960s antipsychiatry, exemplified by R. D. Laing, shaped SF authors' representations of contact with inner space (5). New Wave SF reflects the progressive thought of 1960s psychology and antipsychiatry, such as the concept that the human psyche is aspatial and atemporal. These societal, psychedelic, and psychological revolutions informed New Wave SF representations of Ballard's transformative idea of contact with inner space.

The psychological and spatial elements of contact with inner space are apparent in New Wave SF characters' dreams and memories. Dominika Oramus, writing on Ballard and Laing, notes they agree that psychological experience occurs in the external world rather than the mind (220). Oramus's idea suggests the inseparability of the human psychological state with the environment and implies that the human mindscape and exterior landscape merge (Oramus 220). Similarly, Greenland states that interior space has a physical element because "it has been used to distinguish Earth and its atmosphere from outer space" (51).

Greenland argues that "inner space" denotes "landscapes of dream and memory; and, by extension, of the subjective world: that is, the external world as transformed and encoded by the individual consciousness" (51). Subjective internal experiences of outer ecology define "inner space". People engage with their interior space when their "individual consciousness"

filters input from the external environment. Human psychological relations with this space fuses the mental and spatial while locating this intersection within a person's imagination and the exterior world. This fusion of thought, space, and environment is a characteristic of this psychic connectedness. In New Wave SF, connection with inner space occurs when characters' psychology, bodily, and spatial conceptions merge during dreams and the recollection of memories. Examples are the scientists' "jungle dreams" in *TDW*, Paul's prescient dreams in *Dune*, and the Athsheans' symbiosis with the forest while asleep in *WFW*. Notably, internal space metaphorically refers to psychological space. Contact with inner space includes features of dream, memory, and the spatial, exemplified by New Wave SF characters' mental experiences of ecological disasters.

New Materialist Theory

In contrast with New Wave SF's psychological focus, new materialists underline the materiality of human bodies, animals, plants, and human constructions (like cities and satellites) but do not deeply analyse the mind. Nick Fox and Pam Alldred, in an essay defining new materialism, argue that in new materialist philosophy, all entities, humans and nonhumans, are embedded in the material (5). From a new materialist perspective, the physical human or nonhuman subject is an integration of disparate materials (Fox and Alldred 9). Diana Coole and Samantha Frost, quoted in the introduction, in relation to new materialism's emphasis on the interdependence of humans and the Earth's materials (1), state that new materialists "affirm matter's immanent vitality. Such thinking is accordingly post-rather anti-Cartesian. It avoids dualism or dialectical reconciliation by espousing a monological account of emergent, generative material being" (8). Vital, material existence includes "inanimate" landscapes, such as oceans, lagoons, lakes, rivers, deserts, and forests.

These landscapes are the vital “concepts and images of nature” (Coole and Frost 8). Unlike rationalists, new materialists hold a monological position on the environment that avoids human/nonhuman dualisms, while not reconciling humans and ecosystems in an essentialist manner. A monological position demonstrates no divide between humans and nonhumans as they are agential and unified. Also, new materialists avoid essentialism by reconciling humans and ecologies without denying unique human qualities, like self-consciousness. In addition, they do not anthropomorphise ecologies by projecting human subjective experiences and mental states onto nonhuman life. According to the new materialist, posthumanist philosopher, Rosi Braidotti, nonhuman matter is self-organising, vital and actively responds to the world and culture (35). From Braidotti’s perspective, there is no opposition between matter, ecology, culture, society, and technology (35). The interchange between ecosystems and culture forms an agential continuum. New materialists stress how inextricable entanglements of matter and humans, cultures, animals, and environments produce life in collective co-existence.

New materialist theory emphasises the entanglement of human, material, and cultural agencies within the Earth collective. As illustrated in the introduction, Karen Barad states, “Outside of particular agential intra-actions, ‘words’ and ‘things’ are indeterminate. Hence, the notions of materiality and discursivity must be reworked in a way that acknowledges their mutual entailment” (“Posthumanist” 820). Language and cultural systems, such as “words”, cannot exist independently of the material, including “things.” This relationship between the cultural and the material is intra-active (Barad, *Meeting* 140). The intra-action of culture and natural objects reveals a “mutual entailment” required for their existence. From this perspective, culture and nature are entangled and co-constituted by intra-action. Consistent with Barad’s position, Stacy Alaimo, a contemporary new materialist feminist, emphasises

the enmeshment of material agencies, like ecologies and chemicals, with “social, economic, and political forces” (*Bodily* 146). Alaimo highlights that humans and nonhumans are part of interwoven material, discursive, and ecological systems (“Oceanic” 133). Human and nonhuman subjects, discursive constructs, and material agencies are interdependent, meaning humans and ecologies cannot be separated because of psychology, the discursive, or materiality. Further, Vicky Kirby states that the notions that materiality is discursive, and that culture is nature reveals that these terms are neither autonomous nor dualistically opposed (16). Instead, Barad advances, physical, political, and sociological structures form a “material-discursive” network (“Posthumanist” 810). Recognition of the entanglement of cultural, material, and ecological agencies promotes a broad ethics that includes diverse humans and nonhumans.

The influential late twentieth century deconstructionist Jacques Derrida, and twenty-first century new materialists, including Barad and Kirby, contest the divide between cultural humans and material nonhumans. Barad argues, “agential realism denies the suggestion that our access to the world is mediated, whether by consciousness, experience, language, or any other alleged medium” (*Meeting* 409). Human access to the world is immediate without culture or individual psychology mediating that relationship. All aspects of the human being, including consciousness, language, and experience, are inseparable from the exterior environment. In short, the human/nonhuman relationship is unmediated. Derrida’s definition of the text—by which he means everything—states that the text is not a term that mediates the relationship between the human biologist and the live world (81). As a form of culture, the text is part of the living world and the human biologist both. The text is not a medium between humans and ecology; in new materialist theory, the culture as text, the living world as nature, and the human are entangled. Drawing from Derrida and Barad’s arguments, Kirby

states there is nothing outside nature as landscapes are literate, numerate, and social (ix). Kirby argues that landscapes have qualities commonly ascribed to culture, like expressive capacity and the ability to intra-act with human and nonhuman life. The material and discursive intra-act, do not aggregate or exist separately as “things” (Kirby 16). Furthermore, Derrida argues that the language, writing, and science models that describe the world are the product of living entities, including humans, animals, and environments (81). The observer’s linguistic description of the observed ecology is a part of the observer and observed, external to neither, meaning, the human are inseparable from the external world. Derrida’s deconstruction and Kirby’s new materialism underscore that binaries like subject/object, human/nonhuman, culture/nature, and material/discursive are false. Derrida, Barad and Kirby’s work reveals that deconstruction and new materialism stress the continuity of materiality and culture.

The theoretical notion of intra-action assists in collapsing the culture/material, culture/nature, and human/nonhuman divisions. Barad suggests that the mutual constitution of entangled and agential entities consists of specific “intra-actions” (*Meeting* 33). She emphasises how the interchange of human and nonhuman matter generates agency: “Matter is substance in its intra-active becoming—not a thing, but a doing, a congealing of agency” (Barad, *Meeting* 210). Barad highlights that matter is not a “thing” because it congeals during intra-action and becoming. These processes enact the agencies of entities physically and psychologically. The intra-action of humans and nonhumans is reciprocal, nondualist, and collective. These intra-actions are continual processes that creatively configure and reconfigure the world (Barad, *Meeting* 177). Humans and environments do not pre-exist intra-action. Instead, they emerge as entities with specific properties and qualities, like bodies, will, and growth, during intra-actions (Barad, “Posthumanist” 815). As Barad posits, the entanglement of entities is

agential (“Posthumanist” 818). From Barad’s perspective, entities are not self-contained as they exist in synthesis with other entities in an assemblage. Barad asserts that “agential separability is not individuation”, where separability allows intra-action within a collective system but not singular agency (*Meeting* 393). Individual entities only possess agency when they collectively intra-act. This position suggests that the ecological is not a pre-existing context for humans. In contrast, Alaimo proposes that bodily agents emerge from environmental intra-action and retain singular agency (*Bodily* 3). Even though human and nonhuman physiology forms through joint intra-action, the human and nonhuman forms do exist as agents. Arguably, Barad’s argument ignores material embodiment and agential boundaries. Entities’ intra-action and inseparability from others within Earth’s collective reveal that the hyperseparation of human/nonhuman is false.

The intra-action of humans and ecologies’ spatio-temporality is crucial to environmental reciprocity. Barad argues that entities do not occupy the spatio-temporal, but rather that “space, time, and matter are mutually constituted through the dynamics of iterative intra-activity” (*Meeting* 181). Cosmic boundaries and properties, including matter, space, and time, are produced by “iterative intra-activity”. The cosmic collective consists of always already entangled relations of space, time, humans, environments, and forces, like gravity and magnetism. The constant reconfiguration of time, space, and matter during intra-action suggests that the spatio-temporal has neither beginning nor end. This is due to the principle that all entities, including matter, space, time, and energy, can only be transformed, not created or destroyed. Donna Haraway underlines the embeddedness of human and nonhuman species with several temporalities (*Species* 25). As species share histories and temporalities, they enact one another’s behaviours and relationality through becoming (Haraway, *Species* 25). These multiple temporalities and histories include civilisation’s linear time and

geological time. Joseph Donaldson defines geological time as the slow-moving and inactive temporality of the Earth's evolutionary and human history (2), encompassing the growth and change of civilisations, the climate, the environment, plants, geology, and animals over a long-time scale. The intra-action of humans and ecosystems enacts geological time rhythms. Alternatively, contemporary French philosophers Serres and Latour state that industrial civilisation's linear time is iterative and segmented (60). Linear time is associated with a human orientation to short-term and unending profit achieved through ecological exploitation. Human enmeshment with civilisation's time promotes disregard for slow geological time. This rift between geological and linear time severs human/nonhuman relations. As a form of entanglement, human and nonhuman intra-action is a continual and unending process that bridges temporal and spatial schisms and fosters ecosystem balance.

New materialists underline that human and nonhuman entities intra-act and generate agency within "assemblages". Notable French postmodernists, Gilles Deleuze and Felix Guattari, outline that an "assemblage" is a collective of multiple human and nonhuman entities and relations that enact one another's agency (8). An "assemblage" can be a planetary system of humans, animals, and environments like Earth. Coole and Frost define assemblages as "intricate interlocking systems whose interactions and dynamic processes are variable and, for the most part, unpredictable" (29). "Interlocking systems" produce cosmic actions and effects such as vibrant oceanic ecosystems. Such systems create these effects through "dynamic processes", including the interaction, intra-action, and entanglement of the natural and the social. The interconnections of matter, society, technology, and economy generates "particular effects" within a system (Coole and Frost 29). Additionally, matter is agential, self-organising, and interconnects with the subjectivities of humans, organisms, and ecology (Coole and Frost 7). These scholars indicate that the material world is constantly in flux and

construction; this new materialist idea is consistent with principles in Newtonian Physics concerning cause and effect. The expansion of scientific knowledge and technology relies on advances in human models of matter and the quantum world (Coole and Frost 5). These advances continually reconstitute the environment and society in complex ways. Humans must alter their relationship with ecosystems to adjust to rapid technological and scientific change. These rapid shifts sever entanglements of humans, nonhumans, and forces. By contrast, human physical and psychological intra-action with ecologies in collectives enhances their ethical response to planetary systems in crisis. New materialism is a process-related theory, underlining that the constant interchange of material humans and nonhumans generates their agencies within the Earth's assemblage.

Drawing on assemblage theory, new materialist accounts of "agencement" assist in analysing humans and environments' intra-action. "Agencement" is a translation of Deleuze and Guattari's term "assemblage" (23). Vinciane Despret, in an essay outlining the history of the term interagency, argues that "each living being renders other creatures capable (of affecting and of being affected), and they are entangled in a myriad of rapports of forces, all which are 'agencements'" (37). Despret defines "agencements" as the ability of entities to be affected by other entities in a shared and intra-active relationship. Entities' interrelations are "distributed and redistributed incessantly" to form a collective "agencement" (Despret 38). Despret's reference to "affecting" and "being affected" shows that the intra-action of humans and nonhumans reciprocally grants them agency and emotion. Mark Bonta, writing on Deleuze, posits that Despret's term "agencement" is a network of self-organising entities that intermesh and cause emerging effects (54). Bonta's reference to emerging effects means that the continually shifting and evolving intra-action of agents alters the collective. Likewise, Jane Bennett, in her work on the politics of things, collapses a division between human and

nonhuman agents, asserting that humans “are also nonhuman” (3). These agents perform reciprocal actions and enact collective effects while retaining a singular identity (Bennett 35). Collective effects refer to entities’ co-constitution of agencies within an agencement. The enmeshment of entities produces ecological effects, like complex jungle ecosystems and desert wastes. Bennett’s argument, that entities retain individuality, contrasts with Barad’s emphasis that relations exist rather than “things” (35). The entanglement of humans and environments in SF is consistent with Bennett’s position that entities possess identity and psychology on the actual Earth. Despret, Bonta, and Bennett stress that humans and nonhumans reciprocally enact agency and affect during psychic and physical intra-action. Their intra-action within agencements sustains holistic life on Earth.

Contemporary political theorists Simon Choat and Paul Rekret argue that new materialists fail to recognise the societal and political barriers to human integration into ecology. Choat asserts that new materialists marginalise economic, material, historical, and social conditions within which humans work (1037). He suggests that new materialists do not acknowledge the societal and historical context of the “power and ownership” of ecological relations (Choat 1040). Choat claims that the complexity of new materialist ideas, like becoming, contingency, and intra-action, obscure rigid and exploitative power relations between humans and ecosystems (1036). Choat’s explanation, that new materialists disregard social barriers to environmental entanglement, resembles Rekret’s discussion of the limits of materialist ethics. Rekret argues that new materialists do not recognise that social and material factors constrain human access to nature (225). Rekret states, “The ethical mobilisation of ontological speculation widespread in recent invocations of materiality thus reassures thought and action of its autonomy by disavowing its objective constraints” (240); implying, that the new materialists’ ethical response to planetary crises requires the material continuity of humans

and nonhumans. The new materialist ontological intervention into these catastrophes disregards the objective restrictions of an agential and corporeal divide of human/nonhuman. Cultural, societal, and political limits on human efforts to symbiotically connect with the environment construct this divide. From this perspective, humans cannot autonomously and ethically restore divisions permeating the Earth. This is due to their entanglement with a restrictive and ecologically destructive capitalist society. Although new materialism does not consider, in depth, divisions established by capitalism, and it uses abstract terminology, it also usefully challenges divisive ideologies in a time of environmental crises. Undermining these ideologies is important to removing ethical justifications for the human degradation of ecosystems.

Defining “Psychological Entanglement”

New materialists overemphasise the material component of entanglement, although they acknowledge the inseparability of mind and matter. The new materialist stress on material entanglement fails to address how the psychic component of human/nonhuman dualism destabilises ecosystems. However, Rhodes and Dunk perceive “the mind as one part of a greater ecological system, rather than [as] a separate anthropocentric phenomenon” (158). New materialists recognise human psychology, but do not consider it a distinct factor that participates in enmeshments and generates collective effects. Yet, these theorists argue that the mind and exterior environment are inseparable, despite their lack of psychological analysis within explications of relationality. Arianne Conty outlines that new materialists undermine “the modern divide between interiority and exteriority that [differentiates] between actors and acted upon in terms of inner intentions” (74). Countering the dualistic separation of mind/matter is essential to bridging a psychic gap “between actors and acted

upon”. Conty implies that humans are mentally continuous with animals and environments. Hence, new materialists can elucidate the psychic aspects of human/nonhuman entanglement and underline materiality without contradiction. In this respect, the entangled relation of human/nonhuman has intersecting corporeal and mental elements. These theorists articulate that material forces produce the Earth, including its physical, biological, cultural, and psychological elements (Fox and Alldred 2). Thereby, new materialists agree that materials actively produce the ecological and mental aspects of the world. The new materialist rejection of any separation of human consciousness, biology and ecology is consistent with Ballard’s notion of contact with inner space and “psychological entanglement” in New Wave SF.

New Wave SF representations of contact with inner space overlap with new materialist theory of entanglement; underlining their intersection could productively broaden the idea of relationality. Vint claims that SF and new materialism overlap because they undermine the idea of autonomous human identity (361). As such, contact with inner space is consistent with the idea that humans are tied to external ecologies inherent in entanglement.

Furthermore, Tobias Skiveren, writing on fictionality and the new materialism, asserts that new materialists move beyond the discursive constructs of semantics and language by turning towards speculative fictional forms like SF (198). These theorists claim that matter is active, agential, and lacks boundaries—this last, a feature of SF—to transcend “reigning anthropocentric regimes of truth” (Skiveren 199). Hungarian SF theorist, Istvan Csicsery-Ronay, proposes that SF contributes metaphors and models for understanding the contemporary world (2). He argues, “SF regularly employs radically new scientific concepts of material and social relations; these relations, in turn, influence our conceptions of what is imaginable or plausible” (Csicsery-Ronay 4-5). SF provides scientific ideas that extend beyond material enmeshments to mental human/nonhuman connection. The interaction of the

SF concept of contact with inner space and new materialism helps produce a theory of entanglement that includes consciousness. Contact with inner space resembles new materialist analyses of entanglement's physical, mutual, inextricable, and nondual features. SF characters' connection with inner space suggests an entangled relationship that incorporates psychic humans and ecosystems. As they both highlight these features of enmeshment, SF depictions of relations with inner space apply to new materialist theories of relationality. This intersection of SF and new materialism reveals a psychological element in entanglement. Consequently, this psychic understanding of entanglement extends theories of relationality focused on the materialities constituting the universe.

A new materialist investigation of the interplay of the human psyche and ecology in SF depictions of contact with inner space suggests the transformative idea of "psychological entanglement." Importantly, Iris van der Tuin and Rick Dolphijn, in an essay on the transversality of new materialism, argue that Barad's theory of intra-action indicates that "mind and matter, and sociology and new materialism, do not exist independently before they start to inter-act" (168). These two scholars underline that neither mind/matter nor society/nature exist without the other; these dualities are mutually implicated in intra-action as a form of enmeshment. A new materialist analysis of New Wave SF accentuates that the psyche must be considered distinctly and conjoined with materiality within human/nonhuman relationality. Ballard's concept of contact with inner space includes a psychic human/ecology connection underemphasised in new materialist models of relationality. New materialist entanglement needs to incorporate the psychological component of SF representations of connection with inner space to encompass a complex human/nonhuman relationship with many components, ranging from bodily to subjective and internal experience.

In a defining argument of this thesis, interweaving SF characters' material embeddedness in water, deserts, and forests and the mental component of their contact with inner space reveals that entangled relations are physical and psychological. The notion of "psychological entanglement" is required in new materialist theory because it undermines the mental aspects of the exceptionalist assumption of human/nonhuman dualism alongside the equally crucial material aspect. In *TDW*, Ballard's representation of the scientists' contact with the inner space of water evokes "psychological entanglement". Ballard's SF explores internal states to challenge realist fiction narratives that reduce psychology to the material. His surrealist imagery illustrates the biological scientists Beatrice Dahl (referred to in the novel as Beatrice), Kerans, and Dr Bodkin, and the naturalist Hardman's psychic entanglement with the London lagoon. Like Kerans, Beatrice's "jungle dreams" exemplify the material and reciprocal elements of entanglement and the psychic feature of contact with inner space: "Jungle dreams, Robert," she murmured ambiguously. "I'm learning my ABC again. Last night was the delta jungles" (Ballard 50). Beatrice's nonduality with the regressing jungles and lagoons signifies physical enmeshment. The term "nonduality" means that characters' psyche and identity are inseparable from environments, so much so that they cannot be distinguished. Her reciprocity with the lagoon during "delta dreams" resembles the psychological characteristic of Greenland's definition of contact with inner space (51). For example, Beatrice's dreams are subjective interior experiences incorporating the external lagoon, revealing the cerebral side of relations with inner space. Thus, Beatrice's relationship with the inner space of the lagoon encompasses the reciprocal, inextricable, physical, and psychic components of entangled relations. This overlap of new materialist theories and SF criticism reveals they can intersect productively to encapsulate the Earth's diverse interrelations. Interweaving the two notions of contact with inner space and entanglement

reveals the entanglement of Beatrice's consciousness and body with water. Moreover, Beatrice's ambiguous murmuring reveals that her immersion in interior jungles and lagoons and the impulse toward the dissolution of her identity into water are involuntary. Her instinctual immersion in these ecologies symbolises a collective human psychological entanglement with the environment. The mental enmeshment of humans and ecosystems shows that the human/nonhuman dualism espoused in rationalist and anthropocentric thought is false.

Psychological Entanglement and Ecological Crisis

The disconnection of humans from nonhumans at physical and mental levels is incompatible with the ethical treatment of the environment. Beery et al. outline how ideologies, cultural norms, and political relations prevent peoples' awareness they are part of nature (472). One of the ideologies and political relations traced to human/nonhuman disconnection, outlined by Berry et al., is scientific rationalism. As explored in the introduction, Val Plumwood claims that rationalists separate humans from nonhumans and reduce nonhuman life to justify ecological exploitation (*Environmental* 8). Rationalist ideology reinforces the culture/nature and human/nonhuman binaries that restrict life, agency, and psychology to humans and animals. This ideology denies the presence of these qualities in oceans, deserts, and forests. Plumwood argues that the rationalist view of the nonhuman "licenses supposedly 'purely instrumental' relationships that distort our perceptions and enframings, impoverish our relations and make us insensitive to dependencies and interconnections" (*Environmental* 9). The notion that nonhumans are pure mechanisms is conducive to the instrumental reduction of environments as a source of profit. Plumwood asserts that this instrumental relationship promotes distorted perceptions of ecology, blinding humans to their mental and bodily

embeddedness in ecosystems. This perceptual deficit compromises humankind's ethical response to human/nonhuman schisms. Therefore, capitalists do not consider the moral consequences of resource extraction for profit as the nonhuman displays neither human agency nor psychology. Dualistic ideologies promote instrumental waste of resources and materials for economic growth and consumption. The result is the perpetuation of a status quo materialist approach to the environment and the reiteration of a rationalist human/nonhuman schism fuelling unethical treatment of ecosystems.

Recognising psychological entanglement in Ballard, Herbert, and Le Guin's SF novels is crucial to contesting rationalist notions of human/ecology separatism. These divides feed into a disregard for ecologies' agency and psyche. This schism provides the moral justification for human exploitation of ecosystems for profit, conducive to environmental harms over time. Entanglement subverts both this divide and the ideological basis for maladaptive ecological manipulation. These authors' depictions of characters' dreams, interior monologues, affect, transformative experiences, psychic visions, and prescience demonstrate psychic enmeshment. In the SF studied, the characters, Kerans and Paul Atreides's, consciousness is reciprocal with ecosystems during altered states. These take the form of entanglement and contact with inner space. In this respect, Rhodes and Dunk, in their work on eco-psychology, argue that the divide between the human mind and ecology "can heal and the ecological ego grow, as we move toward reciprocity and responsibility" (157). These characters' immersion in the nonhuman world promotes environmental reciprocity. Their reciprocity symbolically transcends mind/ecology, mind/body, and human/nonhuman fractures. It proves necessary to amend new materialist theory, by incorporating the mind in entangled relations, because it subverts the mental part of the divisive human/nonhuman relationship, espoused in rationalist, anthropocentric, and instrumental ontologies. Recognising that the human psyche

is continuous with the natural world, encourages people to also acknowledge that they continually interact with the nonhuman. By incorporating the psyche, this nondualist human/nonhuman relation is core to developing environmental ethics, as well as proving crucial to broadening existing capitalist, scientific, and green responses to planetary crises. The ethics emerging, from SF characters' mental relations with ecosystems and new materialist theory, discourages environmentally ruthless attitudes and behaviour. These New Wave SF depictions of psychological entanglement provide a perspective on human/nonhuman relations that encourages the psychic reciprocity of diverse life and of the Earth's health.

A new materialist analysis of entanglement in New Wave SF reflects ecopsychologists' notion of the reciprocity of the human and ecological unconscious. Rhodes and Dunk argue that ecopsychological concepts are present in new materialism, including the extension of human psychology to material life (158). Like new materialism, ecopsychology positions "the mind as one part of a greater ecological system, rather than [as] a separate anthropocentric phenomenon" (Rhodes and Dunk 158). From this perspective, the human unconscious is not restricted to the self but extends to a planetary assemblage. The explicit broadening of the new materialist concept of entanglement to human and nonhuman psyches in New Wave SF echoes the ecopsychological idea of the unity of the unconscious and ecosystems. While the concept that the human mind is part of natural systems, encapsulated by psychic enmeshment, signals an ontological shift, this ontological shift refers to the immersion of the human psyche in the nonhuman world. Like ecopsychology, psychological entanglement in SF implies that humans and nonhumans access a shared "ecological unconscious". According to Rhodes and Dunk, "To open access to the ecological unconscious [is] the goal of ecopsychology: to rekindle the reciprocity that lay buried deep in

the evolutionary tree” (156). The “ecological unconscious” is a reciprocal psychology shared by all life. Human connection with the ecological unconscious is possible, as it is part of evolutionary history; even so, human and nonhuman access to this “ecological unconscious” is barred by human exceptionalism and irresponsible exploitation of resources. This human-centred ideology fractures the continuity of human and nonhuman mentality. Yet, a new materialist theory of psychological relationality reveals that humans access this shared unconscious. So, psychic entanglement in New Wave SF reveals a reciprocal way for humans to rekindle their collective access to environmental consciousness lost over millennia.

To elaborate, the intersection of New Wave SF characters’ contact with inner space and new materialist theory reveals a psychological entanglement. This entangled relation highlights an alternative way to undermine physical, mental, and dualistic human/nonhuman relations, as in rationalist and exceptionalist reasoning. New Wave SF writers illustrate contact with inner space as the continuum of human and ecological consciousness, revealing a way to counter this dualistic separation. Similarly, new materialists analyse the material unity of humans and nonhumans. However, they do not stress that psychology requires a deep analysis even though it participates in interrelations as an agential entity. New materialist entanglement resembles human relations with inner space as it incorporates humans and ecosystems’ mutual, physical, and spatial interdependence. In this respect, applying the psychic aspect of contact with inner space in *TDW*, *TD*, *Dune*, and *WFW* to the new materialist theory of relationality suggests the mental entanglement of humans and ecologies. “Psychological entanglements” in New Wave SF include human contact with inner space, intra-action with landscapes, nonduality with ecosystems, symbiosis with water and desert, cultural embeddedness in the environment, and immanence within forest ecology. As a SF example in *TDW*, Kerans’s bodily merger with the lagoon and the jungle signifies material human/water

entanglement. The nonduality of his mind and the lagoon during dreams reveals contact with inner space. Combining these two features of Kerans's "jungle dreams" uncovers his psychic entanglement with water. In New Wave SF, characters like Kerans experience psychological enmeshment with ecology. Their fictional enmeshment renews the new materialist challenge to the interdependent mental and material elements of human/nonhuman dualism constructed by human-centred discourse. In conclusion, a new materialist investigation of four New Wave SF novels is a thought experiment that brings diverse human, environmental, and geological lives together in physical, psychological, and cultural entanglements.

Chapter Two: Psychological Entanglement and Nonduality with Water in *The Drowned World*

J. G. Ballard's *The Drowned World* (*TDW*) explores biological scientists and a naturalist's mental responses to the flooding and the increasing heat of a London lagoon afflicted with climate crisis. The scientists, Kerans, Dr Bodkin, and Beatrice, and the amateur naturalist Hardman become psychologically entangled with the flooded lagoon. However, the rationalist, instrumental, and anthropocentric construction of the psychic human/water dualism threatens their enmeshment. It does so by fracturing the existing entanglement between them and the drowned world's water ecologies. Water ecologies, in this chapter, refer to lagoons, lakes, oceans, and the atmosphere. In addition, an absence of ecological ethics, as exemplified by Colonel Riggs, justifies the exploitation of water ecologies without concern for the consequences for global warming. The consequence of his actions is a continuation of *TDW*'s future Earth's warming and flooding. Ballard contests ideological assumptions of human/nonhuman dualism by representing the scientists' psychological entanglement with water and the jungle. For example, the characters experience "jungle dreams" (discussed in detail throughout this chapter) and devolution, preceding their enmeshment with water. Moreover, Kerans's contact with inner space gives him an alternative consciousness of climate. His dreams trigger psychic intra-action with the lagoon and the sun. At the novel's end, Kerans and Hardman's porous relations with water compel them towards the equator to experience transformative nonduality with the ocean. Importantly, the scientists and the naturalist's dreams, evolutionary regression, nonduality with water, and the eclipse of their individual identities, characterise their entanglement.

These psychological entanglements undermine the anthropocentric construction of a human/water barrier, a critical factor in human mistreatment and destabilising of water ecosystems in *TDW*.

Ecological Crisis and Society

In *TDW*, an instability in the sun results in several solar storms penetrating the Earth's weakened atmospheric shield against radiation. This astrophysical event warms the atmosphere, melts the poles, and floods cities. These environmental shifts afflict the human unconscious, civilisation, and the Earth. The scientists, Kerans, Beatrice, and Bodkin, and the naturalist Hardman, stay within the London lagoon, despite the military order for residents to migrate to Camp Byrd in Greenland near the North Pole, due to the high temperatures and flooding. Global warming leads to conditions in the lagoon associated with the Triassic epoch. Regarding temperature, the narrator describes the sun as a "wide expanding ellipse that fanned out across the eastern horizon like a colossal fire-ball" (7). The vast heat of the sun threatens the existence of human life on this SF Earth as it is impossible for humans to survive when temperature rises to intolerably high levels. Nonhuman life, such as lizards, crocodiles, and tropical plants thrive in the new environment. Moreover, Ballard's mention of "colossal" suggests that the Earth and humanity are symbiotic with the sun and the atmosphere, and subject to its changes, something the discussion below on Bodkin's experiment on Hardman also references. Concerning ecological change, there is a "steady decline in mammalian fertility, and [a] growing ascendancy of amphibian and reptile forms best adapted to an aquatic life in the lagoons and swamps" (Ballard 23). The dominance of amphibians and reptiles in the lagoon signals a devolution of animal life to the Triassic epoch. The lagoon's inhabitants also devolve because of their symbiosis with the Earth's

natural systems. In this case, the dinosaurs, water ecosystems, and jungles replace human civilisation and technology. In short, the amphibians and reptiles are better adapted to “aquatic life” than humans. Indirectly, Ballard denotes that Western society, with its technological and scientific advances, is nonadaptive to ecological change and responsible for a warming, inundated, and inhospitable *TDW*’s Earth.

Ballard’s lived experience of wartime Shanghai and early life in London influenced his representation of global warming and contact with inner space in *TDW*. Graham Matthews, writing on Ballard’s formative years, proposes that the flooded lagoon juxtaposes London, a beacon of Western science with an inundated Shanghai (21). These two locations symbolise Ballard’s past and inner self. Ballard imports the latent content of his memories of the monsoons and flooding in Shanghai during World War II, and of his childhood in 1950s London into characters’ dreams (*Guide* 184). Kerans, Hardman, and Beatrice’s “jungle dreams” are characterised by physical and psychic nonduality with the regressing jungles and lagoons. As these characters sleep, the fusion of their internal state and outer reality is contact with inner space (Ballard, *Guide* 184). For instance, when Kerans has his first “jungle dream”, he perceives the lagoon is “thick with thousands of entwined snakes and eels, writhing together in frantic tangles that tore the surface” (Ballard 70). Speculatively, Ballard’s chaotic and psychic experience of a flooded Shanghai warzone during the Japanese invasion in 1937, embedded in the writer’s unconscious, is represented by Kerans’s fragmented and surreal dreams. In Kerans’s dream, the “writhing” and “frantic tangles” of the animals represent his chaotic unconscious relationship with the lagoon. In the novel, Kerans incorporates the external lagoon and its climate crisis into his mind during sleep. The extension of Kerans’s mind is a feature of Colin Greenland’s definition of contact with inner space in Greenland’s discussion of British New Wave SF. In addition, these “writhing”

animals in his dreams could be understood as a symbol for humanity's fractured psychic relations with water. Ballard draws on his childhood experiences to represent the nonduality of Kerans and the devolving lagoon, reptiles, and fish as he sleeps. Ultimately, Kerans's nonduality with water displays the mental dimension of contact with inner space in opposition to the psychic fractures afflicting the future Earth.

The psychological effects of a climate crisis on characters exists within the context of 1960s counterculture. Shannon Mancus posits that psychological change in the 1960s is associated with a growing counterculture (338). Features of this counterculture include the anti-Vietnam War movement, the rise of Second Wave Feminism, opposition to US international dominance, spiritualism, and an emphasis on altered consciousness (Mancus 339-400). Core to this counter-cultural shift is an environmental awareness of the danger and extent of ecological disasters, such as air, water and atmosphere pollution, pesticides, and deforestation. New Wave writers like J. G. Ballard, Frank Herbert, and Ursula Le Guin rejuvenated the SF genre in the 1960s and 1970s by representing "contact with inner space" in reaction to these societal, environmental, and psychic shifts (Mancus 340-341). In *TDW*, Kerans exemplifies this psychological connection while underwater: "the soothing pressure of the water [penetrated] his suit so that the barriers between his own private bloodstream and that of the giant amnion seemed no longer to exist" (Ballard 110). His psychic and physical boundaries with water collapses, a feature of contact with inner space. Kerans's relationship with inner space blurs the boundaries of his body, mind, and the lagoon's depths. The reference to "amnion" demonstrates that Kerans's regressive evolutionary response to the environment's devolution allows his contact with humankind's origin in primordial waters. In addition, Kerans's mental connection with inner space triggers his spiritual transformation, reflecting the psychedelic elements of 1960s counterculture. Ballard's representation of

contact with inner space expands the reader's understanding of reality beyond a rationalist position that separates humans from nonhumans psychologically.

As previously mentioned, a dualistic human relation with nonhuman water triggers Hardman's jungle dreams, social withdrawal and mental imbalance. After experiencing these dreams, Hardman withdraws to "his cabin for up to a week on end, [steadily retreating] into his private world, going through his old notebooks and running his fingers, like a blind man reading Braille, across the glass display cases with their few mounted butterflies and giant moths" (Ballard 35). As Hardman dreams, he experiences the sun's drumming, intolerable heat, and lizards' roaring. Ballard's representation of Hardman "steadily [retreating] into his private world" shows his social alienation and psychic dysfunction. The description of Hardman as "like a blind man reading Braille" signifies his perception adapts to the changes in the external world. Hence, Hardman's alternative mode of perceiving "butterflies and giant moths" is a metaphor for a shift in human relations with the environment. His adaptive perception of ecology coincides with the devolution of animal biology, jungles, and lagoons. His altered relationship with water and insects stems from collective human destructive relations with climate at material and psychic levels. This way, the rationalist notion of a mental human/nonhuman dualism triggers Hardman's dreams, resulting in his isolation from the scientists and military personnel, such as Riggs and Macready. Nevertheless, his obsessive interest in butterflies and giant moths signifies his involuntary symbiosis with the environment, in reaction to a collective human divide from ecology, instated by exceptionalist ideologies. Hardman and his colleagues' social isolation and eventual psychic symbiosis with devolving animals and water suggest an alternative to a dualistic human relationship with the nonhuman world.

TDW illustrates climate change's reciprocal and harmful effects on humankind. They lead to a mass human retreat to the poles and the decay of society and behaviour. As Victoria Crozier explains, Ballard's fiction is part of a New Wave movement in 1960s SF that refocused the genre on events on Earth and within the psyche (11). New Wave SF is "eco-conscious", exploring the destructive impact of humankind on environments before the dangers of climate change became apparent (Crozier 10-12). In *TDW*, Ballard anticipates the effects of global warming on twenty-first century society and ecologies. Climate's influence on society primarily consists of a human movement to the poles, particularly the North Pole, with an inevitable shift in individual consciousness and civilisation. For example, Ballard explains the notion "that within the new perimeters described by the Arctic and Antarctic Circles life would continue much as before, with the same social and domestic relationships, by and large the same ambitions and satisfactions—was obviously fallacious" (45). Ballard's reference to how "same social and domestic relationships" will not persist after ecological crisis suggests that environmental changes afflict society and interpersonal communication. As such, many characters in *TDW*, including Kerans, Hardman, and Beatrice, become isolated from one another. Ecological crises impact human "ambitions and satisfactions" referring to how characters' goal-directed behaviour stems from human/ecology co-evolution. Ballard implies that people's ambitious goals, pursuit of wealth and climate crisis are intertwined. As the environment regresses and people devolve, human behaviours shift. The fabric of society and behaviour mirrors a divided physical and mental relationship between humans and ecosystems. However, the influence of ecological cataclysm on humanity underlines that civilisation and the environment are symbiotic.

Ideological Contributors to Climate Change

The rationalist culture/nature dualism and the psychic human/nonhuman division contribute to mistreatment of ecosystems in the modern world and to global warming. The 1700s French Philosopher Rene Descartes projects a mind/body dualism onto the human/animal dualism (149). He argues that the essential qualities of humans are the mind and soul, are absent in animals who only possess a body. In this way, Descartes posits that animals and the environment are mindless mechanisms (149). He implies that humans are superior to a mindless nonhuman world because they can think. This Cartesian psychological divide promotes the separation of humans and ecology. The twenty-first century environmental humanities scholar Kate Rigby opposes any separation of humans and environments. Specifically, Rigby highlights that the culture/nature binary and the cultural subordination of nature are congruent (5). She argues that the modern mindset is defined by human transcendence of “nature by means of the internalisation of civilised constraints along with the ever more expansive techno-scientific domination of the material realm” (5). Rigby’s reference to “transcending nature” by internalising cultural constraints builds a society/nature rift that elevates humans. These constraints exemplify an anthropocentrism that alienates humans from the natural world. Using technology to achieve “domination of the material realm” reinforces the human/nature schism and degradation of ecologies in the form of increasing heat and flooding of London in *TDW*. Extending Rigby’s analysis to psychology, Val Plumwood asserts that rationalist ideology denies the nonhuman “mind, reason and ethical consideration” (*Environmental* 4). Rationalists argue that human reason is separate from the materiality of the environment. The view that the environment is mindless and cannot suffer justifies ecological manipulation for profit on ethical grounds. This dualistic

treatment of ecologies by individuals, businesses, and institutions results in disregard for the Earth's atmospheric protection from solar radiation, contributing to *TDW*'s global warming.

In *TDW*, Bodkin's scientific experiment on Hardman exemplifies the rationalist construction of a mental divide between humans and water. According to Matthews, Ballard implies that Bodkin's instruments cannot help humanity adapt to changes in water ecologies or understand the depths of the human psyche (20). Instead, Bodkin's use of technology in his experiment bolsters anthropocentric science and reason. Bodkin exposes Hardman to the internal stimuli of the sun, a feature of his dreams: "Projected by the parabolic bowl, a circular disc of intense red light three feet in diameter covered the wall of the cabin, Hardman's head at its centre" (Ballard 36). Bodkin simulates Hardman's aural experience of the sun by using a "pick-up head" to generate the "sounds of a deep slow drumming". Hardman is sceptical that this experiment will work, saying: "Sometimes I think I have the dreams continuously, every minute of the day. Perhaps we all do" (Ballard 37). Bodkin exposes Hardman to his dreams of the sun drumming and heat to alleviate Hardman's fear response to the lagoon's warming, in a form of exposure-response psychotherapy. When Bodkin tries to stop Hardman's dreams, revealing Bodkin's elevation of human reason and science, he attempts to sever Hardman's psychological entanglement with the lagoon. Thereby, Bodkin unintentionally imposes a rationalist and psychic human/nonhuman binary on the lagoon, the jungle, and the sun. Alternatively, Hardman's sleep reveals his mental continuity with the lagoon. His explanation that all humans dream continuously means that humans and nonhumans are always psychologically entangled. Hardman's mental unity and entanglement with the lagoon suggest that the notion of a rationalist and psychic schism between humans and ecology is a false construct.

A rationalist human/nonhuman divide and the mechanist view that the environment is “inanimate” is a foundation of anthropocentrism. Tracey Clement, in her discussion of *TDW*, highlights the dangerous impact of an anthropocentric worldview that separates culture and nature on Earth (37). This separateness elevates the value of human actions and technology, thereby encouraging the exploitation of the environment for the progress of civilisation and humankind. *TDW* shows that the anthropocentric marginalisation of environments is conducive to global warming and the planet’s peril (Clement 37). An example of this human-centric attitude is Riggs’s statement that “some of the canopies—of non-lignified plants, mark you—are over two hundred feet high. The whole place is nothing but a confounded zoo” (Ballard 17). Riggs’s recognition that the plant canopy is “over two hundred feet high” signals his disdain for nature and an elevation of human cities. His view that the jungle is a “confounded zoo” indicates that it is nonhuman and lacks agency and psychology. Furthermore, Riggs’s reference to a zoo underscores that the jungle is unruly and “inert matter” requiring human intervention. Thus, Riggs exhibits anthropocentric perceptions of ecosystems. The decay of ecologies, under the care of capitalists, demonstrates the interplay of human-centred attitudes and environmental mistreatment. Finally, the powerful image of apocalyptic plant growth exceeding “two hundred feet” underlines that humans cannot control the effects of climate change due to their vast scale and complexity. The exceptionalist human/nonhuman divide obstructs recognition of the jungle and water’s value, psychology, and agency. This divisive ideological construction is integral to the lack of ethical treatment of water ecosystems.

The anthropocentric view that ecologies can be ethically exploited for profit as they are “inanimate” and lack psychology is the basis of instrumental ideology. As outlined in the thesis introduction, Plumwood asserts that humans display instrumentalism when they cast environments as a dispensable source of profit (*Feminism* 118). Instrumentalists believe ecosystems are “inert” and mindless. While this ideological position indicates that exploiting geologies, resources, and landscapes for monetary gain is ethical, these ideas also legitimise economic manipulation of water environments in *TDW*. For instance, Riggs praises Strangman, the head of a group of looters, for seizing control of the lagoon to instrumentally manipulate its underwater cultural heritage for profit: “Reclaiming land, particularly an urban area like this right in the centre of a former capital city, is a Class A1 priority. If Strangman is serious about pumping out the next two lagoons he’ll not only get a free pardon, but a governor-generalship” (Ballard 158). Riggs underlines the societal value of London’s “urban area” as he supports Strangman’s “pumping out the next two lagoons.” When Riggs welcomes the reclamation of land, he affirms the economic value of civilisation’s progress rather than the right of the tropical ecosystems to thrive. His intention to grant Strangman a “governor-generalship” exemplifies an elevation of Western governments and economic rationalism, despite their link to degradation of ecologies. In effect, Riggs supports the culture/nature binary, justifying Strangman’s manipulation of the lagoon to restore London’s buildings and roads. These two characters want to restore the lagoon to its state before global warming as the land is a source of wealth. Riggs and Strangman’s instrumental view of the lagoon as “inert” and mindless matter for monetary gain underpins ecological manipulation apparent in their plans to drain the lagoon and reinstate London’s civilisation.

In another form of dualistic thinking, Western society’s construction of the autonomous individual promotes their distance from ecological and environmental harms. Florian Cord

writing on late capitalism in *TDW* argues that power and discourse are not solely repressive but construct the individual subject (109). Power relations and discourses continually reconfigure this subject (Cord 110). Social theorists maintain that since the eighteenth century Enlightenment, humans have been inducted into individuality by state and economic power. The seminal social theorist Michel Foucault delineates how the state “categorises the individual, marks him by his own individuality, attaches him to his own identity, imposes a law of truth on him which he must recognise and which others have to recognise in him. It is a form of power which makes individuals subjects” (“Subject” 781). State power constructs the individual subject and subordinates them in a capitalist society. People believe they are autonomous because they internalise discourse regarding selfhood generated by authoritarian media and government. This discourse suggests that individuals are mentally divided from the external world and make free choices. Yet, a person’s internalisation of this discourse serves capitalist control of their economic decisions and society’s financial growth at the expense of ecological health. Thus the state’s adherence to autonomous selfhood, increases its authority over the populace, aids economic expansion, and provides the ideological base for ecological exploitation. Human control of water environments and the model of an autonomous individual are intertwined. Nonetheless, the notion that individuals are separable from their environmental context at a mental and bodily level is false. The idea of psychological entanglement underlines that singular humans are continuous with surrounding ecologies at multiple levels. This psychic human/water separatism at an individual level is a construct, positioned at the core of the instrumental manipulation of water and atmospheric ecosystems on Earth.

The notion of an autonomous identity in Western thought, exemplified by the character, Colonel Riggs, is congruent with human separatism from water and the atmosphere. An

Australian SF critic, Adrian Tait, asserts that humans consider themselves separate from the environment in the modern world (27). According to Tait, Ballard's writing underlines that society constructs a selfhood that is "independent, sovereign, irrevocable" psychologically (Tait 38). Tait's argument is supported by Foucault's idea of a singular identity. Foucault argues that the idea of a singular identity is an effect of state power and discourse (*Order* 387). In *TDW*, the state's control over individuals, foments human independence from lagoons, jungles, and the atmosphere. As such, Riggs refuses to acknowledge the porous borders of Kerans's mind: "I don't intend to stay here for three days," he snapped curtly. 'Don't worry. I'm not suffering from any crazy obsessions about these lagoons, flooded or otherwise. We're leaving first thing tomorrow, all of us'" (Ballard 159). The basis of Riggs's rationalism is his belief that human selfhood and mind are distinct from the environment and subject to unchangeable natural laws. He rejects Kerans's psychedelic experience during sleep as "crazy obsessions about these lagoons" because they refer to the biologist's mental nonduality with the lagoon. Kerans's nonbinary relationship with water contradicts Riggs's rationalist view that individuals are bounded units and ecologies are "inert" and lack psychology. Moreover, Riggs—adhering to an understanding of mental health embedded in Western societies' construct of individual psychic and corporeal borders—considers Kerans's spiritual transformation a sign of mental instability rather than enlightened unity with ecology. Nevertheless, this barrier between the individual and water is fundamental to human/nonhuman psychic and material alienation. Riggs's commitment to the notion of an individual subject and human alienation from water is an ideological position underpinning his inaction on *TDW*'s global warming.

Psychological Entanglement and Global Warming

Ecological devolution reverses human dominance over nonhuman reptiles, insects, dinosaurs, and jungles, thereby fracturing human/ecology entanglement. Ballard grants nature power as early evolutionary animals and ecosystems reclaim spaces once controlled by humans: “As their seats in the one-time boardrooms indicated, the reptiles had taken over the city. Once again they were the dominant form of life” (18). Human society, animals, and ecologies devolve and display the characteristics they possessed during early evolution. In an earlier geological epoch, animals like dinosaurs and reptiles dominated. *TDW*’s climate crisis causes a devolution of animal and plant life that elevates animals, reptiles and dinosaurs and triggers the regression of humans and civilisation. The author’s description of reptiles occupying office buildings reveals the collapse of human supremacy over the nonhuman. As such, humans live within the south and north poles, cities such as London are degraded, and humans cannot control animals. In this case, the reptiles’ control of the city signals that human power and climate impacts are temporary. Ballard’s, possibly ironic, depiction of reptiles in a boardroom suggests they have agency, undermining exceptionalist reasoning and promoting human connection with animals. The author reverses human power over nonhumans to critique corporate titans’ ecological exploitation. His depiction of reptiles and social apocalypse symbolises the detrimental effects of corporate control of the environment on industrial civilisation and the biosphere. Also, Ballard’s representation of reptiles reveals the simultaneous devolution and psychological enmeshment of humans, animals, and vegetation. Thus, he dismantles the human psychic boundary with ecologies and animals. Closing this psychological divide promotes ethical treatment of nonhuman life, such as lizards, reptiles, lagoons, and oceans, as a response to persistent human/water divisions.

The scientists and the naturalist devolve in response to the evolutionary regression of the lagoon and the jungle because of their psychic entanglement with the nonhuman. Kerans's devolution begins with jungle dreams. As suggested at this chapter's start, these dreams allow Kerans to recollect human embeddedness in landscapes from early evolution. Bodkin explains the psychological impact of the dreams on Kerans:

the expanding sun and the rising temperature are driving you back down the spinal levels into the drowned seas submerged beneath the lowest layers of your unconscious, into the entirely new zone of the neuronc psyche. This is the lumbar transfer, total biopsychic recall. We really remember these swamps and lagoons (Ballard 74).

Bodkin conflates the lagoon's evolutionary history with layers of the human mind and body as "the neuronc psyche." His reference to the depths of the unconscious as "drowned seas" signals continuity of collective memory, evolution, and water. As evolution progressed, human memories of ecologies became part of the collective unconscious, emerging later as drives, fears, and instincts. Scientific, empirical understandings that human psychology is separate from nonhumans contributed to the burying of these instincts and memories in the depths of the unconscious. As Kerans dreams, he experiences devolution in line with "the expanding sun" and the rising lagoon. His entanglement with the landscape is psychological because he has memories of ecology emerging from the collective unconscious during sleep. Additionally, Bodkin's statement that "we really remember these swamps and lagoons" underlines Kerans's inextricable, material, and mental enmeshment with his surroundings (Ballard 74). These scientists' surreal dreaming allows an experience of psychic entanglement that challenges the rationalist notion of a dualistic relationship between humans and evolutionary landscapes.

The biologists' connection with the environment's unconscious reveals that the mental separation of the human psyche and ecologies is illusory. An important theorist on the psychological elements of Ballard's SF, Samuel Francis, posits that Kerans reacts to the ecological crisis and the lagoon's devolution by regressing into his internal world (72). As Kerans regresses, his unconscious merges with conscious reality (Francis 72). The continuity of his unconscious and the conscious world during dreaming suggests that the environment possesses psychology. As such, the novel suggests that dream worlds are the external projection of Kerans's inner psyche (*TDW* 184). Therefore, Ballard represents the porosity of Kerans's dreams and the exterior world to illustrate their psychic symbiosis. While Kerans has a nightmare of the sun drumming, he "paused and tried to shrug off the echoes that persisted in his ears, uneasily wondering what was the real identity of his new pursuers. His unconscious was rapidly becoming a well-stocked pantheon of tutelary phobias and obsessions" (Ballard 71-72). The conscious "echoes" of Kerans's "new pursuers", including the beating sun and lagoon, permeate his unconscious. During Kerans's nightmare, he experiences unity with an ecological psychology. Further, as humans and the environment devolve, Kerans is porous with the "phobias and obsessions" accumulated within the human collective unconscious over evolution. His contact with humanity's psychology triggers his neurosis. The biologist's shared anxiety with humanity blurs the boundaries between his mind, the sun, and the lagoon. Kerans's dreams, nonduality with ecological psychology and the collective unconscious, and transcendence of singular identity are features of entanglement. His psychological entanglement deconstructs the anthropocentric idea of a mental human/ecology gap conducive to industrial civilisation's neglect of water systems' health.

The scientists' contact with inner space allows them to perceive the entanglements pervading the Earth's water ecologies. Ballard argues that the term "contact with inner space" refers to when characters' interiority fuses with the exterior world, resulting in a "startling and convulsive effect" ("Unconscious" 141). The connection between human characters' psyche and the environment shares the inextricable, nondual, and mental features of entanglement. In this respect, Greenland states that reality is discovered "where there is an interchange between the energy of the individual mind and some figment of externality. Inner space is the hunting ground for reality; everything beyond is fiction" (56). Postmodern society's rapid shifts and shallowness obstruct human access to reality. Greenland implies that humans cannot perceive reality without experiencing the "interchange" of their "individual mind and some figment of externality" (56). This mental interconnectedness with the external world is an example of contact with inner space and psychic enmeshment. In *TDW*, the scientists need to experience mental contact with water to perceive the reality of Earth's fractures underlying the merely "physical" world. So, when Kerans and Bodkin connect with inner space, they access the invisible psychic interconnections between humans and water ecologies. Their experience enables them to recognise that human distance from the nonhuman world. This distance ethically legitimises behaviours by companies, governments, and individuals that wreak havoc on the environment. Ultimately, the scientists' contact with inner space allows them to understand that the psychological and nondualist entanglement of water ecosystems and humanity are stronger than their divisions.

Kerans's contact with the lake's inner space provides him insight into ecological deterioration associated with a fractured entanglement of humans and water. A prominent twenty-first century analyst of Ballard's SF, Jeannette Baxter, proposes that in *TDW*, characters' connection with the inner space of the flooded lagoon allows the emergence of an "alternative

consciousness” (22). The character Kerans experiences an alternative consciousness of the entanglement of humans, reptiles, and water across evolution. Ballard elucidates that contact with inner space occurs when the transmuted image of the past, such as the human evolutionary origin in water, becomes part of one’s internal landscape (*Drowned* 184). For instance, Kerans has a visceral dream that allows his alternative perception of ecology:

Kerans felt, beating within him like his own pulse, the powerful mesmeric pull of the baying reptiles, and stepped out into the lake, whose waters now seemed an extension of his own bloodstream. As the dull pounding rose, he felt the barriers which divided his own cells from the surrounding medium dissolving (Ballard 71).

Kerans incorporates the “baying reptiles” and the lake from the evolutionary past into his interiority. His ensnarement by the lake’s reptiles signifies the psychic inseparability of humans from their evolutionary source in water. The unity of Kerans’s interior and evolutionary water reveals the psychic aspect of contact with inner space. The barrier between Kerans’s “cells” and “surrounding medium” dissolves, showing that his contact is bodily mutating selfhood. Notably, his relationship with inner space comprises devolution and vivid dreams, nonduality with water, and the collapse of identity boundaries. When Kerans sleeps, he becomes conscious of the nonduality of humans and the Earth’s waters. His enmeshment reveals that dualistic, rationalist, and anthropocentric understanding of human/water separatism is an illusion. The alternative consciousness manifest in Kerans helps humanity chart a different historical path from industrial civilisation’s pollution of water and atmospheric systems.

The psychic intra-action of Kerans, the sun, and ecologies undermines human/nonhuman divides linked to human mistreatment of water ecosystems. According to Moritz

Ingwersen, *TDW* suggests that the idea of an autonomous subject separated from the environment is a false construction (2). In the 1960s, Ballard anticipated twenty-first century new materialist notions of entanglement (Ingwersen 2). These ideas include the intra-action of humans and nonhumans. Karen Barad, in her discussion of entanglement, states that intra-action is a process where humans and nonhumans' iterative, mutual, and interdependent actions co-constitute their materiality (*Meeting* 151). Barad indicates that matter, including humans and environments, are "always already" entangled with others in a mutual and intra-active process (*Meeting* 392-393). Ballard's representation of human/nonhuman relations exemplifies these material and psychic elements of intra-action. For instance, Kerans undergoes an intra-active process with the sun and fresh water: "Even as he sat on the bed, splashing his face in the luke-warm water from the jug, he could still see the vast inflamed disc of the spectral sun, still hear the tremendous drumming of its beat" (Ballard 71). As mentioned, and in common with the other scientists and army personnel, Kerans experiences devolution, jungle dreams, and intra-action with the sun. His interchange with the "tremendous drumming" of the "spectral sun" co-constitutes their material agencies in a form of intra-action. Ballard's reference to how Kerans could still see and hear the sun's drumming shows that this relationship is always already present, another feature of intra-action. His persistent experience of the sun encapsulates the mutual and iterative qualities of entangled relations. Kerans's sensory perception of an "inflamed disc" and "drumming" signals that his intra-action with the sun is mental, because it begins during dreaming and continues after he wakes. His relation with the sun signifies human psychological and physical entanglement with the Earth and its solar system and star.

Kerans's reaction to a surrealist painting echoes his psychic symbiosis with the sun and lagoon. Baxter posits that surrealist artworks reflect the altered reality of a flooded landscape

in crisis (22). In addition, Baxter claims that the idea of inner space combines surrealism and science fiction (22). The novel suggests that the images used by surrealistic painters like Max Ernst represent inner space (*TDW* 184-185). Contact with inner space refers to when characters experience psychic nonduality with the lagoon, the jungle, and the sun during sleep and also while having visionary experiences. As Kerans observes when looking at Max Ernst's *The Large Forest* (1925) in Beatrice's apartment, "the image of the archaic sun burned against his [Kerans's] mind, illuminating the fleeting shadows that darted fitfully through its profoundest deeps" (Ballard 29). Kerans experiences the archaic sun in the painting "illuminating the fleeting shadows" of his psyche during a psychic vision. These "fleeting shadows" within his psyche refer to a repressed and inescapable neurosis. Kerans's neurosis indicates his mind is a microcosm for a dysfunctional relationship between humans, water, and the atmosphere. Nevertheless, the inseparability of Kerans and the artwork signifies the symbiosis of his mind, the lagoon, and the sun of the SF Earth of *TDW*. Kerans's symbiotic perception of the artwork's archaic sun illuminating the "shadows" of his unconscious reflects a psychological entanglement between himself, the Earth, and its star. Kerans's relationship with the sun triggers his decision to stay in the lagoon and travel south to the scorching equator. At the equator, his unity with water ecology and the solar system undermines conceptions of human/nonhuman separateness.

In *TDW*, the scientists' nonduality with geological time and water reveals an alternative to disrupted human relations with linear time. Jim Clarke claims that *TDW*'s temporal and climate disruptions are interdependent (15). Ballard's depiction of temporal disruption and equatorial temperatures of 82.2°C are intertwined (Clarke 15). As mentioned in Chapter One, Serres and Latour define linear time as segmented, iterative, and progressive (60). Linear time and a human emphasis on the progress of the economy and society are interwoven. In

TDW, these features of linear time clash with geological time and construct a divide between humans and water. Kerans contacts geological time in the planetarium:

Epochs drifted. Giant waves, infinitely slow and enveloping, broke and fell across the sunless beaches of the time-sea, washing him helplessly in its shallows. He drifted from one pool to another, in the limbos of eternity, a thousand images of himself reflected in the inverted mirrors of the surface (Ballard 110).

Ballard's vivid description of "sunless beaches of the time-sea" means that Kerans exists beyond a temporality tied to the Earth's day and night cycle. Rather, he is in a symbiotic relationship with "infinitely slow" geological time. The reference to "drifted", "waves", "time-sea", and "shallows" conflates water and its temporality. Kerans's experience of being washed helplessly in the cosmic ocean reveals his entanglement with the time of evolution, the Earth, and the universe. His psychic enmeshment with the water extends to an aquatic temporality. Ballard's illustration of how the ocean surface reflects "a thousand images" of Kerans means his identity collapses, and he experiences oneness with water. His unity with water and geological time deconstructs linear time's reinforcement of human/nonhuman fractures. These fractures promote industrial civilisation's time, environmental exploitation, and discourage ecological reciprocity.

Kerans's abdication from individuality allows his mental nonduality with water to be read as entanglement. His experience challenges dualistic ideologies by transcending the boundaries of identity. Cord outlines that abdication refers to a person's desire to transcend the socially constructed borders of autonomous identity (109). Human abdication dismantles false borders between humans and ecosystems. In this respect, Kerans travels to the tropics to experience abdication from individual being and dissolution into the ocean (Cord 117). For example,

Kerans's dreams reveal that the physical restrictions of subjectivity are illusory: "Riggs had not seen the dream, not felt its immense hallucinatory power. He was still obeying reason and logic" (Ballard 75). Riggs is devoted to the "reason and logic" of rationalism that excludes Kerans's hallucinatory experience because it violates the scientific understanding that identity is separable from the environment. Hence, the reference to "hallucinatory power" refers to Kerans's abdication from individuality and nonduality with the lagoon. Ballard conveys this unity when Kerans "listened to the deep subliminal drumming in his ears, half-closed his eyes so that he could see the glimmering surface of the lake dapple across the dark underhang of the table" (75). The lake's "glimmering surface" and the sun's drumming breach the borders of Kerans's identity as he abdicates. The effervescence of Kerans's experience illustrates his mystical transcendence of selfhood. It also suggests the continuity of his psyche and body with the sun and lake. Kerans's abdication, mental and somatic nonduality with the water and the solar system, and transcendence of identity are features of *TDW*'s psychic entanglements. These entanglements are integral to contesting the idea of a bounded human identity and consciousness separate from water, morally legitimising destruction of water and atmospheric ecologies.

Kerans and Hardman's transcorporeality with water dissolves individual borders. Posthumanist scholar, Astrida Neimanis argues that water comprises humans locally, globally, and across evolution (39). Water permeates all life on Earth at bodily, psychic, and temporal levels. Neimanis claims that "as bodies of water, we rely on water for our continued proliferation, but we are also reservoirs for this proliferating force of life-in-the-plural" (111). Humans, animals, and environments exchange water with one another to proliferate life. Neimanis indicates that the entanglement of human bodies, minds, and water generates vitalities that permeate the Earth. Also focusing on the human/water relationship, Stacy

Alaimo argues that the “flow of substances”, such as water, permeates the human subject and dissolves their boundaries in a transcorporeal process (“Oceanic” 112). Transcorporeality refers to the porous human connection with water (Alaimo, “Oceanic” 117-118). In transcorporeal relations, water moves within and across bodies and psychologies. This relationship is defined by intra-action as water transforms humans, and humans transform water. In addition, humans and early animal ancestors from the ocean are transcorporeal. The water of these animals’ descendants is part of the human body, suggesting their evolutionary and physical kinship (Alaimo, “Oceanic” 118). In *TDW*, the transcorporeality of characters and water allows them to transcend the borders of the subject. Kerans and Hardman experience transcorporeality with water when they dream of the lagoon. These colleagues’ relationship with water drives them south to the hot equator to experience the metamorphosis of their identity. Their transcorporeality with the evolutionary source of humans in water is a nondualistic, physical, and psychic entanglement.

The Journey South

Kerans and Hardman’s porosity with water on their journey south to the equatorial waters is also emotionally transformative. Their transformation reveals that the rationalist notion of a separation between individuals and aquatic environments is a false construct of modern society. As they travel south, these characters experience immersion in thunderstorms, rivers, and the ocean. Kerans experiences a porous, transcorporeal, and emotional connection with water when encountering a thunderstorm: “The massive banks of black cumulus, only four or five hundred feet above, dimmed the air like a solar eclipse, and he revived sufficiently to start the outboard and raise his speed” (Ballard 167). This thunderstorm demonstrates Earth’s immense power and sublimity, suggesting Kerans’s immersion in a cosmic reality

dwarfing his identity. The clouds are sublime because of their overpowering darkness and proximity to the ocean. Ballard's description of "massive banks of black cumulus" and "solar eclipse" signifies that the cosmos provides humans with a path to transforming the self, emotion, and danger. The interrelation of Kerans's consciousness and the immense landscapes of clouds, oceans, and storms has a redemptive quality. It redeems Kerans by allowing his nonduality with the water and atmosphere. Before Kerans meets the thunderstorm, he is exhausted by the growing heat as he travels south, symbolising humankind's physical and emotional distance from water. He "revived sufficiently" as water is a source of emotion. The water dissolves Kerans's subjective borders, he becomes transcorporeal; it elevates his affective state. Furthermore, Kerans's porosity with oceanic and atmospheric agencies allows his self to dissolve into water. His transformative dissolution into water symbolises human unity with sublime ecologies. The intensity of Kerans's experience transcends psychic human/environment borders, characteristic of scientific rationalism, through affective force.

Kerans's odyssey is a metaphor for the dissolution of human subjectivity into water and obliteration of the boundaries of the subject. Ballard posits that these waters are both the end of individuality and the source of human life (*Drowned* 183). He articulates that Kerans's quest through scorching landscapes ends with redemption. As a result, Kerans experiences the dissolution of his singular identity and transformative nonduality with water. Like Ballard, Gregory Stephenson claims that Kerans's journey allows transformation beyond the limits of human identity and materiality through contact with absolute being (2). Contact with absolute being refers, in this context, to characters' connection with a shared human origin in water. Kerans's psychic experience of the sun drives him south to the equatorial ocean:

the archaic sun in his mind beat again continuously with its immense power, its identity merging now with that of the real sun visible behind the rain-clouds. Relentless and magnetic, it called him southward, to the great heat and submerged lagoons of the Equator (Ballard 161).

The divide between the “archaic sun” within Kerans’s psyche and the “real sun” symbolises human alienation from the environment. The restriction of his view of the “real sun” by “rain-clouds” highlights the fractured human relationship with the *TDW* future Earth and its star, a rationalist construct underlying disregard for landscapes’ agencies and psychologies. This idea is conducive to ecologically exploitative actions and behaviours that pollute and damage water ecosystems. Moreover, the merger of Kerans’s mind and the “archaic sun” symbolises his transcendence of the human/nonhuman border and mental integration into the cosmos. After Kerans’s odyssey concludes, his identity could dissolve into the equatorial waters. His immersion in the shared source of human physiology, mind, and subjectivity suggests contact with absolute being. His transformative unity with the waters from which life emerged is psychic entanglement. Kerans’s entanglement challenges rationalist ideas of human/nonhuman separatism through the notion of cosmic power.

While it is possible to read, as this chapter does, that Kerans’s identity dissolves into water as an example of nondual entanglement, there is textual evidence in *TDW* that offers a different reading. This textual evidence illuminates a collective human disruptive relation with water and atmospheric ecologies. Due to this rift, Kerans’s journey could end with his demise as he disintegrates into the ocean. Ballard’s conclusion embraces ambiguity. In contrast to Kerans, Riggs, Macready, and Strangman escape rising temperatures, flooding, and the return of Triassic jungles by travelling north. Kerans travels south because the equatorial water beckons him to experience entanglement. Nevertheless, Kerans’s compulsion to journey to

the equator is against his will and allows a doubled reading of *TDW*'s conclusion. During his journey Kerans lands on an island and finds "himself stumbling about the silent basins, their floors cracked into hexagonal plates, like a dreamer searching for an invisible door out of his nightmare" (Ballard 168). As the boundary between Kerans's self and the environment collapses, he experiences confusion akin to mental illness. The description of Kerans "stumbling about the silent basins" signifies his anxiety. His neurosis represents an unconscious human schism with the Earth's waters and atmosphere. In this case, Kerans's confused experience of the island reflects a dysfunctional relationship between humans, society, and water that preceded global warming. Furthermore, the "hexagonal plates" of the cracked floor signify human artificial manipulation of the planet that is responsible for the climate crisis. Thus, Kerans's dream in this passage can refer to the shared human nightmare of climate change. Although humankind collectively and purposefully destabilises the Earth's ecosystems in *TDW*, Kerans is an individual exemplar of the human/posthuman disconnection. Ballard's description of Kerans searching for an invisible door reveals that any attempt to escape global warming, such as a retreat to the poles, will probably fail. Thereby, Kerans's anxiety and disorientation show the outcome of his voyage south is beyond his control and the human passage through climate crisis is uncertain.

Contradicting the argument that Kerans undergoes psychic transformation at *TDW*'s conclusion, Baxter argues that his quest south is a postmodern display. Baxter states that postmodern culture's fictional and empty representations are a "spectacle" (37). She posits that Ballard's novel exists within a 1960s postmodern context characterised by human alienation from society and false images (Baxter 28). This false representation is apparent in the growth of media and communication technologies, such as computers, film, television, and surveillance, and the commodification of memory within 1960s society. Baxter claims

that Kerans's goal of reaching the tropics is unattainable as it is a "spectacle" (37). In an example that illustrates Baxter's position, Kerans, in response to the draining of the lagoon, "fought to free his mind, grappling with this total inversion of his normal world, unable to accept the logic of the rebirth before him" (Ballard 121). One reading of Kerans's resistance to a compulsion to travel south is that he cannot accept the dissolution of his identity, and the "logic of the rebirth" within a cosmic assemblage, because the materiality of water disrupts his psychic drives. In this respect, his autonomy and enmeshment with matter could prevent him from reaching the equatorial waters and experiencing identity dissolution. Furthermore, the representation from which Kerans "fought to free his mind" indicates that an evolutionary force triggers his involuntary journey towards immersion in the ocean. The idea that the equatorial waters lure him against his will is textual evidence for Baxter's argument that the endpoint of his journey is a spectre constructed by postmodern society. His impulse to reach the tropics may be a symbol of people's involuntary embeddedness in the depthless representations of Western capitalism. Thus, Baxter implies that Kerans's odyssey ends with the disintegration of self into the ocean. Even if Kerans's southern odyssey does not lead to his demise, Baxter's position illuminates the dangers of heeding the confusion, spectacle, and endless repetitions of society in the twenty-first century.

TDW represents scientists and a naturalist's transformative nonduality with water bodies, the jungle, and the sun as psychological entanglement. Alternatively, Riggs and Strangman's denial of environmental agency and psychology constructs an anthropocentric human/water rift. This rift is one cause of maladaptive human exploitation of water ecosystems in *TDW*. Instances of Kerans, Bodkin, Beatrice, and Hardman's mental enmeshment with the lagoon suggests an alternative to human/water dualism. For example, these colleagues devolve and become psychologically entangled with the surrounding lagoon and the jungle, as

exemplified by their jungle dreams. As such, their experience connects the human and the nonhuman. In addition, Kerans's contact with the inner space of the lake allows his alternative consciousness of the psychic enmeshment of humans and their origin in evolutionary waters. His mental intra-action with the lagoon and the sun during sleep suggests the human/water schism is false. Meanwhile, Kerans abdicates from an enclosed individuality and experiences embeddedness in the collective that is the lagoon. Ballard scholars, like Stephenson and Baxter, disagree regarding whether this experience is revelatory or an illusory spectacle. In this way, Kerans and Hardman's southern odyssey could conclude with their transformative nonduality with life's beginnings in the equatorial ocean and the dissolution of the human self. In sum, these nondual and psychic entanglements feature characters' vivid dreams, devolution, unity with water, and the collapse of the boundaries of the self. Importantly, as Kerans and Hardman journey south, they experience psychological entanglement with water. Ballard's SF representation of these scientists and an amateur naturalist obliterates rationalist and dualistic ideas of a mental human/ecology schism through affective force.

Chapter Three: Nonduality with Water, Desert and Geological Time in *The Drought*

Like *The Drowned World (TDW)*, J. G. Ballard's *The Drought (TD)* represents human psychological nonduality with water environments, afflicted by climate change on a future Earth. *TD*'s main characters—Charles Ransom, a former doctor, Mrs Quilter, her son Quilter, Catherine Austen, Philip Jordan, and Richard Lomax—experience this entanglement as drought. They live on a dying river near the town of Mount Royal; the worldwide drought is anthropogenic, caused by ocean plastic pollution. This desertification leads to the loss of time, individual isolation, and societal collapse; loss of time refers to the temporalities of the landscape, society, and individuals. Moreover, several factors presage the drought, characterised by a psychic human/water and human/desert rift in anthropocentric and instrumental thought. For instance, the dominance of chronological time in the society preceding the drought builds a rift between humans, water, desert, and geological time. Also, the wealthy architect, Lomax's collecting of water in a private lake, exemplifies modern society's human-centric and instrumental focus on extracting future profit from depleted resources. As such, he contributes to a mental and corporeal human/water schism. Meanwhile, characters' psychic entanglement with arid landscapes, water, and time undermines these schisms. In this respect, the novel's entanglements include human modulation and intensive effects, absolution in time, psychic unity with water, desert, and geological time, contact with inner space, and transformative nonduality with the timeless sands. In *TD*, psychological entanglements are characterised by nondual relations between

characters, water, desert, and temporality. These enmeshments deconstruct anthropocentric, psychic, and dualistic oppositions, ethically justifying ruthless exploitation of water systems. The consequence is degradation of ecosystems and a drought disaster afflicting human societies and ecologies.

New Wave writers, including Ballard, Frank Herbert, and Brian Aldiss, anticipated the climate crises of the twenty-first century in contrast with 1950s SF writers. Accordingly, Leonard Orr in an essay on Ballard's Utopian disasters, states that cosy catastrophe narratives in 1950s Hard SF, include a protagonist who averts the crisis, restores social order, and liberates the remaining humans (479). Nick Hubble argues that in these cosy catastrophe SF novels, confident male characters use reason to solve ecological crises (48). However, their rationalism is associated with a human/ecology binary or rift. Admittedly, Orr highlights that Ballard differs from these traditional SF writers, as he represents ecological crises as a source of psychological growth (480). Victoria Crozier in her study of Green SF notes,

the New Wave of eco-science fiction thus [offers] its readers something that earlier science fiction narratives lacked—traditional bread and butter science fiction motifs such as novel inventions and extra-terrestrial contact, intertwined with real-world environmental concerns (10).

She finds the idea that New Wave SF abandoned previous narrative motifs overly simplistic. From her perspective, writers still use traditional SF motifs, like scientific inventions and alien contact, but include ecological problems. As such, New Wave SF writers draw on biological science while describing characters' altered states. Ballard represents protagonists, including Ransom in *TD*, who prefer the climate disaster to elements of the previous civilisation (Orr 479). In an interview, Ballard argues that his characters' solution to the

ecological crisis is not escape but integration with the Earth and psychic fulfilment (O'Hara and Sellars 199-211), highlighting how humans react to environmental disasters psychologically and grow as individuals. He illustrates characters' mental and temporal entanglement with ecology within the context of climate crisis, not just the physical element highlighted by new materialism.

Impacts of the Drought

In *TD*, climate change and drought trigger mental turmoil and growth. Lorenz Firsching, writing on Ballard's ambiguous apocalypse, argues that Ballard emphasises how environmental disaster triggers a psychological change in characters (302). As such, their change allows the emergence of a new psychology. Characters' withdrawal and exploration of their inner selves enables the transformation of their consciousness. For example, Ballard represents Ransom's turmoil, social isolation, vivid dreams, and internal journey toward redemption, in line with the New Wave's focus on characters' redemptive journey and contact with inner space. David Pringle, in *Earth is the Alien Planet*, argues that Ballard's characters follow the logic of the landscape (20). For example, Ransom journeys from Mount Royal, which is plagued by aridity, to the sea settlement to search for water. When Ransom finds it difficult to access water in the sea settlement, he returns to Mount Royal and begins "to sense [the river's] true inner compass" (Ballard 186). In addition, he perceives, "the white deck of the river was carrying them all in the opposite direction, forward into zones of time future where the unresolved residues of the past would appear smoothed and rounded" (Ballard 186). Ballard describes the past as "smoothed and rounded" residues, symbolising a dysfunctional human/nonhuman relationship responsible for plastic pollution of the oceans. The novel's reference to the river carrying characters into a future zone suggests that the only

solution to the drought is accepting worsening aridity. In this respect, at *TD*'s conclusion, Ransom accepts the drought as he travels into the desert wastes outside Mount Royal. Orr argues that Ransom's inner journey into the desert waste culminates in his psychic assimilation into the environment (483). So, Ballard conveys how Ransom's behaviour is not destructive, as it results in transformative psychic growth. His revelatory nonduality with the desert is a form of entanglement. Importantly, Ransom exemplifies the emergence of a new psychology adapted to water scarcity.

Ballard illustrates how the draining of the river due to the drought mirrors characters' social alienation from one another and water. Ayse Ciftcibasi argues that the water scarcity in *TD* afflicts the human spirit to the extent that people do not realise they are continually interacting with the exterior world (84). Ransom lives alone on his houseboat on a drying river near Mount Royal. Ransom's situation figures as a literal representation of his psychological condition and a metonymy for the ecological zeitgeist more generally. The novel's river ecology is central to individual and societal health as it bolsters connections between people. In this way, the narrowing of the river is a metaphor for a lack of associations, including the social, environmental, and temporal. For example, Ransom's isolation following his divorce from Judith is a symbol for the river's growing aridity: "With the death of the river, so would vanish any contact between those stranded on the drained floor" (Ballard 18). Ballard represents the separation of boats and houses on the river to signify the isolation of human characters from one another. In this way, the river mediates the entanglement between humans, society, and ecosystems. Thus, the characters' isolation, because of the stranding of boats on the riverbed, is a metaphor for the collapse of social, mental, and emotional interconnectedness. As such, Ransom's social isolation mirrors his alienation from the dry river. The river and ecologies, in general, are vital to social

connections, psychological health, and the functioning of society. Also, the dried river symbolises characters' psychic rifts with water and other environments. These rifts are integral to ethical disregard for water systems due to their appearance as lifeless matter with no agency. This discourse legitimises the mistreatment of these systems, often through chemical and plastic pollution, and the continuation of an anthropogenic drought in *TD*.

In *TD*, the global draining of water environments, such as the river and the ocean, disturbs the societal construction of identity. A scholar of SF scarce-water worlds, Zachary Kissinger posits that Ballard represents a disintegrating society that promotes ecological destruction (54). This social stagnation and environmental decay obliterates individual identity dependent on healthy relations with ecosystems (Kissinger 54). In *TD*, human entanglement with water, desert, and geological time generates identity. However, accumulating resources for economic gain severs the connection of humans and ecologies vital to identity construction. The authorities' restriction of water access, and the desertification in *TD*, drains human identity and time. For example, the white landscape symbolises an obliteration of self and temporality: "The unvarying desert light, the absence of all colour and the brilliant whiteness of the stony landscape made him feel that he was advancing across an immense graveyard" (Ballard 173). Ballard's images of "white landscape" and "immense graveyard" underline the apocalyptic end of the ecological order as many animals and environments become extinct. The reference to "the unvarying desert light" signifies an eternal present where the environment or human identity never changes. Therefore, Ballard ties characters' emotional states to light and climate, suggesting that landscapes have the potential to transform them. Yet, the heightened light and its invariability, signify an ecological apocalypse which together with a slowing of human and nonhuman life, result in the loss of self in time and place. Ballard's use of these phrases reveals the absence of human connection with water,

which is vital to constructing the singular subject. The draining of water systems and desertification of the landscape signals the disintegration of Ransom and his companions' identity.

At a collective level, civilisation's fragmented relationship with water results in social collapse and unethical behaviour in *TD*. An important SF theorist, Ursula Heise, posits that SF writers use reduced ecologies as a device to explore how environmental problems impact society (111). Writers' depiction of scarce landscapes reveals how humans might create an ethics that responds to nonhuman agencies (Heise 111). Water scarcity results in Mount Royal's fall and the emergence of destructive human impulses: "He [Ransom] already felt that in the new landscape around them humanitarian considerations were becoming irrelevant" (Ballard 98). Due to severe aridity, humans cannot connect with water, resulting in a social, psychological, and temporal vacuum. Those from the city of Mount Royal and the sea settlement lack the ability to apply "humanitarian considerations" due to the fractured entanglement of society and the landscape. Arid conditions drive unethical human relations with other humans and ecology. For example, characters participate in a mad rush to obtain water in the sea settlement: "The scattered shooting resumed, the soldiers firing over the heads of the hundreds of people moving straight towards the sea" (Ballard 120). Water scarcity impacts chances for survival by causing a dangerous collapse of ethics, evident in the militia's weapon use. Ransom and his friend Catherine are desperate to reach the sea, as survival is the priority in this new landscape. This collapse of human relations with water leads to the disintegration of the sea settlement's moral order. Ballard's reference to hundreds of people trying to access water shows a competitive society, lacking cohesion. These environmental and societal rifts obscure human recognition of how the mistreatment of water prolongs the drought. The thought experiment in *TD* reveals that its characters cannot change

their ethics and adapt to a wasted landscape due to the human/desert barrier. The result is the collapse of civilisation, social alienation, and continued water scarcity.

Causes of the Drought Crisis

In *TD*, anthropocentric and rationalist ideologies divide humans from other humans and water, ethically justifying manipulation of ecologies. According to Jason Moore, writing on what he terms, the Capitalocene, anthropocentric oppositions such as society/nature and reason/nature foment the exclusion of the natural world from human society (*Anthropocene* 2). This dualistic thinking is fundamental to human exploitation of the environment to develop economies (Moore, *Anthropocene* 2-3). Ideological dualisms are conducive to human unconcern for their impacts on ecosystems. The result is an increased propensity for collective and individual violence against water ecologies and biosphere instability. In *TD*, this binary casts water as an “inert” substance, fuelling authorities’ unconcern for water ecosystems in the sea settlement. The authorities’ attitude toward water is anthropocentric and generates a human/nonhuman schism. Their manipulation of water for profit, authority, and survival propagates this divide. Also, Ciftcibasi argues that a human/environment division fuels societal collapse in *TD* (84). For example, police and militia control access to water with fences on the beach: “all along the beach there’s a double wire fence. The army and police are on the other side. Every day they let a few people through. Behind those sheds there are big distillation units” (Ballard 112). The authorities’ use of “distillation units” to make water reveals their acceptance of a human-centred ideology that casts water as “inert”. They treat water as an “inanimate” resource to enhance their power. The police and militia’s mistreatment of water occurs alongside a violent authoritarian control of the population, exemplified by their construction of “a double wire fence.” Their human-centrism and

coercion of the populace contribute to water system destruction and societal entropy. The authorities' imposition of anthropocentric binaries, such as society/nature and human/nonhuman, on humans, the sea settlement, and water accelerates the deterioration of water-scarce landscapes and societal chaos.

Human bodily, porous, and reciprocal entanglements with water challenge the notion of human/aquatic divisions underlying unethical treatment of the ocean in *TD*. In an argument relevant to *TD*, Astrida Neimanis states that the term “aqueous Anthropocene” assists in “re-imagining our embodiment as aqueous all the way down, across times, bodies, and places” (170). Fragmented human/water relations are partly responsible for the crisis of the Anthropocene. *TD* has an “Anthropocene” crisis because of human and societal alienation from water. Emma Armstrong notes that ecologist Eugene Stoermer and chemist Paul Crutzen defined the term “Anthropocene” in 2000 to refer to measurable impacts of humankind on geology and the environment (9). The fractured relationship between humans and water contributes to the exploitation of water, comprising pollution of the oceans with plastic and by drought: “[T]he sea had constructed a skin no thicker than a few atoms, but sufficiently strong to devastate the lands it once irrigated. This act of retribution by the sea had always impressed Ransom by its simple justice” (Ballard 41). In *TD*, when humans treat water environments as “inanimate” sources of profit, they sever their entanglement with water. Ballard's reference to “an act of retribution by the sea” indicates that human exploitation of water for profit damages the human/ecology relationship. This broken entanglement fuels a lack of a human ethical, or adaptive, response to plastic pollution of the ocean, arid climate change, and societal ruin. Similarly, Ballard's use of the phrase “simple justice” signifies that human impacts on water ecosystems are unethical. These impacts include the breakdown of society in Mount Royal, the sea settlement, and water

scarcity. Nevertheless, human porosity and reciprocity with water influence civilisation's response to the drought. Ransom's reciprocal enmeshment with water suggests his adaption to this calamity. His accommodative and entangled relationship with water provides an alternative to civilisation's maladaptive management of scarce-water and continued aridity.

The sea settlement's occupants are orientated to a linear time associated with an anthropocentric human/water rift and water scarcity. Serres and Latour state that modernity's time is linear and moves continuously forward (60). Rigid proximities and distances define linear temporality. However, humans do not experience time as linear and rigid but as polychronic and nonlinear (Serres and Latour 60). In *TD*, human entanglement with modern society's linear time contributes to the drought. The police, militia, and populace in the sea settlement are entangled with a linear temporality. The authorities' temporal orientation promotes their control of water for power and economic gain. As such, they construct an anthropocentric human/water divide conducive to the sea settlement and water ecologies' entropy. For example, Ransom "expected the beach to be crowded, but not the vast concourse below, a meaningless replication of identity in which an infinite number of doubles of himself were being generated by a cancerous division of time" (109). The beach's urgent and divisive temporality is linear time. The state imposes the divisions of linear time on human relations with water in the sea settlement by instating social restrictions. These restrictions signal an elevation of human authority and construction of an imbalanced relationship between humans and water. In addition, Ballard's description of a "cancerous division of time" refers to how this temporality is incompatible with a healthy connection between society and water. On the beach, people treat one another as doubles because they are fixated on the endless economic and societal replication on a linear time scale. The authorities and inhabitants of the sea settlement display anthropocentrism and orientation to the time of an

eroding civilisation. This orientation constructs a human/water binary that fuels the sea settlement's overcrowding and unequal access to scarce water.

A persistent human orientation to short-term time encourages the economic manipulation of water and ecological apocalypse. Michel Serres proposes that the current world places "time in danger, a cultural pollution that we have inflicted on long-term thoughts, those guardians of the Earth, of humanity, and of things themselves" (31). Serres refers to "cultural pollution" as the absence of a modern tradition that emphasises the actual Earth's long history, including the rising and waning of cultures, empires, and ecologies. Modern power eradicates cultural traditions and memories on large time scales (Serres 29-30). An example of this long-term perspective is Ancient Greek religion, art, and literature, for example, the treatment of time in Homer's *The Iliad* and *The Odyssey* (2003). These classic Greek poems emphasise the mythical and prolonged human relations with ecosystems over vast temporalities, in Olympus and the Underworld, beyond the decade long Trojan war and Odyssey's ten year journey home. Arguably, the contemporary marginalisation of cultures like that of Ancient Greece, a culture devoted to mythological time, endangers geological time in contemporary society. Joseph Donaldson outlines how geological time refers to the slow changes in evolution and history on Earth (2). Geological time contrasts with human civilisation's linear temporality, characterised by forward flow and acceleration (Donaldson 2-3). Recognising the importance of ecosystems over slow geological time is central to cultivating ecological health and to building robust cultures capable of facing what the future brings. Society's linear, short-term, and restrictive time clashes with geological time. The result is a temporal and human/nonhuman fissure that justifies human actors' control of water ecologies for profit. This way, humankind's orientation to profit over the short-term divides humans from water

and geological time in the future represented by the fiction of the mid 1960s *TD* and in the now of this current Earth.

In *TD*, Lomax's short-term understanding of chronological time instigates a microcosm of temporal rifts, intrinsic to unethical attitudes toward water ecosystems. This unethical approach legitimises pollution and mistreatment of water. For instance, Lomax exploits the remaining water in Mount Royal for profit as he adheres to a short-term temporality. Demonstrating his short-term orientation, in a discussion with Ransom about leaving Mount Royal he states: "I'm damned if I'm going to the sea. All that water, a mineral I despise, utterly unmalleable, fit only for fountains" (Ballard 53). Lomax disregards the impact of Mount Royal's aridity on himself and other characters. He only considers the monetary value of water, describing sea water as "utterly unmalleable, fit only for fountains." His dismissive attitude towards salt—"a mineral [he] despise[s]"—symbolises his lack of concern for the fictional Earth's resources. This anthropocentric attitude is integral to plastic pollution of the oceans and aridity. Furthermore, Lomax collects the remaining fresh water in a lake for short-term economic gain. He displays a narrow focus on linear time and future profit. As such, this character ignores the entanglement of humans, water, and geological time. Towards *TD*'s conclusion, Lomax opens the boundary of his lake and its water flows into the sands. His actions symbolise a maladaptive and anthropocentric relationship between humanity and water. This broken relationship demonstrates why Lomax cannot manage the lake's water and water scarcity. As such, Lomax's water loss suggests the failure of a human-centric and short-term economic attitude toward water. His approach was integral to the pollution of water systems, which resulted in drought over time. In *TD*, modern society's response to the drought is weak as short-term and linear time do not encompass water's geological time. The immensity of the Pacific, the Atlantic, the Indian, and the Southern

Oceans in *TD* illustrates this vast temporality. Together these temporal rifts and human-centrism underpin human pollution of the ocean with plastics, initially responsible for aridity and water scarcity.

A human orientation to linear and future profit attained by exploiting water harms aquatic systems. Moore argues that humans continue to push the contemporary Earth's climate and biosphere over planetary boundaries that endanger life (*Anthropocene* 1). The endless capitalist accumulation of resources for profit threatens water ecosystems, plant and animal species, and cultures (Moore, *Anthropocene* 7-8). Immanent to this accumulation process is a polarisation of economy and nature. Kissinger, in his analysis of water scarcity in SF, underlines the environmental dangers of the "present-future mentality of Western expansionism, which is a belief in satisfying fate in anticipation of a future that 'belongs' to specific individuals to fulfil economic destinies" (45). "Western expansionism", that is, the West's orientation towards continual economic growth, emphasises the value of consumerism, individual use of resources, and private wealth. The false view that pursuing future profit is "satisfying fate" legitimises human dominion over the environment. Human actors' control of ecology constructs an anthropocentric human/water dualism. Dualistic and human-centric thought underlies the manipulation of water resources and damage to the biosphere. A "present-future" approach is associated with an ecologically destructive rift between linear and geological time. This financial orientation to the future is incompatible with the slow change of water systems over geological epochs. Where focus is on economic gain in the future, and linear time contributes to human alienation from environments and their temporality, the result is an anthropocentric rift between humans/water that morally legitimises the plastic, and other kinds of ocean pollution, in the contemporary world.

In *TD*, Lomax's exploitation of scarce-water for future profit exemplifies anthropocentrism. His use of diminishing water resources for continual financial gain reinforces the human/environment disconnection. In a discussion with Ransom, Lomax affirms his belief in economic progress in the future: "Don't talk to me about the balance of nature! If it wasn't for people like myself we'd all be living in mud huts" (Ballard 52). Lomax's mockery of "mud huts" suggests that he values modern society and financial progress more than environmental health. He does not recognise the negative effect of manipulating water for profit on the balance of nature/ecology. In this way, Lomax disregards the symbiotic relationship between humans and ecologies, which is evident in his ridicule of "the balance of nature!" This statement exposes his ignorance of society's human-centric pollution of oceans preceding the drought. Similarly, Lomax's says "there's a great deal of future [in Mount Royal], believe me" (Ballard 52). His narrow interest in gleaning profit from a barren Mount Royal reveals he is oblivious to the planetary crisis. Lomax's instrumental attitude to water systems as a source of economic expansion underpins the drought disaster. While this character's boast about the future of Mount Royal underlines his intense focus on water's monetary value, his myopic focus on profit prevents his recognition of the Mount Royal's desertification. Lomax treats water as a resource to aid his future economic progression and perceived destiny. Moreover, Lomax disregards how his exploitation of water divides him from other people, society, and water environments. The resulting drought damages human bodily health, mental health, and the social fabric. A human focus on future profit, exemplified by Lomax, constructs an anthropocentric divide between water, humans, and civilisation, resulting in the continuation of aridity.

Adaptive Responses to the Drought

The intra-action of humans, rivers, oceans, and geological time co-constitutes their agencies, and lessens divides integral to water scarcity. Adding to her argument regarding the temporal (as referenced in Chapter One of this thesis), Donna Haraway's concept of *sympoiesis* (translated as "making with") suggests the interrelation of humans and multiple spatio-temporalities (*Staying* 33). According to Haraway, entities do not start as individual units and then interrelate (*Staying* 33). Instead, they are inseparable from other entities within an ecological collective. Human, nonhuman, and temporal agencies are co-produced during intra-action. In *TD*, humans, animals, water, the river, and time intra-act. For example, human entanglements with the river shift over evolution:

The continued lateral movements of the river, its rise and fall and the varying pressures on the hull, were like the activity within a vast system of evolution, whose cumulative forward flow was as irrelevant and without meaning as the apparent linear motion of time itself (Ballard 17).

Ballard's reference to the "apparent linear motion of time" suggests that the river and linear time are not entangled. Rather, the river's activity "within a vast system of evolution" underlines its enmeshment with geological time. Its evolutionary lateral movements and rise and fall reveal its intra-action with geological time within a planetary collective. As a result of intra-action, the water's movement grants agency to the river, humans, animals, and geological temporality. However, fractured temporal and human/water entanglements afflict the river collective. The fractured link between the river's geological time and civilisation's linear time is intrinsic to human unethical approaches to water and practices that harm water

systems in *TD*, and credibly in broader human experience. Yet, characters' intra-action with rivers, deserts, and geological time contests anthropocentric ideologies and a linear temporality that severs human/water interrelations.

Ransom's intra-action with water and geological time before the drought's extremity is an example of entanglement that reduces ecological disconnections. For instance, he experiences intra-action with Mount Royal's river and its temporality: "with his discovery of the river Ransom had at last found an environment in which he felt completely at home, a zone of identity in space and time" (Ballard 17). The intra-action of the river, geological time, and Ransom co-constitutes their agencies. The reference to Ransom's feeling at home reveals that balanced entanglements of humans, water and geological time are essential to healthy identity, society, and ecosystems. Ransom's "zone of identity" is in Mount Royal because he is entangled with the river's water. His entanglement with the river erodes when he reaches the sea settlement, and the authorities restrict access to water. Similarly, Ransom's wife Judith and Jonathan Grady's identities drain due to a lack of water. Notably, the settlement's aridity, the authorities' water restrictions and violence, and inequality sever these characters' enmeshment with water. Moreover, the authorities' unjustified power and the inhabitants' greed and pursuit of wealth are embedded in a linear and short-term temporality. The dominance of linear time in the community means that its inhabitants, including Ransom, Jonathan, and Judith, experience a rift with water and geological time. Their lack of connection with water ecosystems and their temporality is conducive to a larger unconcern for the environmental implications of actions, by individuals and groups, that led in *TD* to plastic pollution of the oceans and global drought. Alternatively, Ransom's intra-action with the river and geological time in Mount Royal builds and protects his subjectivity. His initial entanglement with water suggests an alternative to the fractured relation of human identity,

geological time, and water in the sea settlement. Yet, Ransom's relationship with the sea settlement's scarce water precedes his entanglement with the interior desert.

TD's characters' recognition of their symbiosis with water and geological time is vital to human/nonhuman harmony in the work. Erin Fitz-Henry argues that the modern economic system and linear time flatten differences between humans and environments (15). Notably, ecologies like rivers operate on multiple temporal scales, such as geological time, which is incompatible with linear time. Fitz-Henry asserts that the perspective of geological time encompasses human co-existence with these environments across history (15). Serres suggests that human consideration of nature's rhythms and scope is essential to human/ecology harmony (29). For instance, Ballard describes Quilter as living in a "timeless world" (209). Quilter attends to "timeless" natural cycles operating on geological time. As noted in the introduction, Ransom observes Quilter, who appears as "a demented faun strewing himself with leaves as he mourned for the lost spirit of the river" (Ballard 13). Quilter's attention to the mythical signifies his holistic relation with the river's temporal cycles. He displays symbiosis with geological time of the river's rhythms and wildlife; his symbiosis is a form of harmonious psychological entanglement with water and its time. Like Quilter, Ransom's interdependence with the river is temporal, psychological, and physical. These characters' recognition of their continuity with water and geological time promotes a vibrant relationship between humans and a future Earth's ecosystems. Their symbiosis undermines human psychic and physical separation from water and geological time perpetuating human/nonhuman disconnect and accelerating anthropogenic impacts on water ecologies.

Ransom's temporal response to environmental catastrophe consists of "modulation", which precedes his experience of "intensive effects". As mentioned in the introduction, Shavero outlines that the force of "modulation" occurs within a vacuum without space or time (16). In *TD*, Ransom experiences modulation due to his fixity in the present vacuum of the desert without spatio-temporality. Jeronicic and Willems argue that Ransom's modulation allows "intensive effects" (11). An intensive effect allows changes to Ransom's indivisible properties, such as his psychology. For example, when Ransom travels with a group to the sea settlement to find water, he experiences "an increasing sense of vacuum, as if he was pointlessly following a vestigial instinct that no longer had any real meaning for him" (Ballard 105). Ballard's reference to a vacuum signals that Ransom is not interested in human activities in a world embedded in linear time and capitalist competition for water, resources, and money. Despite Ransom's previous desperation to find water, he senses that searching for water lacks "any real meaning for him". His indifference to finding water suggests he accepts the water scarcity of the desert's vacuum. Ransom's acceptance of the "increasing sense of vacuum" and fixity within the present and spatial context of water scarcity are features of modulation. His modulation allows him to question dominant understandings of linear time and space that precipitated the drought (Jeronicic and Willems 11). Ransom's modulation allows intensive effects that alter his psychological relationship with the desert landscape.

Ransom's experience of intensive effects are central to human transcendence of the psychological underpinnings of drought, enhancing his psychic entanglement with the desert. His experience of intensive effects is an alternative to maladaptive human relations with rivers, oceans and deserts, which justify plastic pollution and consequent drought. These effects also enable him to escape the mental disconnection between humans and the

landscape responsible for the drought. For instance, an intensive effect enables Ransom and his group to shift their psychological relationship with the dried river: “the endless stretches of wet salt [sucked] away from them all but the hardest core of themselves. These tiny nodes of identity glimmered in the light of the limbo, the zone of nothingness that waited for them to dissolve and deliquesce like the crystals dried by the sun” (Ballard 135). Ransom and his companions accept the landscape’s change, which allows them to retain “the hardest core of themselves”. Their existence in a vacuum, and fixity within an immediate and surreal spatial context, suggests modulation. Ballard’s description of “dissolve and deliquesce like the crystals dried by the sun” reveals that Ransom’s modulation allows an intensive psychological effect. Specifically, his intensive effect allows him to contact the depths of his consciousness and experience mental embeddedness in the sands. Ransom’s psychic experience restores his fractured relationship with the dry landscape. This broken connection is a microcosm of a collective human schism with the Earth’s water-scarce ecologies. My analysis of Ransom’s experience broadens Jeronic and Willem’s interpretation of intensive effects and their impact on human relations with ecology to the psyche in Ballard. Ransom’s intensive effect as psychological entanglement with an arid environment symbolically restores a fragmented mental relationship between humanity, water, and deserts in *TD*.

Ransom’s absolution in time allows him to escape from traumatic memories and adapt to the arid landscape. His absolution reveals that divisive mental and temporal relations between humans and the desert are illusions. Samuel Francis, writing on psychology in the fictions of Ballard, notes that humans have a collective history of psychological embeddedness in ecology (ch. 2). Yet, in *TD*, the draining of water symbolises the decline of collective human psychology (Francis ch. 2). David Paddy, focusing on Ballard’s imagined geographies, contends the dry geography of *TD* represents the burning of humankind’s collective past and

memory (63). The entropy of humankind's shared memories and unconscious degrades the human relationship with water-scarce ecosystems. Nevertheless, characters' absolution in time may help them escape from memories of natural disaster and renew their enmeshment with the desert. Specifically, Ransom's absolution in time absolves his traumatic memories of the drought: "the only final rest from the persistence of memory would come from his absolution in time" (44). Ballard's phrase "absolution in time" refers to Ransom's escape from the linear temporality feeding into a pervasive human disassociation from water, environmental manipulation, and anthropogenic drought. Ransom's absolution in time allows him to transcend traumatic memories of the drought crisis. He achieves this absolution and escapes from linear time by merging with the timeless desert. However, Ransom's merger with the arid landscape means his "final rest" suggesting the dissolution of his identity into the Earth. His unity with the desert is a form of psychological entanglement that undermines fractured temporal and psychic human/nonhuman relations.

Significantly, in *TD* "the solitary figure's" acceptance of the drying landscape and social isolation typifies a nondualist response to the drought. Ransom observes the solitary figure on the riverbed: "Two hundred yards away the solitary figure of a man was walking along the drained white channel" (Ballard 112). He perceives this man as symbolic of an alternative human response to the apocalyptic environmental context: "his strange figure, detached from the pressing anxieties of the drought and exodus, seemed a compass of all the unstated motives that Ransom has been forced to repress" (Ballard 112-113). This figure's nonchalant walk along a drained channel signifies his lack of anxiety about the drought. Also, this man's isolation and riverbed context suggests his acceptance of the arid landscape in crisis. As well, the man's solitary walk along the white channel means he has accepted the collapse of the social order and relationships. Ballard's use of the description "white" highlights a spiritually

transcendent aspect of the figure's journey, as this colour is often associated with religious experience. His odyssey into the interior of the desert and self may lead to his transformative, psychological, and physical nonduality with the sands as entanglement. In addition, the solitary figure encapsulates Ransom's "unstated motives", consisting of a desire for total isolation and immersion into the sands. This man's unity with the desert inspires Ransom's odyssey into the interior to possibly experience spiritual revelation. Like this figure's oneness with landscape, Ransom's immersion into this timeless landscape could lead to his alienation from the social order and linear time. His transformative nonduality with the desert and its time is a form of psychological entanglement. It challenges the notion of a psychic and physical human/ecosystem dualism in *TD*. This dualism promotes individuals, institutions, and governments' lack of care for the oceans, resulting in deteriorating global water systems and desertification in this novel.

Mirroring Ransom, Catherine withdraws socially in response to the ecological crisis preceding her nondual entanglement with the desert. Her social isolation reveals her adaption to the drought: "her solitary figure seemed to Ransom like the spectre of the renascent dust" (Ballard 22). The word "renascent" refers to something becoming active again ("Renascent"). Ransom's comparison of Catherine to "renascent dust" signifies her rising liveliness because she accepts both the arid landscape and her isolation. Ballard implies that the desert is alive and confers agency. Catherine's psychic entanglement with the dust grants her agency, promoting human continuity with the nonhuman world. The description of Catherine as a "spectre of the renascent dust" suggests her transcendence and elevated emotional state as psychological elements of enmeshment. This character's interrelation with the dry landscape bolsters her vitality. Moreover, Catherine's ghostly spectre reveals her existence beyond the physical world, modern industrial society, and linear time. Like the

solitary man and Ransom, she transcends society's destructive conceptions of ecological relationality by embarking on an inner journey into the desert. Her journey culminates in her psychological nonduality with the timeless sands. Catherine shows that an adaptive approach to the drought means accepting the desert and its timelessness. Her unity with the desert and connection with the temporal allows her transcendence of self. Importantly, the solitary figure, Ransom, and Catherine are indiscernible from the arid landscape. These characters' nonduality with the desert as psychic entanglement opposes the persistent anthropocentric idea of a human/environment rift preventing the cultivation of robust water and desert ecosystems and the drought's end.

Psychological Transformation

Unlike Ransom and Catherine, the fisherman Captain Jonas is entangled with a new and imagined river. He searches for this elusive river and experiences emotional intra-action with its water. As a result, he transforms human/ecosystem rifts. Harlan Wilson argues that Ballard's ecologies, such as water, are agential because they possess personality, traits, and consciousness (54). According to Wilson, landscapes are the externalisation of characters' psychologies (54). Characters' meaningful relationship with these landscapes expands their consciousness and allows self-discovery. In *TD*, human/water intra-action is central to the health of individuals, society, and ecosystems. The characters' connection with water landscapes is psychological intra-action, which grants each agency. To demonstrate, Jonas obsessively searches "For a new river". Jonas gestured with a sweep of his long arms, encompassing the fading skyline and half the land. 'Somewhere there. My bo'sun tells them to laugh at me, but I have seen it!' He seemed to half-believe his own boast" (Ballard 77). The affective impact of the river on Jonas, evident in the "sweep of his long arms", suggests

their reciprocity. This reciprocity and Jonas's elevated emotion highlights how he and the river intra-act, and grant one another agency. But Jonas appears to doubt "his own boast" revealing a desperation to find water to ensure survival. His fervour underlines the emotionally intense and powerful qualities of his vision. It is possible that the new river does not exist and instead symbolises a lost connection between humans and the environment preceding the drought. Nonetheless, Jonas's elevated state allows his psychological intra-action with water as a form of entanglement. Like Kerans in *TDW*, the affective force of Jonas's entanglement with the river undermines rationalist and anthropocentric divisions between humans and water.

Ransom and Philip Jordan also embark on a quest to find the river and experience transformative unity with water. As mentioned in Chapter One, Stacy Alaimo's conception of transcorporeality suggests that human and water agencies are interconnected ("Oceanic" 112). Alaimo argues that even though human bodies are transcorporeal with water, the subject's outline can be dissolved by water ("Oceanic" 112). The theory of transcorporeality suggests that individual consciousness can dissolve into water. Thus, Alaimo's definition of transcorporeality can be applied to Ransom's changing consciousness in *TD*. Her new materialist position also can be read through Firsching's claims that water has a mystical power to transform the human self in Ballard's SF (304). For instance, the river's breaching of Ransom and Philip's psychology and selfhood during a transformative process exemplifies the notion of a transcorporeal subject. In this case, Philip tells Ransom, "'there's a river somewhere, doctor. Quilter says my father's already seen it. When I find him we'll go off and look for it together'" (Ballard 209). Ransom and Philip begin a journey to find the river, the first step in their psychological transformation. This quest imbues them with psychological energy, evident in their excitement. Ransom and Philip's elevated affect drives them to

experience transcorporeal relations with the river. Their transcorporeal experience consists of transformative and psychological unity with water. The end of Ransom and Philip's odyssey may result in the emergence of a new psychology that is continuous with water. Their surreal merger with the imagined river counters the rationalist notion that water ecologies have no agency or psyche legitimising irresponsible pollution of oceans and rivers in *TD*.

Ransom journeys into the desert wastes outside Mount Royal to access inner space. His passage undermines psychic and temporal divisions that ethically justified human ocean pollution, resulting in drought and water scarcity. Michel Delville argues that Ransom's initial journey to the sea settlement and back to Mount Royal is a symbolic quest into inner space (10). Ransom must disengage from temporal rifts to contact the inner space of the desert. After returning to Mount Royal, Ransom treks into the desert and immerses himself in the timeless sands. Delville claims that Ransom's merger with the timeless sands allows him to experience isolation and inorganic rest (7). Like Delville, Elana Gomel suggests that Ransom's internal landscape and the outer desert merge at the novel's end (202). At *TD*'s conclusion, Ransom walks into the desert dunes and relates with inner space: "An immense pall of darkness lay over the dunes, as if the whole of the exterior world were losing its existence" (Ballard 210). While this darkness means that Ransom accepts the reality of sunlight, representing drought, he also differs from other characters who attempt to escape the encroaching aridity or devise solutions to end the crisis like Lomax. These restless characters perpetuate their division from water and the desert. At the same time, Ballard's reference to "the exterior world were losing its existence" reveals that Ransom's psyche merges with the timeless desert; his psyche is in contact with inner space. His relationship with internal space comprises mental nonduality with the desert and the erosion of identity boundaries. This nondual relationality indicates that drought is a psychological construct. In

this case, when Ransom reconnects with the arid landscape, the external world loses “its existence”, suggesting that the drought is psychic rather than material. Importantly, his connection with inner space is a form of entanglement. Ransom’s unity with the sands and what Delville terms inorganic rest symbolically reduces the human/landscape and human/temporal binaries. These binaries suggest that characters are disconnected from “inanimate” matter of landscapes and geological time. Beyond the future prognosis of *TD*, humans use this rationalist perspective to justify their exploitation of water ecosystems in the actual world.

At *TD*’s end, Ransom experiences unity with the desert and transformation of the self. He accepts the drought and the dissolution of his subjectivity into the sands. For instance, Ransom notices that the environment changes as follows:

the sun seemed to be receding into the sky, and the air was becoming colder. To his surprise he noticed that he no longer cast any shadow on to the sand, as if he had at last completed his journey across the margins of the inner landscape he had carried in his mind for so many years (Ballard 210).

Like Quilter, Ransom surrenders to the reality of drought and time’s stagnation. Ransom’s acceptance of the drought, the landscape’s timelessness, social isolation, and civilisation’s downfall allow him to complete his odyssey. Notably, Ransom recognises that he does not “cast any shadow on to the sand” because his journey across an inner landscape is complete. He could only have a shadow if his body were separable from the external light. So, Ransom’s lack of a shadow suggests his spiritual unity with the sands. Additionally, Ballard describes the cooling air registering that Ransom’s inner journey and the drought have concluded. Thus, his voyage ends with corporeal and psychic nonduality with the desert and

the sun. Further, Ransom's experience represents an alternative to divisive physical and psychological human/ecology relations preceding the onset of a global drought. In sum, his entanglement consists of mental continuity with the desert, the collapse of identity boundaries, and the presence of timeless sands. Ransom's nondual enmeshment obliterates psychological and ideological divides, responsible for collective and individual human actions destabilising water ecosystems, like the ocean, on the fictional Earth.

Ransom's quest culminates in rainfall as a metaphor for the end of humankind's passage through an arid climate crisis. Yet, paradoxically, Ransom does not perceive the rain: "It was some time later that he failed to notice it had started to rain" (Ballard 233). Notably, his voyage into the desert allows his transcendence of a human rift with water, but specifically it is Ransom's nonduality with cosmic water which prevents his awareness of rainfall. In this case, he does not register that "it had started to rain" as his body and psychology are already porous with water. Therefore, the novel concludes with the submersion of Ransom's psyche within the timeless sands and symbolic rain. In addition, the rain symbolises that the drought is psychological rather than physical. Ultimately, the inseparability of his consciousness from the external rain is a symbol of an enhanced collective human relationship with the desert. The result is an end to the drought. As well, Ransom's mental inseparability from water suggests another reason he does not register the precipitation. Moreover, Kissinger argues that the landscape's aridity and Ransom's revelatory experience may explain this anomaly (53). Kissinger explains that the intensity of Ransom's psychological connection with arid landscapes prevents his perception of rainfall (53). From this position, Ransom's deep entanglement with a water-scarce environment obscures his sensory recognition of the rain. Additionally, his escape from linear temporality through absolution in time hampers his perception of temporal progression. As such, Ransom is no longer embedded in civilisation's

space and time because he cannot experience time or weather. Instead, he experiences the transformative dissolution of his identity into the atemporal rain and sands, signalling the drought's conclusion.

As in *TDW*, in *TD*, characters' nonduality with water, desert, and geological time, as psychic entanglement, undermines anthropocentric construction of human/water opposition. These dualistic ideas underlie a lack of human ecological ethics. This ethical vacuum is conducive to plastic pollution of the oceans. In this fictional world, water pollution led to arid climate and global desertification over time. At the start of Ballard's novel, the draining of the river and lake empties characters' identities, fomenting their social isolation, and hastens societal collapse. Society's orientation to linear time and future profit polarises the relationship between humans, water, and geological time. For example, human/temporal and human/water rifts are conducive to Lomax and the authorities' maladaptive control and exploitation of scarce-water for self-interest, power, and profit. Alternatively, psychological entanglements counter ideological human/water dualisms. Especially, Ransom's acceptance of a present vacuum as modulation allows intensive effects elevating his psychological enmeshment with a water-scarce landscape. In addition, Ransom's absolution in time enables his symbiosis with the timeless desert. Also involving temporality, Ransom and Catherine's nonduality with the desert and geological time, are entanglements. Finally, Ransom's contact with inner space comprises a mental merger with the desert and time. His transformative unity with the timeless sands and water ends the drought, symbolically, as it rains. In *TD*, Ransom and his colleagues' entanglements feature nonduality, the transformation of selfhood, and connection with geological time. Importantly, Ballard's depiction of psychological enmeshments suggest a greater connection between humans and water-scarce ecologies. The characters' experience

of nonduality with water and the desert challenges the dualistic and exceptionalist reasoning, promoting ecological disconnectedness.

Chapter Four: Psychological Entanglement and the Cultural Politics of Water Scarcity in *Dune*

Both Frank Herbert's *Dune* and J. G. Ballard's *The Drought* represent conflict between characters who are psychologically entangled with the desert, and human-centric actors who exhibit a mental rift with Arrakis's ecology. Notably, this chapter focuses on *Dune* (1965) because it represents human interconnection and division from environments in greater detail than its sequels *Dune Messiah* (1969), *Children of Dune* (1976), *God Emperor of Dune* (1981), *Heretics of Dune* (1984), and *Chapterhouse: Dune* (1985). In *Dune*, the Fremen cultivate the psychic, cultural, and biological interplay of desert, scarce water, sandworms, and spice. The desert is balanced, as each element is vital to the whole and their interaction is central to planetary health. Yet, the off-worlders, among them the Harkonnens, CHOAM, the Guild, the Imperialists, and water traders', pursuit of economic and political power from excessively extracting spice and water, conversely, constructs a human/ecology schism. In addition, the Atreides, the Fremen, and the planetologist Liet Kynes's human-centric plan to flood Arrakis will disrupt its ecological interrelations; however, Arrakis's entanglements protect planetary harmony. Paul Atreides and his mother, Jessica, elevate the natives' bodily, psychological, and temporal entanglement with Arrakis by teaching the "weirding way", advanced skills in battle and attaining higher consciousness (Herbert 303). Ultimately, Paul takes the water of life and experiences unconscious nonduality with humanity on Arrakis and in the galaxy. His experience has features of contact with inner space and entanglement. The Fremen and Atreides' nondualist relationship with Arrakis's physical, psychological, and

temporal elements sustains planetary harmony. It prevents the off-worlders' destruction of its entangled deserts, water, and spice.

Dune is a mid 1960s New Wave SF novel embedded in the dawn of the modern environmental movement and ecological science. A prominent contemporary scholar of Herbert's *Dune*, Kara Kennedy, in her critical companion to the novel, argues that it influenced New Wave SF by representing ecological themes rare in traditional 1950s SF (*Critical* 70). R. J. Ellis, examining the discourse of apocalyptic ecologism, asserts that Herbert's novel's historical and environmental context is the "discourse of apocalyptic ecologism" (104). Neil Gough, writing on SF as environmental literature, reminds a reader that 1960s apocalyptic discourse is influenced by Rachel Carson's *Silent Spring* (409). As mentioned in the discussion of the 1960s environmental movement in Chapter One, Carson illustrates how the interplay of environments, animals, humans, and other forces in ecosystems, is essential for ecological balance on Earth (1). Gough explains that SF, such as *Dune*, provides a modern scientific perspective on natural catastrophes, rather than resorting to supernatural approaches (410). In this way, Carson's ecological science effects *Dune*'s exploration of an interwoven desert ecosystem. The interweaving of elements on Arrakis is determined by water scarcity. Herbert outlines how the interconnection of factors, such as the Fremen psyche, culture, desert, minimal water, and the sandworms' spice production, promotes the health of Arrakis. However, in *Dune*, the off-worlders and water traders' exploitation of spice and water, the Atreides's extraction of profit from spice, and the plan to flood the planet endanger the entangled relations of the Fremen and the desert. Echoing 1960s environmentalism, Herbert's novel suggests that human alteration of Arrakis's balanced environmental, biological and psychic components is disruptive.

In *Dune*, Herbert reveals an interconnection between New Wave SF and the modern environmental movement when warning of ecological crises on Earth. According to Gough, New Wave SF represents threats to life on planets as an allegory for a failed human/nonhuman relationship on Earth (410). In this respect, Kennedy argues that *Dune* provides a holistic view of the dangers of human manipulation of ecologies (*Critical* 70). This novel shows the influence of multiple factors, such as culture, nature, and the local, on ecosystems. Extending her analysis of New Wave SF mentioned in the introduction, Rebecca Evans claims that: “if environmentalism translated easily into dystopian warnings in the 1960s and 1970s, New Wave writers took a more cautious approach to environmental utopia: it may be possible, they tended to suggest, but it is by no means the most likely outcome” (443). Herbert suggests that “environmental utopia” is not an expected result on Arrakis due to its aridity. However, *Dune* shows how characters adapt to water-scarce landscapes by attending to a place’s diversity. In this way, Ursula Heise, in an essay on reduced ecologies in SF, argues that New Wave SF novels depict planets with scarce resources to explore how their environments impact humans, cultures, and ethics (99). For instance, Herbert represents a diminished Arrakis to warn the actual Earth of the cultural and environmental effects of human interference with ecosystems. In *Dune*, and in the current world, threats to ecosystems consist of actors’ human-centrism, psychic schism with nonhumans, and stem from greed. The off-worlders exhibit these traits and threaten Arrakis’s ecology by excessively exploiting spice and water. Alternatively, Arrakis’s water scarcity forces the Fremen to unite to create a vibrant society and sustain planetary entanglements (Evans 444). The Fremen show how adaption to severe ecological conditions is possible if cultures cultivate these interconnections. In short, *Dune* alerts readers on the actual Earth of

the importance of human adaptive, mental, cultural, and physical enmeshments with ecology for planetary health.

Fremen Cultural Entanglements with Desert Ecology

The Fremen relationship with Arrakis's landscape is a place-based, diverse, and balanced entanglement. Kennedy explains that the interrelation of organisms and the environment defines a balanced ecology (*Critical* 59). She suggests the Fremen live in social harmony with nature, while the off-worlders exploit water and spice for economic gain (Kennedy, *Critical* 57). Kynes emphasises that "the highest function of ecology is the understanding of consequences" (Herbert 291), Kynes refers to how the relationship of elements in an ecology generates different outcomes. In this respect, he also refers to Arrakis as a planetary model: "A planet's life is a vast, tightly interwoven fabric" (295). Herbert suggests that Arrakis is alive and agential when Kynes refers to "a planet's life". His reference to Arrakis as an "interwoven fabric" highlights its symbiotic relations. This exoplanet displays a harmonious enmeshment of the Fremen culture, water, desert, sandworms, and spice; the water scarcity of the planet determines this entanglement. Kennedy asserts that changing components in a system affects other components due to their mirrored relationship (*Critical* 59). Removing or changing one of these elements will alter the exoplanet's "interwoven fabric". In this way, the Fremen, Kynes, and the Atrides plan to manipulate the environment's fabric by flooding the desert for selfish reasons. The Fremen perceive the planetologist Kynes as their spiritual leader and share his vision of a lush Arrakis. Importantly, the ordered psychic and physical interrelation of planetary elements has purpose

and agency. Changing these components, most notably water, will destabilise relationships on Arrakis.

The new materialist notion that the material, the cultural, and the political are entangled applies to the Fremen's interconnection with scant water. As mentioned earlier in this thesis, Karen Barad explains how physical landscapes and political and societal structures form a material/cultural network ("Posthumanist" 820-821). The material and culture are not opposed in a binary relation as the cultural is physical, and the physical is cultural. Fremen culture is continuous with water. Applying Barad's theory to *Dune*, local physical conditions make Fremen knowledge and cultural practices possible. The intra-active relationship between their culture, bodies, psyche, and water forms a material/cultural network. Also, the narrative of water scarcity in *Dune* determines how bodies interact with water and the desert and how this interaction is expressed through discourse (Kissinger 21). As such, the interdependence of Fremen discourse and water suggests material/cultural entanglement. This enmeshment exemplifies the reciprocity of their society, culture, politics, and water ecosystems. Correspondingly, Kissinger argues that "the complex hydrology of *Dune* produces both social and political arrangements" (21). The water-scarce ecology of Arrakis is a central pillar of the native society and the off-worlders' civilisation based in the capital Arrakeen. In contrast with the natives' orientation to surviving in the desert, the off-worlders, including the Harkonnens, the Guild, CHOAM, and the water traders, and at times the Atreides, control water and spice for profit and political dominance of Arrakis. The Fremen political power results from their conservation of vibrant water and desert ecologies. Their cultural practices, politics, and Arrakis's materiality, such as underground water catchments, do not possess properties or meanings outside their entanglement. Water's dual

metaphorical role in Fremen culture, physical presence and importance to the economy on Arrakis reveals the intersection of the material, the cultural, and the political.

In using *Dune* as a SF model of Barad's theory, it is notable that Arrakis's water scarcity constructs the Fremen culture, bodies, rituals, and practices. While the Fremen culture, including its customs, is adapted to the desert in an entangled relationship, it also is devoted to the place and diversity of the desert ecosystem. Herbert narrates how water scarcity impacts bodily and cultural relations with landscapes. For example, Jessica observes Paul's tears after he defeats Jamis in a Fremen "sietch", an underground dwelling in the desert: "She focused on the words: 'He gives moisture to the dead.' It was a gift to the shadow world—tears. They would be sacred beyond a doubt. Nothing on this planet had so forcefully hammered into her the ultimate value of water" (Herbert 338). Paul's tears are a material phenomenon that signifies his cultural respect for Jamis as a "gift to the shadow world—tears." The Fremen reaction to Paul's crying suggests that they consider water as life. His tears are enacted as socially meaningful, in Fremen society, through bodily intra-action with scarce-water. These tears are biological water and symbolise Paul's respect for Jamis. Thus, his crying is both matter and metaphor. Due to water scarcity, tears are sacred in Fremen culture, exemplifying their balanced dual bodily and cultural embeddedness in the dry landscape.

The Fremen cultivate harmonious ecological relations and consciousness through teaching, language, and cultural practices. Daniel Immerwahr, in an essay on indigeneity and empire in Herbert's writing, posits that *Dune* promotes environmental consciousness by emphasising reciprocal relations between humans and the desert (192). For example, the Fremen exhibit

reciprocity with the desert when they teach children geography: “‘Tree,’ the children chanted. ‘Tree, grass, dune, wind, mountain, hill, fire, lightning, rock, rocks, dust, sand, heat, shelter, heat’” (Herbert 372). Teaching Fremen children desert geography to maintain cultural reciprocity with landscapes is necessary for survival. This teaching enhances children’s environmental awareness by priming them for life as adult Fremen adapted to “tree, grass, dune, wind”. It also suggests cultural and physical entanglement with their planet, Arrakis. This cultural entanglement incorporates the interconnectedness of sand, water, sandworms, and spice. Also, the linguistic component of their culture fuses them with ecology. For instance, Fremen instructors repeat words such as “rock, rocks” when they teach children to familiarise them with the experience of encountering geologies on Arrakis. The natives have an ordered and entangled relationship with arid landscapes because they incorporate geographical enmeshments in their cultural teachings and practices. The environmental reciprocity of the Fremen and the desert is core to their ecological and cultural consciousness and existence.

Water, as noted in the discussion above, shapes the Fremen culture, and their culture shapes water in a social and geographical entanglement. Susan Stratton, writing on the environment in *Dune*, argues that the Fremen are collectively intertwined with water because it is central to life or death (312). In their society, possessing water means success and wealth and lacking water means illness and poverty (Stratton 312). Moreover, Eric Otto, in his study of SF and transformative environmentalism, declares that the Fremen exemplify high ecological awareness by caring for water ecosystems (41). Where the desert harshness determines the Fremen’s conservation of water (Otto 36), their reverence for scarce-water is also a part of their religion and customs. Its importance to the environment and Fremen survival cannot be understated. For instance, when the Fremen leader Stilgar spits on the table in an audience

with the Atreides: “Deliberately he bent over the end of the table, spat on its polished surface” (Herbert 100). In response: “Idaho said, ‘We thank you, Stilgar, for the gift of your body’s moisture. We accept it in the spirit with which it is given.’” In Western culture, represented by the Atreides, spitting is considered disrespectful. To illustrate, the Atreides and the guards’ initial reaction to Stilgar’s action is outrage: “the men around the table started to surge to their feet” (Herbert 100). Alternatively, in Fremen culture, Stilgar’s actions are considered respectful due to Arrakis’s aridity. His spitting suggests that the natives prioritise relationships between cultures and people over water despite its centrality to their existence. Stilgar’s behaviour is characteristic of Fremen customs and practices centred on awareness of arid ecologies. Their culture exhibits an ecologically conscious, place-based, and reciprocal approach to water. The Fremens’ reverence for scarce-water, even within their bodies, demonstrates their cultural entanglement with Arrakis and promotion of planetary harmony.

The Fremen and the Atreides experience bodily and cultural enmeshment with water and desert when using stillsuits in Herbert’s fiction, *Dune*. Paul Shepard writing on ecology and human/environment interactions argues that humans draw on and impact ecosystems as their bodies and behaviour are inseparable from the external environment (112). Extending this argument and her theorisations in previous chapters, Astrida Neimanis outlines that human substances, such as bodily water, are continuous with the environment (65). The human body’s water is porous with rivers, underground water catchments, and oceans. Water affects bodies, and these bodies affect water in the process of intra-action (Neimanis 75). Neimanis states that water bodies are natural, cultural, material, and meaningful (33-34). For example, in *Dune*, the Fremen invented stillsuits to reclaim bodily fluid and survive hot conditions, suggesting their cultural and physical continuity with water. In this case, the Fremen Kynes teaches Paul and his father, Duke Leto Atreides, the proper use of stillsuits: ““Motions of the

body especially breathing,' he said, 'and some osmotic action provide the pumping force.' He loosened the chest fit slightly. 'Reclaimed water circulates to catch-pockets from which you draw it through this tube in the clip at your neck'" (Herbert 118). The Fremen and Atreides' use of stillsuits reveals the porosity of the human body and water, as explored by Neimanis. Also, the importance of the Fremen's stillsuits to their survival and ritual conservation of water underlines a physical and cultural entanglement. Like entanglement, when the natives operate stillsuits they undergo material and social intra-action with water and air. Furthermore, when characters use this technology, their physiology is inscribed with moisture. This inscription refers to how their porosity with water marks them as inseparable from Arrakis. Hence, the Fremen and Atreides' use of stillsuits illustrates the harmonious enmeshment of culture, bodies, technology, and water.

The Psychological Stakes of Exploiting Spice and Water and Planning for the Flood

Rationalist actors, like the off-worlder and water trader Lingar Bewt, exhibit a mental divide from Arrakis and exploit its scarce water for economic and political purposes. Kennedy states that rationalists wish to control, order, and stabilise the natural world because they view it as a mechanism (*Critical* 58). Bewt is a scientific rationalist because he does not recognise water's agency and treats it as a source of profit. Bewt displays rationalist discourse, including the view that he is separate from Arrakis and does not impact its ecology (Kennedy, *Critical* 68). Water traders exemplify an empirical, linear, and short-term view of the economic value of water. They represent the exploitation of water for political, financial, and cultural power. For example, Bewt's reprimanding of Duke Leto for storing large amounts of water shows that he supports water scarcity for financial self-interest:

"I'm curious what you intend about the conservatory attached to this house. Do you intend to

continue flaunting it in the people's faces ..." (Herbert 140). Notably, Duke Leto did not build the conservatory, rather it was built by Count Fenring and Jessica uses it to hold plants for Arrakis's population. In contrast with Bewt, Duke Leto eliminates customs that involve the treatment of water as a source of power, social status, or wealth. For instance, he discourages practices that waste water, such as the custom in the Arrakeen great house for dinner guests to "dip their hands ceremoniously into a basin, slop several cups of water onto the floor, dry their hands on a towel and fling the towel into the growing puddle at the door" (Herbert 137). Instead, he orders his servants to give this water to the poor. Furthermore, Duke Leto conserves water to enhance his family's embeddedness in the water-scarce conditions of Arrakis and Fremen culture. Alternatively, Bewt and the status quo are vested in keeping Arrakis arid to maintain increasing profits from water trading. When Bewt refers to Duke Leto's flaunting of water "in the people's faces", Bewt shows his acceptance of the water scarcity of Arrakis because it ensures financial power. The manipulation of water scarcity reveals an orientation to short-term profit. As suggested above, Bewt's disregard for water's life and agency is rationalist.

Kynes, the Fremen, and the Atrides' anthropocentric vision of a flooded Arrakis risks its physical, psychic, and cultural interrelations. Eva Giraud in her book, *What comes after Entanglement?* states that the notion of human entanglement with ecology includes the role of exclusion (11). Excluding certain relations allows others to emerge in an ecology (Giraud 11). The idea of exclusion applies to the exoplanet's network of the Fremen, water, extensive deserts, sandworms, and spice. The natives' cultivation of the desert is intrinsic to their survival and the planet's balanced entanglements. Conversely, the natives, Kynes, and the Atrides's plan to alter the planet's dry ecology could damage its connections. Therefore, the Fremen cultivate and threaten Arrakis's balance. According to Kennedy, Kynes overlooks the

environmental and social effects of altering factors in Arrakis's ecosystem ("Spice" 458). Kynes and Paul Atreides aim to develop civilisation and combat the dangers of aridity by inundating the landscape (Immerwahr 210-211). Kynes narrowly envisions a future Arrakis, supported by many Fremen and the Atreides: "open water somewhere beneath him, a long qanat flowing with water across the desert, and trees lining it ... He had never seen water open to the sky except in text illustrations" (Herbert 293). Due to Arrakis's aridity, Kynes's dream of "open water" and "trees" is enticing. However, all elements on the exoplanet are crucial to ecosystem equilibrium. In this case, arid and wet landscapes are incompatible. A dry Arrakis promotes close Fremen cultural and psychic connections with water. Yet, flooding the desert would eliminate water scarcity, an integral part of the exoplanet's ecological, animal, and cultural assemblage. To address this problem, the Fremen, Kynes, and the Atreides envision an Arrakis with oceans, lush greenery, and a desert for the spice and the sandworms. These actors' plan to flood Arrakis for political and economic gain and comfort demonstrates their anthropocentrism and disregard for water's agency. In *Dune*, Herbert shows how anthropocentric actors' lack of ecological insight endangers Arrakis's balance and communities.

The anthropocentric plan to flood Arrakis with water could eliminate the entanglement of humans, sandworms, spice production, and society. Kennedy asserts that no groups or actors consider the environmental implications of inflicting themselves on Arrakis (*Critical* 68). Importantly, spice highlights a paradoxical competition between water and sand. The sandworms are essential to this competition, as they produce spice in a desert and die when exposed to water. For example, the sandworms "live to great age unless slain by one of the fellows or drowned in water, which is poisonous to them" (Herbert 572). Arrakis's aridity allows the presence of sandworms, which as stated above, cannot survive in wet conditions.

The sandworms are the only animals capable of producing spice, and humans cannot manufacture spice artificially. As mentioned before, the sandworms could survive if part of Arrakis is maintained as desert, outlined by Paul: “There will be flowing water here open to the sky and green oases rich with good things. But we have the spice to think of, too. Thus there will always be desert on Arrakis” (Herbert 527). Paul plans a balanced ecology allowing the continuation of spice use and the expansion of Fremen society across a lush Arrakis. The Fremen support this plan with Paul as their leader. However, the plan is dangerous because 3000 years later, in *God Emperor of Dune* (1981), Arrakis becomes a green planet with no desert, spice, or sandworms. These actors’ vision of a flooded Arrakis places its interwoven cultural, ecological, and animal elements at risk. Therefore, the plan comprises the imposition of an exceptionalist and maladaptive human/water dualism on the exoplanet. In addition, the human-centric plan to flood the desert and destroy the sandworms will be catastrophic for the off-worlders who trade spice, such as the Harkonnens, the Guild, and CHOAM. Arrakis is an ecological collective where the removal or change of one element, such as water, can trigger environmental, economic, or political imbalance. Despite the Fremen and Atreides’s caution, flooding Arrakis will remove the desert, destroy the sandworms, eliminate the spice, and damage the planetary and galactic economy.

The human-centric flooding of the desert will also disrupt the Fremens’ balanced cultural and psychic entanglement with water, desert, and spice. Giraud proposes that exclusion has a constitutive and creative role within systems (18). The exclusion of water from Arrakis promotes the natives’ cultural embeddedness in water. Even though most humans do not thrive in dry conditions, the Fremen exist due to their adaption to water scarcity. An example of the Fremens’ entanglement with the desert is evident in a flyleaf that Jessica reads:

“Manual of ‘The Friendly Desert,’ the place full of life. Here are the ayat and burhan of Life.

Believe, and al-Lat shall never burn you” (Herbert 206). The manual’s reference to “the ayat and burhan of Life” reveals the importance of the Fremens’ spiritual relationship with the desert to their culture. Their spirituality consists of a profound social and mental continuity with the sands. The manual’s mention of “the place full of life” underlines the diversity of organisms living on Arrakis, which are absent from an aquatic world. Kynes, the Fremen, and the Atrides’ vision of a flooded exoplanet means the application of culture/water dualisms to its desert ecology. A wet Arrakis’s entanglements will exclude the Fremens’ cultivation of the landscape over millennia. Flooding Arrakis would eliminate the natives’ cultivation of ecological diversity and sever their cultural and psychic enmeshment with desert, water, spice, and sandworms. The Fremen do not realise that their plan to cultivate a limited desert for the sandworms and spice endangers the planet’s rich interrelations. In this case, the blind and dualistic anthropocentrism of Kynes, the Fremen, and the Atrides threatens Arrakis’s entangled ecosystem at cultural, psychological, and bodily levels.

The anthropocentric and rationalist off-worlders, including the Guild, CHOAM, and the Imperialists, manipulate spice for profit and political control of Arrakis. They fail to consider how their actions will fracture the planet’s enmeshments. Kennedy argues that these off-worlders have a narrowminded and colonial perspective on spice (*Critical* 64). These groups do not consider the impact of excessive spice mining on the environment and Arrakis’s native inhabitants (Kennedy, *Critical* 64). Therefore, excessive spice mining could deplete the exoplanet’s resources, fracture the Fremens’ embeddedness in the desert, and destabilise the galactic economy. The off-worlders’ divisive economic relation with spice exemplifies an exceptionalist human/resource rift. In this way, the Guild gains economic power through material ownership of spice. This group provides space transport, with their navigators using “the spice drug on Arrakis to produce the limited prescience necessary for guiding

spaceships through the void” (Herbert 553). The Guild wants to continue spice mining on Arrakis for linear financial gain. In addition, the Guild has “limited prescience”, symbolising their myopic focus on future profit from spice and mental rift with the exoplanet.

“Prescience”, in this context, refers to a human ability to sense events in the present or future and understand how one’s actions influence those events. Like capitalists on Earth, the off-worlders are oriented to short-term profit and political, military, and economic power from selling resources. These actors disrupt Arrakis’s balanced psychic and physical entanglements with ecological and human impacts. They undermine the sandworms’ spice production and the planetary economy. The off-worlders’ human-centred relationship with spice instils a psychological and political human/ecosystem divide. Their divisive relations with resources may result in the depletion of spice and disruption of Arrakis’s harmonious interplay.

As well, the human-centred Atrides and CHOAM manipulate spice for linear economic development and political survival in a way that endangers Arrakis’s entanglements.

Kennedy claims that the Atrides do not want to conserve spice or consider how spice exploitation impacts the Fremen (*Critical* 65). Duke Leto displays anthropocentrism when he mines spice for profit without acknowledging its agency. Like the off-worlders, his human-centric treatment of spice resources divides him from the exoplanet physically and psychologically. This division contributes to the depletion of spice and severs the balanced entanglement of humans, desert, water, sandworms, and spice on Arrakis. Duke Leto’s discussion with Paul concerning the value of spice exemplifies anthropocentrism: “‘By giving me Arrakis, His Majesty is forced to give us a CHOAM directorship ... a subtle gain.’ ‘CHOAM controls the spice,’ Paul said. ‘And Arrakis with its spice is our avenue into CHOAM,’ the Duke said” (Herbert 45). When Duke Leto divides humans from the

nonhuman by exploiting spice for financial gain, Herbert suggests that the Atrides accept the Emperor's offer to rule Arrakis because of the spice's value. Similarly, their plan to gain a directorship in CHOAM reveals a human-centred orientation to political status within the galaxy, without concern for the possibly finite nature of spice. The Atrides do not consider the limits of spice exploitation and the ecological, human, and economic consequences of depleting this resource. As such, they exhibit psychological disconnection from the desert. The Atrides and CHOAM construct a cultural, mental, and economic schism between humans and spice that threatens Arrakis's unity.

Arrakis's ecologies, cultures, and human factions, such as the Atrides, the Fremen, and the off-worlders, form an assemblage. Within this assemblage, these groups plan to gain political and military power by selling spice and water for profit. Notably, Manuel DeLanda, writing on a philosophy for human society, opposes the idea that a whole assemblage is irreducible (10). DeLanda outlines that assemblages are "wholes characterised by relations of exteriority. These relations imply, first of all, that a component within an assemblage may be detached from it and plugged into a different assemblage in which its intra-actions are different" (2). "Relations of exteriority" define these collectives, suggesting that connections between parts have properties distinct from singular parts. DeLanda's reference to plugging a component "into a different assemblage" means that the component has different relations within a new collective. The component changes when it is plugged into another assemblage due to its altered entanglements. Thus, the efficacy and agency of humans and ecologies results from their relations with other actors in an assemblage. Ecological and human interrelations drive peoples' actions within a system, rather than individual choice. In *Dune*, cultural, political, economic, military, and psychological forces affect each other and shift Arrakis's assemblage. Paul's political strategy and leadership is determined by his presence

within Arrakis's ecological, social, and economic interplay. Yet, his actions drastically change the planetary collective, resulting in a different interconnection of the ecological, cultural, and political components of Arrakis.

At *Dune*'s conclusion, Paul and the Fremens' assault on Arrakeen culminates in his ascension to Emperor, significantly shifting the imperial and environmental relations of Arrakis's assemblage. Providing a SF example of the new materialist DeLanda's theory, Amanda Rudd writing on *Dune* explains that relations between parts define the imperial assemblage's function and properties (49). These parts include Arrakis's water, spice, desert, sandworms, the Fremen, the Atreides, and the off-worlders. When Paul becomes Emperor, he shifts the assemblage's relations sufficiently to create a new collective (Rudd 49). Initially, Paul relates to the natural components of Arrakis's assemblage in a political and military strategy to ascend to the Fremen leadership. Nonetheless, Paul is an authoritarian Emperor like Shaddam IV as he exploits spice for profit and self-interest. He lacks concern for how excessive mining of spice and manipulation of water impacts the political, economic, and ecological components of the planetary collective. To demonstrate, Paul demands the CHOAM company holdings as dowry to wed Shaddam IV's daughter, Princess Irulan. Jessica reacts to Paul's demands: "'The Emperor's entire CHOAM Company holdings as dowry,' he said. 'Entire?' She was shocked almost speechless" (528). Paul's demand of the "CHOAM" holdings to marry Irulan reveals his embeddedness in the empire's financial system. The new imperial assemblage incorporates Paul's orientation to economic growth and political and military dominance from trading spice and the plan to create a green Arrakis. However, as Paul is the Fremen messiah, he incorporates the Fremens' environmentally conscious cultivation of the desert. Thus, natives' cultural and ecological awareness of the desert, water, and spice are parts of this new collective. Importantly, his

alteration of the planetary collective shifts the relationships of its parts, including the Fremens, the Atrides, the off-worlders, water, desert, spice, and sandworms. Thereby, Paul changes Arrakis's imperial assemblage to include his ruthless economic, political, and military expansion from mining spice and the natives' ecological consciousness.

Cultivating Arrakis's Psychological Entanglements

The "Bene Gesserit" and the Atrides' plan to heighten the Fremens' awareness opposes the off-worlder's psychic rift with the desert and exploitation of resources. The "Bene Gesserit" are a mental and physical training school of females across many planets. Their "Missionaria Protectiva" plot refers to importing the idea of a "Kwisatz Haderach", a messianic leader, into Fremens culture. Lorenzo DiTommaso argues that as this visionary leader, Paul Atrides, elevates the Fremens' animal awareness to human awareness (317). Therefore, Paul's role on Arrakis is to expand the natives' humanness (DiTommaso 317). To do so, the Atrides instruct the natives in the "weirding way" of battle and higher consciousness. For example, Stilgar informs Jessica: "Teach us this weirding way and you have sanctuary with us as long as you wish. Your water shall mingle with our water" (Herbert 303). The Atrides agreement with the Fremens means the entanglement of their bodily waters. The intersection of Paul and Jessica's instructions on the weirding way and the natives' fixity on desert survival lifts their humanness to a higher level. This enhanced awareness extends to the environment. The Atrides' elevation of the Fremens' ecological consciousness bolsters their embeddedness in water and drives their ethical treatment of the desert. Thus, boosting this culture's awareness is central to their maintenance of the landscape's interplay. Moreover, Paul's training of the natives in the weirding way improves their military skills. As such, the Atrides' teachings helps the Fremens sustain and defend

Arrakis's entanglements from the off-worlders' invasion and excessive control of spice and water for financial and political gain. These interrelations are available to readers in Herbert's *Dune*, and can apply to ways of thinking and acting in the current Earth's environmental crisis.

Arrakis's symbiotic entanglement of cultures, psychologies, bodies, deserts, water, and spice underlines that the environmentally destructive mind/matter binary is a false construct. As Leonard Scigaj argues, in his essay on technology and ecology in *Dune*, ecology includes notions of interdependence and reciprocity (349). Ecological thinking in *Dune* consists of the idea that the social and the material are interlinked and mind/body unity (Scigaj 349). This thinking encourages the Fremen, the Atreides, and Kynes's social and psychic symbiosis with material spice and water. It contrasts with the economic exploitation of ecologies and mind/matter dualism exemplified by the off-worlders. Paul quotes from the O. C. Bible after defeating Jamis, displaying the religious aspect of symbiosis: "From water does all life begin" (Herbert 334). The O. C. Bible illustrates the continuity of culture, life, spice, and water as a symbiotic entanglement. Additionally, Arrakis's interrelations have physical and psychic elements, as human life originated from water during abiogenesis. The inhabitants of the planet experience mental symbiosis with spice and water. Their experience contradicts the notion of mind/body dualism. For instance, Jessica realises that her body and psyche are porous with spice: "no trickery or artifice could pry them completely free from Arrakis: the spice was addictive. Her body had known the fact long before her mind awakened to it" (Herbert 211). Jessica's addiction to spice suggests the unity of her body, consciousness, and spice. Herbert's reference to how Jessica's body knew she was saturated with spice before her mind reveals bodily and mental symbiosis. Those living on this planet are suffused with spice due to its presence in all life, water, and food. Paul and Jessica's understanding

that nothing could free them from Arrakis, suggests a symbiotic interplay of the exoplanet's cultural, bodily, psychic, and ecological elements. However, the off-worlders and water traders' human-centric orientation to exploiting Arrakis's spice and water for profit and political gain could deplete resources and fracture the Fremens' entanglement with the desert.

The Fremens' entanglement with the desert and geological time bolsters Arrakis's ecological harmony. In the actual world, Erin Fitz-Henry claims that human attention to long-term and collective time counters the ecological effects of singular, linear, and short-term time (15). Advancing Serres and Latour's ideas on temporality, explored earlier in this thesis, the philosophers argue that topological time is uneven and crumpled (60). While, linear time is geometric, metrical, and defined by linear and fixed distances. Moreover, topological time includes the past, present, and future, including geological time. In *Dune*, Arrakis's desert exemplifies this topological temporality. As such, the planet's geologies slowly evolve without human interference from deep history to the future. The Fremen culture attends to the landscape's time. For example, Stilgar says to Paul and Jessica: "'Each year the polar ice retreats,' Stilgar said. 'Bi-lal kaifa,' they chanted. 'We will make a homeworld of Arrakis—with melting lenses at the poles, with lakes in the temperate zones, and only the deep desert for the maker and his spice'" (Herbert 343). Stilgar's mention that "each year the polar ice retreats" reveals the natives' accept water cycles changes over evolutionary history. They sustain the landscape's balance over the past, present, and future, elements of topological or geological time. Therefore, the Fremens' bodily and psychological unity with Arrakis incorporates geological temporality. As their entangled relationship with the desert's time allows them to perceive the complex interplay of sand and water on Arrakis, they realise the importance of having a "deep desert" for the sandworms and spice. They understand that sustaining Arrakis's collective and long-term time guards planetary harmony from off-

worlders' imposition of linear time on the arid landscape. The off-worlders' control of spice and water suggests they adhere to this short-term temporality. On Arrakis, the Fremen cultivate the delicate interchange of desert geographies and geological time to sustain ecosystem balance.

Paul takes the psychedelic water of life and experiences contact with the inner space of the desert. His contact comprises temporal and psychological entanglement with the collective Arrakis and the galaxy. Otherwise, the off-worlders' psychic disconnection from Arrakis, due to their materialist approach to ecology, undermines planetary harmony. As outlined earlier in the thesis, Colin Greenland explains that contact with inner space refers to a person's interior landscape merging with the external world (56). Similarly, Scigaj argues that a sense of balance and interrelation between humans and nonhumans has a psychological element (350). Like contact with inner space, "prana" refers to the symbiotic balance between a person's mental state and the external world and their fixity on the present (Scigaj 348). The Fremen understand that taking the water of life allows a person's nonduality with the desert and temporality. For example, after taking the water of life, Paul experiences this unity: "'Not the future,' he said. 'I've seen the now.' He forced himself to a sitting position, waved Chani aside as she moved to help him. 'The space above Arrakis is filled with the ships of the Guild'" (Herbert 481). Paul says, "I've seen the now", revealing his insight into the present and his psychic balance with space as "prana". Paul's "prana" enables his psychic entanglement with Arrakis and its surrounding space. His mental nonduality with the exterior world and geological time exemplify his connection with inner space. Greenland asserts that human enmeshment with space is an element of contact with inner space (51). In this case, Paul's prescient insight that the Guild ships are above Arrakis reveals his contact with the planetary space. This crisis shows that Paul's psychological entanglement with Arrakis

defeats the Guild's mental detachment from ecology and rationalist plan to exploit and deplete spice and disrupt the desert's interrelations.

After drinking the water of life, Paul experiences nondual awareness of the desert's temporal, physical, and psychic enmeshments beyond a rationalist perspective. DiTommaso argues Paul has revelatory insight into peoples' ecological awareness during his altered state (319). He perceives the past, present, and future of human existence (DiTommaso 320). For instance, Paul experiences mental continuity with desert, water, and cosmic time while unconscious: “‘And you, my son,’ Jessica asked, ‘are you one who gives or one who takes?’ ‘I’m the fulcrum,’ he said. ‘I cannot give without taking and I cannot take without ...’” (Herbert 481). After Paul's use of the water of life, his psychology and agency expand to Arrakis. Their expansion indicates that he connects with Arrakis, and Arrakis connects with him in an intra-active relationship. Paul's unconscious and temporal nonduality with the cosmos suggests an entangled relation incorporating the mind and time. His unity and intra-action with Arrakis and the galaxy are features of psychological entanglement. Applying Herbert's representation of Paul's transformative insight into the cosmos to new materialist theory indicates a broadening of material entanglement to a shared human psychology. With the aid of this psychedelic substance, Paul's revelatory experience collapses the borders of his identity and allows him to transcend the human/Arrakis boundary. His transcendence of this rationalist boundary helps him preserve the desert's balanced cultural and psychic enmeshments from the off-worlders' invasion, wasteful spice mining, and exploitation of water. Nevertheless, Paul's intention to flood Arrakis with the support of the Fremen means he participates in destabilising the planet's entanglements.

Like Paul, Jessica experiences nonduality with Arrakis and the cosmos after taking the water of life. Her nonduality is an entanglement that reveals the off-worlders' rationalist and instrumental human/spice rift is a false construct. When Jessica drinks this substance, she experiences unity with the human collective and the universe:

She felt that she was a conscious mote, smaller than any subatomic particle, yet capable of motion and sensing her surroundings. Like an abrupt revelation—the curtains whipped away—she realised she had become aware of a psycho-kinesthetic extension of herself. She was the mote, but not the mote (Herbert 380).

Herbert's representation of Jessica as "the mote, but not the mote" refers to her presence as an individual within a human collective extending through space and time. Jessica feels simultaneously outside herself and within herself in a revelatory experience of psychic entanglement with the cosmos. The reference to "a psycho-kinesthetic extension of herself" means that she experiences bodily and mental continuity with the universe. Jessica's experience of being "smaller than any subatomic particle" reveals the collapse of her identity boundaries. The broadening of Jessica's mind allows her awareness of humankind's unity and the diversity of life in the cosmos. Jessica's psychic enmeshment deconstructs the off-worlders' dualistic, rationalist, and instrumental construct of a human/spice boundary that drives their destabilisation of Arrakis.

Paul's Prescience

In addition to Paul's transformative entanglement with Arrakis, he appears to transcend time and experience prescient insight into the universe. After partaking of the water of life, Rudd

claims that Paul steps outside of time and envisions future events across eternity (50). Moreover, Rudd details that when Paul becomes prescient when present in this timeless stratum, he accurately perceives and experiences Arrakis's reality (50). For example, he observes time: "Awareness flowed into that timeless stratum where he could view time, sensing the available paths, the winds of the future ... the winds of the past" (Herbert 317). Herbert suggests that Paul exists in a "timeless stratum". As such, he does not intra-act with the physical or temporal elements of the cosmos. Paul's freedom from the impacts of events in space and time allows him insight into reality. He has accurate visions because he does not interfere with events by taking part in them through action or perception. In this case, his vision of "the winds of the future ... the winds of the past" signifies the extension of his prescience in all temporal directions. His prescience encompasses extensive temporal periods as he senses the consequence of all human actions far into the future (Rudd 50). Furthermore, taking the water of life allows his nonduality with the human collective from the past to the present to the future. Paul's unity with time suggests he experiences more powerful prescience than Jessica. Yet, he perceives that individual choice and galactic evolution determine future events. Therefore, Paul's prescience is imperfect and his actions' consequences, such as planning to flood Arrakis, are uncertain and unfixed.

However, the notion that Paul experiences accurate prescience from outside time is problematic. Timothy O'Reilly, in a book on Frank Herbert and his work, proposes that Paul does not exist outside geological time when experiencing prescience (31). O'Reilly argues that no absolute standpoint exists outside of temporality in *Dune* (31). The lack of a human position outside time to perceive reality is due to the observer effect. Explaining the observer effect, Barad states that the configuration of the material and the discursive enacts a cut between the observer's agency and the observed object ("Quantum" 253). The discursive

takes on a meaning and specific configuration within a material context. Moreover, there are no separable entities that subsequently interact with one another. Rather entities continuously emerge during intra-action. In this respect, material/discursive intra-actions co-produce the characteristics of the observer and the observed. Thus, the observation of reality changes that reality. A SF example is Paul's vision:

The prescience, he realised, was an illumination that incorporated the limits of what it revealed—at once a source of accuracy and meaningful error. A kind of Heisenberg indeterminacy intervened: the expenditure of energy that revealed what he saw, changed what he saw (Herbert 317).

Paul seems to transcend time to aid his prescient insight into the universe. Yet, Herbert's reference to how Paul's energy use "revealed what he saw, changed what he saw" means that his perception intra-acts with events. In this case in *Dune*, the entanglement of the physical world, psychology, and culture prevents Paul's accurate insight into the cosmos. As such, the observer effect indicates that Paul changes events by perceiving them and cannot predict the future. Ultimately, this effect means Paul cannot exist outside time and his use of prescience to cultivate ecological vitality on Arrakis and across the galaxy is limited.

The cultural, bodily, and psychic entanglement of the Fremen, the Atréides, the off-worlders, and Arrakis is vital to planetary balance. The Fremen display harmonious material and cultural enmeshment with the desert due to water scarcity. This cultural enmeshment is exemplified by their varied relationship with arid landscapes. They sustain the exoplanet's interplay of culture, water, sand, sandworms, and spice. The Fremen cultivate water scarcity, vital to the harvesting of spice from the sandworms, to ensure their political, cultural, and financial influence on Arrakis. Meanwhile, the off-worlders and traders destabilise Arrakis's

interrelations by excessively extracting spice from the sands and selling water. Moreover, Kynes, the Fremen, and the Atreides' early anthropocentric plan to flood the landscape endangers Arrakis's fragile interplay. Although these actors want to maintain a limited desert for the spice and sandworms, their plan threatens Arrakis's dry climate, as illustrated in *God Emperor of Dune* (1981). Conversely, psychological and cultural entanglements between the Fremen and the Atreides cultures, individuals, and Arrakis undermine these ideological threats to planetary order. First, Paul and Jessica raise the Fremen's environmental consciousness. It helps them sustain the desert's harmony from the threat of the off-worlders' invasion. Second, the Fremen's symbiosis with spice and water reveals cultural, bodily, and mental enmeshments with the desert planet. Third, Paul's contact with inner space and "prana" signifies his transformative nonduality with the desert, water, spice, and geological time as unconscious entanglement. On one hand, the Fremen cultivate an interwoven and sustainable cultural and psychic entanglement with the desert, water, and spice in a way that generates profit. On the other hand, the off-worlders and sometimes the Atreides's mining of spice and control of water fracture these entanglements and endanger Arrakis's environmental balance for political and economic dominance.

Chapter Five: Athshean Entanglement with Forest as Representing a More-than-Human Psyche in *The Word for World is Forest*

Ursula Le Guin's *The Word for World is Forest* (*WFW*) represents the Athsheans' deep psychic entanglement with Athshe's forests. The native Athsheans' embeddedness in Athshe is like the Fremens' unity with Arrakis, as they both promote planetary balance. Specifically, in *WFW*, the Terrans invade Athshe and exploit its timber resources for economic and political gain. While the exploitation in *Dune* is, as detailed in the previous chapter, for spice. The Terrans' anthropocentric, rationalist, and psychological separation from the environment motivates their logging. The Terrans also instrumentally exploit the trees for profit, further widening their psychic rift with ecology. As the invaders dream, they experience a conscious/unconscious polarity that alienates them from the forest. In contrast, Athshean dreaming, which can occur when the Athshean are asleep or awake, enhances their psychic entanglement with the trees. The nonduality of their dream-time and world-time allows contact with their collective and unconscious ecological roots. Further, the natives' contact with inner space is vital to their mental enmeshment with the trees. It fosters their close relationship with the forest. Similarly, this culture's immanence within Athshe sustains planetary balance, while sharing features of entanglement. In short, Athshean cultural, corporeal, and psychological entanglements with the forest are defined by their deep connection with trees. Also, their contact with Athshe's ecosystems renders their psyche as "more-than-human" during dreams. "More-than-human" refers to an extension of Athsheans'

unconscious beyond the body to the collective psyche of their culture and the forest. While the Terrans' adherence to dualistic ideologies, psychic fracture with the environment, and history of mass logging undermine these enmeshments. The result is forest extinction and the destabilisation of Athshe.

In *WFW*, Le Guin projects 1970s environmental concerns, including plant extinction, onto Athshe. Importantly, providing insight into environmental elements of SF Rob Latham, in an essay on ecological imperialism, states that New Wave SF writers critique the disastrous ecological effects of technological progress, rationalist inquiry, and corporate and government power (80). In this respect, New Wave SF's criticism of society aligns with the dystopian predictions of the environmental movement, exemplified by Rachel Carson's *Silent Spring*. Fiction and scholarship suggest that Western rationalist actors, devoted to technological and economic progress can destabilise ecosystems. Furthermore, Douglas Barbour writing on wholeness and balance in Le Guin's fiction, argues that *WFW* shows that the Terrans' disordered relationship with the future Earth and Athshe extends the contemporary exploitation of forests (169). Therefore, Le Guin's novel is a symbolic SF case study of the impact of future deforestation on Earth. Adding to this, Carol Hovanec in an essay on SF, nature and the American consciousness, posits that science fiction writers like Le Guin use "other planets in other galaxies to offer theoretical case studies of what might happen in the future if humanity continues to exploit the environment" (84). *WFW* represents a Terran invasion of Athshe and mass logging to show that rampant economic exploitation of ecologies wreaks environmental havoc. Also, it demonstrates that fractured psychic entanglements between humans and nonhumans, exemplified by the rationalist Terrans, endanger ecosystems. This instrumental divide is dangerous because it leads to an unethical view of ecologies as a source of profit and technological progress, which is used to morally

justify deforestation. The Terran destruction of the Athsheans, and their forest, is a SF warning to the present world that the fragmentation of physical and psychic human/nonhuman entanglement can lead to environmental imbalance.

Balanced Athshean Entanglement with the Forest

The Athsheans' cultural and psychological entanglement with the forest as world sustains planetary balance under assault by the Terran invasion. The natives cultivate a harmonious relationship with the forest, apparent in their dreams, tree homes, and language. In this way, Abson et al., writing on the current climate crisis, claim that environmental values feed into attitudes and actions that sustain ecosystems (35). For instance, the Athsheans' cultural elevation of the forest assists them in sustaining Athshe's balance. In contrast, the Terrans' logging and mental remove from the forest damages the natives' psychological entanglement with the trees.

Unlike most Terrans, the colonist and anthropologist Lyubov recognises this and informs his superiors that logging endangers the Athsheans' enmeshment with the forest: "If the forest perishes, its fauna may go with it. The Athshean word for world is also the word for forest. I submit, Commander Yung, that though the colony may not be in imminent danger, the planet is" (Le Guin 86). The title "*The Word for World is Forest*" suggests the physical and psychological unity of the Athshean culture, forests, and the world. In this case, the natives' entanglement with the forest exhibits an environmentally sustainable ethics. However, the Terran deforestation damages the Athsheans' mental and cultural relationship with Athshe

and planetary harmony. First, Lyubov states that if the Terrans harvest the trees, “its fauna may go with it”, to underline that plant extinction will destroy the natives and the Terrans. Second, Le Guin demonstrates how the destruction of the forest threatens Athshe. It does so by severing the entanglement between the natives, the forest, and animals comprising the planet. In sum, Terran deforestation fractures the psychic entanglement of the Athsheans’ culture, the forest, and Athshe. While the Terrans occupy Athshe, they impair the natives’ ability to sustain the health of forest ecosystems.

The new materialist theory of Karen Barad contains echoes of the ideas in *The Word for World is Forest*; the reference to “word”, in particular, suggests that Athsheans’ culture and language as “word” are entangled with the “world”. Barad outlines how cultural and discursive concepts, such as language, are not purely ideas but physical arrangements that produce material and meaning (“Posthumanist” 820). These cultural concepts generate material and meaning through local intra-actions (Barad, “Posthumanist” 820). In the novel, Coro’s discussion with the Athshean leader Selver demonstrates how language creates the material forest and its cultural meaning through intra-action:

I dreamed of you before we met here. You were walking on a path, and behind you the young trees grew up, oak and birch, willow and holly, fir and pine, alder, elm, white-flowering ash, all the roof and walls of the world, forever renewed (Le Guin 60).

Coro’s listing of trees shows that the forest is central to the natives’ culture, psyche, and agency. He dreams of Selver before meeting him in the forest, revealing the enmeshment of the Athsheans’ dreams and the more-than-human world. The natives’ ecological language signifies their culture as “word”: is inextricable from Athshe’s “world”. Their intra-action with the forest enacts the cultural meaning of Coro’s dreams, language, and storytelling.

Selver's ability to renew the "roof and walls of the world" suggests his harmonious enmeshment with Athshean culture and the forest. When dreaming, the Athsheans' language constructs an intra-active relationship between their society and the forest's species.

The Athsheans' cultural entanglement with the forest forms a mesh intrinsic to ecosystem growth. Philosopher Timothy Morton describes the idea of a mesh as "the interconnectedness of living and non-living things" (28). His reference to "living and non-living things" reveals the interconnection of humans and nonhumans within a mesh, or tree, for example.

Moreover, Donna Haraway's metaphysical notion of becoming-with multispecies refers to a reciprocal giving and taking between humans and ecosystems (*Species* 40). In Le Guin's fiction, *WFW*, the Athsheans and the forests are reciprocal and form an assemblage. Whereas, Haraway's idea of the "earthbound" can allude to the Terran entanglement with the Earth collective (*Species* 42). The invaders are "earthbound" because they originated from the future Earth's substance, including water, soil, the atmosphere, and the sun's heat. But the Terran relationship with the Earth's forests—and the Athshean forests—is determined by their pursuit of political power, anthropocentrism, and a mental human/nonhuman rift. In contrast, the Athsheans emerge from the forest, highlighting they are "treebound". The character, Lyubov, understands the natives' unity with forest is different from Terran symbiosis with Earth: "the substance of their world was not earth, but forest. Terran man was clay, red dust. Athshean man was branch and root. They did not carve figures of themselves in stone, only in wood" (Le Guin 105). The Terran enmeshment with the Earth suggests the nonduality of Terran psyche, physiology, and ecology. Lyubov's description of the "Terran man [as] clay, red dust" connotes the Terrans' symbiosis with the Earth's soil. Due to their symbiosis, the Terran decimation of trees imperils the future Earth's dirt and soil ecosystems and themselves. On Athshe, the trees' organic vitality underlines that the Athsheans'

enmeshment with the forest preserves the health of an environmental collective from the threat of the Terrans' anthropocentrism.

The Ecological and Psychological Effects of Terran Deforestation

The Terrans' desire for cultural and economic domination of Athshe motivate their mistreatment of the forest. Likewise, their decimation of the future Earth's forests illustrates the effects of the anthropocentric treatment of nonhumans on planetary balance. Human-centred ideologies increase the disconnection between people and ecosystems. They legitimise the exploitation of ecologies because they lack qualities commonly ascribed to humans, such as vitality, agency, and mind. For example, the greedy and violent Terran Davidson talks with Kees, an ecologist, about the future Earth's desolation in Camp Smith as follows:

'Earth needs wood, needs it bad. We find wood on New Tahiti. So—we're loggers. See, where we differ is that with you Earth doesn't come first, actually. With me it does.'

Kees looked at him sideways out of those blue golf-ball eyes. 'Does it? You want to make this world into Earth's image, eh? A desert of cement' (Le Guin 13-14).

Davidson's mentioning that the Earth badly needs wood reveals his human-centric emphasis on the forest's economic value. He has no ethical concern for trees because they are "inanimate" materials; he exhibits the Terran psychic rift with the environment of both planets. His disregard for the finite nature of timber on Earth and Athshe echoes capitalist companies' disregard for resource limits, including wood, gas, oil, and coal in the current world. Kees says that the fictional Earth is "a desert of cement", recognising the devastating impact of logging on its biosphere. Le Guin's reference to "cement" signals the stakes of the

Terrans' unrestricted use of natural resources, like timber, in the actual-world. The result is a fictional Earth's lifeless wasteland. In this way, *WFW* demonstrates the dangers of anthropocentric ideologies, a mind/matter dualism, and unlimited timber harvesting for the contemporary world.

In *WFW*, the invaders' deforestation has environmental and human consequences because it severs the psychological link between the Athsheans and the forest. Terran actions and practices have reciprocal ecological impacts, including biodiversity loss, damage to the forest's interconnections, and plant extinction. Another reciprocal impact is the Athsheans' attack on the Terran settlers in Camp Smith. Selver leads the Athsheans' violence in response to the Terrans' deforestation, their enslavement of the natives at Camp Smith, and Davidson's rape of Selver's wife. Before the Terran abuse of the Athsheans, there was no violence in their society. In response, Davidson commits a massacre in the Athshean community of Eshreth. The human impact of the invaders' logging and violence is apparent when the natives forcefully defend their forest communities: "hundreds and hundreds of torches flaring up lit one from another and being thrown and soaring through the black wet air like rockets, and the walls of the stockade coming alive with creechies, pouring in, pouring over, pushing, swarming" (Le Guin 170). Davidson often uses the pejorative term "creechies" to dehumanise the Athsheans and justify Terran violence and deforestation. The natives react violently to the Terrans' ecological destruction because it threatens their harmonious entanglement with the forest. Thus, the Terran invasion has catastrophic human, psychic, and planetary effects. In addition, Le Guin represents the Athsheans' retaliation against the Terrans as "swarming", suggesting a natural element to their insurrection. Her description of Athsheans as behaving like insects, acting like bees or ants, for instance, signifies that the forest comes alive to expel the Terrans from Athshe. It also implies that the natives are

inseparable from ecology. The invaders' deforestation severs the exoplanet's human and environmental entanglements and harms the Athsheans psychologically. As a result, Terran mass logging has intertwined human and ecological effects. The Athsheans and the forest's reaction to the Terran deforestation is reciprocal.

The Terran colonialists impose a racist human/nonhuman divide on the Athsheans to legitimise their enslavement of the natives, cultural dominance, and forest clearing. SF critic Keith Hull states that the Terran colonists categorise the Athsheans as "nonhuman" animals so they can enslave them and exploit their forests (69). Latham argues that the colonialists treat the Athsheans as animals to justify their invasion of Athshe and deforestation (78). The colonialists' racism is apparent when Colonel Dongh asserts that "these creechies are a metre tall, they're covered with green fur, they don't sleep, and they're not human beings in my frame of reference!" (Le Guin 77). The colonists, except for Lyubov, believe the natives are nonhuman as they display common features of a large proportion of Earth animals, such as small height, animal facial features, and "green fur." Like the army captain Davidson, Dongh uses the racist term "creechies" to categorise the humanoid Athsheans as animals to enhance his cultural and political power over Athshe. He imposes a racist human/nonhuman boundary on life that straddles the category of "human". Dongh considers the Terrans, including himself, more human than the natives. Le Guin implies that the invaders' derogatory categorisation of the Athsheans is associated with their antipathy toward environments and animals. The Terran dehumanisation of the Athsheans fuels their psychological rift from ecology, rationalist exploitation of the forest, and control over the exoplanet.

On Earth and Athshe, the modern scientific notion that ecologies lack mind and agency is intrinsic to deforestation. Joshtrom Kureethadam in his study *The Philosophical Roots of the Ecological Crisis* posits that modernity's base is a rationalist and scientific ideological structure (67). Lynley Tulloch, in an essay on Western ideologies of nature, outlines how modern rationalism is concurrent with the scientific and industrial revolutions from the eighteenth century Enlightenment to the present (34-35). These scientific, philosophical, and industrial revolutions increased human power over the environment; the purpose of this human power is to develop global economic markets. Greed is conducive to the human destruction of ecosystems, like forests, for profit and industrial progress. Notably, rationalist actors instil humankind's psychic and physical schism with ecology. Kureethadam states that "an exploitative attitude on the part of humans towards the natural world begins only in Modernity, and precisely with the adoption of the central metaphor of the natural world as a machine" (66). Modern ideology suggests that the "natural world" is a machine and does not have ethical value. This ideological position disconnects humans from ecosystems at the level of conscious thought, because it assumes that natural forests lack consciousness. This notion that forests are "inert" and mindless machines without agency justifies the human development of industry and wealth and the establishment of status through logging. Hence, modern rationalism legitimises and perpetuates unethical exploitation of timber. In Le Guin's work, the Terrans' rationalism disconnects them from ecology psychologically and legitimises their wood harvesting for economic and political capital, much as logging in Brazil and Indonesia has done for this Earth.

Captain Davidson's position that the forest and the Athsheans are a resource without agency is characteristic of imperial and rationalist ideology. The consequence of the Terrans' ideology is the timber harvesting for profit and ecological and cultural control of Athshe. The

colonialists' logging has extensive impacts on the exoplanet. For example, Davidson says: "Earth was a tamed planet and New Tahiti wasn't. That's what he was here for: to tame it. If Dump Island was just rocks and gullies now, then scratch it; start over on a new island and do better" (Le Guin 10). Davidson intends to tame "New Tahiti" by logging the forest for wood transported to Earth for profit. The Terran use of the term "New Tahiti" instead of "Athshe" illustrates the colonial emphasis on a progressive goal to justify their exploitation of the land. The invaders' terminology is aligned with their perception of Athshe as an ideal source of wood, enslaved Athsheans, and economic expansion. When he denies the agency or psyche of Dump Island's forests, animals, and the Athsheans, Davidson exemplifies the rationalist and psychic human/nonhuman binary. His derogatory view of the natives and trees legitimises the Terrans' deforestation and slavery to progress Western civilisation. The invaders' adherence to the rationalist position that denies nonhuman agency or psychology fuels their colonial subjugation of the natives, logging, and disruption of Athshe's enmeshments.

Jason Moore, writing on the nature and origins of our ecological crisis, claims that the modern idea that humans and society are separable from nature is conducive to ecological violence ("Capitalocene" 604). In fiction and on the Earth, this ideology precipitates the objectification of ecosystems and a human/nonhuman disconnection, ethically legitimising the exploitation of resources. Modern, post-Enlightenment thought increases the anthropocentric and psychic rift between humans and nonhumans and destabilises planetary systems. Over time the accumulated ecological damage of human exploitation of resources and ecologies results in environmental crises, like deforestation. However, Eric Otto, in his work *Green Speculations: Science Fiction and Transformative Environmentalism*, asserts that humankind's vulnerability to ecological problems reveals its embeddedness in the

environment. This embeddedness, he argues, “further challenges the legitimacy of [what he terms] exemptionalist reasoning based in a Cartesian sense of human intellectual superiority” (Otto 29). Otto’s term “exemptionalist reasoning” refers to the view that humans are exceptional and separable from the environment. The notion that humans are outside the nonhuman stems from distorted Cartesian ideologies of the seventeenth century exemplified by Rene Descartes. The literary SF critic, Joel Fransson, writing in 2018, argues that a human/ecology or culture/nature dualism characterises modernity (4). These modern binaries suggest that human culture is superior to nature. In *WFW*, modern, Cartesian dualisms justify Terran anthropocentric control of ecosystems because they are considered “subhuman.” Further, the Terrans’ deforestation divides them mentally from ecology. Yet, Otto emphasises how the interdependence of humans and environments collapses this divide (29). Supporting Otto’s ideas, Fransson states that a hybrid conception of humans and nature promotes entanglements crucial to sustaining ecologies (4). In SF, the mental hybridity of the Athsheans and the forest helps them sustain mutual growth, including planetary vitality. The natives’ psychological enmeshment with the trees counters the Terrans’ anthropocentrism, psychic disconnection from the forest, and disruption of Athshe’s equilibrium.

The anthropocentric do not recognise the complexity of ecosystems and overemphasise ecologies’ materiality. In *WFW* the Terran, Mr Gosse, draws attention to the human-centred Terran perspective and adherence to modernity’s human/environment rift. The invaders’ deforestation fractures the psychic symbiosis of the Athsheans, the trees, and Athshe. As well, the Terrans’ modern separatism from ecology and lack of environmental ethics justifies their forest harvesting and mistreatment of soil. For instance, Terran logging causes soil ecosystems to deteriorate. Mr Gosse explains this to Lyubov: “the forest is cut over a certain area, then the fibreweed doesn’t reseed, you see, gentlemen, and the fibreweed root-system is

the main soil-binder on clear land; without it the soil goes dusty and drifts off very fast under wind-erosion” (Le Guin 85). Mr Gosse highlights that the Terrans log the forest without concern for its symbiosis, its wind protection, and its healthy root systems, these last, in particular, aid healthy ecosystems. The invaders’ failure to cultivate the forest’s interconnections due to their modern ideology leads to soil deterioration. In this speech, Mr Gosse demonstrates a human-centred perspective that emphasises the Terran effect on the material interrelations of ecology. While the Terrans care for the materiality of the forest and soil, they do not foster human/nonhuman psychic relations. Mr Gosse’s myopic focus on the trees’ materiality means he, like most Terrans in the novel, disregards the psychological and human effects of Terran logging. These include the human violence resulting from a war between the Terrans and the Athsheans. The invaders’ inattention to the interplay of the Athsheans and Athshean ecosystems reveals their adherence to exceptionalist ideology and the elevation of scientific authority. The Terrans’ dualistic ideologies, orientation to profit from timber, and their mental rift with Athshe, increase human/nonhuman disconnection and encourage their logging to the point of forest extinction.

The Terrans’ instrumental ideology and psychic divide from Athshe motivate their logging for economic, scientific, and societal gain. The American anthropologist, Anna Tsing, notes that humankind perceives the environment as a resource to be tamed (vii). The human destruction of ecosystems imperils “interspecies entanglements” vital to the continuing presence of life on the actual Earth (Tsing vii). Furthermore, Tsing argues that humans emphasise the value of forests to future scientific and industrial profit (162-163). Thus, an instrumental position marginalises ecologies’ qualities, exaggerates their financial contribution to human society and science, and promotes ecological violence. In *WFW*, the Terrans’ instrumental disregard for the Athsheans’ embeddedness in the forest ethically

justifies their logging and disruption of planetary equilibrium. The invaders believe men are here “to turn the tree-jumble into clear sawn planks, more prized on Earth than gold. Literally, because gold could be got from seawater and from under the Antarctic ice, but wood could not; wood came only from trees. And it was a really necessary luxury on Earth” (Le Guin 16). Le Guin illustrates how the Terrans consider Athshe a source of “inanimate” timber for profit on Earth. They exploit the trees to make planks, suggesting an integration of forest into industry and economy. The reference to timber as gold underlines the Terran adherence to capitalist expansion achieved through resource extraction. The invaders’ view that timber is both a necessity and a luxury shows their narrow economic orientation to Athshe. The Terrans’ rationalist view of wood provides the moral basis for their logging. The invaders do not recognise the forest’s value as life or the Athsheans’ embeddedness in live trees. Their instrumental focus on industrial and economic progress by trading timber shows a disregard for the natives’ psychic and cultural enmeshment with the forest.

In Le Guin’s novel, the Terrans’ linear and short-term time model is intrinsic to their disconnection from the forests, lack of ecological ethics, and instrumental manipulation of timber. In civilisation, Serres and Latour argue that linear time comprises progressive and inflexible iterations (60). Alternatively, the world’s temporality is multiple, discontinuous, and incompatible with linear time (Serres and Latour 60). Also, linear temporality is associated with a human orientation to short-term and future profit. The Terrans’ embeddedness in linear time encourages their focus on iterative and progressive economic growth from timber harvesting. For example, Captain Davidson values Western civilisation’s linear time and progress. He criticises geological time, considering that the Athsheans “just hadn’t made it. Give ‘em another million years, maybe. But the Conquistadors had arrived first. Evolution moved now not at the pace of a random mutation once a millennium, but with

the speed of the starships” (Le Guin 17). Davidson’s justification for the Terrans’ deforestation is that they arrived first as “Conquistadors”, elevating temporal, industrial, and scientific progress over the forests and the Athsheans’ value as agential life. Davidson critiques the slow pace of evolution as it is incompatible with the linear time of Terran starships and societal and Terran economic development. On Athshe, the invaders’ emphasis on linear time and development severs them from the forest and the world’s geological time. Their geological time is defined by multiplicity and discontinuity. As such, their orientation to linear temporality is ecologically inflexible and permits massive deforestation. The Terrans’ orientation to linear temporality and profit motivates their exploitation of the forest and endangers Athsheans’ entanglement with the trees and geological time.

In contrast with the Terrans’ exploitative relations with the environment, the Athsheans’ dreaming is crucial to Athshe’s psychological framework. Notably, the natives’ world-time refers to their presence within the physical forest. Dream-time refers to Athshean dreaming while conscious or unconscious. Conversely, the Terrans only dream while unconscious, like humans in the actual-world. The invaders are rationalists because they consider the Athshean experience of unified conscious and unconscious dreams illusory. Moreover, the Terrans ridicule the natives’ dreaming as they do not display the cycles and brain waves present in most humans. Nevertheless, the Athsheans’ alien knowledge of conscious and unconscious dreaming promotes their cultural unity with the forest and mental health. On the one hand, the Terrans’ dreaming reveals their mental separation from the environment. The Terrans are irrational when unconscious and dreaming. On the other hand, they are rational when conscious and not dreaming. As such, when Le Guin suggests that Terran well-being depends on “the razor’s edge of reason” (116), she implies that the Terrans base their sanity on reason rather than dreaming. Their shift from rationality, when conscious, to irrationality, when

sleeping, illuminates a psychic disharmony in the novel. The invaders' dreaming means they are often irrational. Arguably, the Terrans' disorder drives their decimation of Athshe's forests and peoples. The Terrans' dreaming reveals conscious/unconscious and rational/irrational schisms preventing their psychic entanglement with the forest, cultivation of balanced ecosystems, and mental stability.

The Terrans' distance from their roots or source in ecology stems from their unconscious dreaming. All cultures are connected to the environment they emerged from during evolution. Selver articulates the Terrans' absence of roots when he speaks to the Athsheans in the Women's Lodge of Cadast: "They have left their roots behind them, perhaps, in this other forest from which they came, this forest with no trees" (Le Guin 56). The natives' entanglement with their forest roots across geological time informs their view that the Terrans have roots in a "forest with no trees" as Earth. The Terrans had roots within the SF Earth's ecosystems before they destroyed its plants and forests. From the Athsheans' perspective, the invaders' rift with their ecological source triggered their mass deforestation of the SF Earth and Athshe. The natives' conscious dreaming in the forest allows healthy enmeshment with their roots. As the Athsheans sleep, they connect with their cultural and psychic origins in the forest and collective unconscious. In contrast with the Athsheans, the Terran schism of conscious and unconscious dreaming prevents their social and mental connection with the trees of Athshe. In this way, the invaders' imposition of a psychic human/nonhuman divide on Athshe, and other planets, prevents contact with their origins. The Terrans' disconnection from their psychological roots during sleep means they lack an organic relationship with the environment and disregard the ethical repercussions of exploiting forests.

Psychological Entanglements Preserve Athshe's Balance

As the Athsheans dream, while conscious or unconscious, they experience close psychological entanglement with the forest in opposition to the Terrans' rift with ecology. According to Barbour, Athshean co-existence in dream-time and world-time reflects their holistic unity with the forest (170). Barbour argues that the Athsheans maintain their sanity by balancing reason and dreams (169). Likewise, Le Guin writes that the Athsheans base their sanity "on the double support, the fine balance, of reason and dream" (116). They are rational during conscious or unconscious dreaming. The natives' nondual dreaming reveals a harmony of rationality and emotion. Their balanced mindset means they have robust entanglements with the forest. Abson et al. argue that the functioning of ecological systems depends upon close cultural relations with natural systems (34). To extrapolate, the natives' embeddedness in the forest is integral to Athshe's functioning societies and forests. Furthermore, when Selver returns to the forest after defending the Athsheans from Terran violence, he dreams while conscious and experiences balanced relations with the trees: "he had begun to dream waking again, regularly, not once or twice in a day and night but in the true pulse and rhythm of dreaming which should rise and fall ten to fourteen times in the diurnal cycle" (Le Guin 49). Selver's dreaming while awake underlines his psychic embeddedness in the forest. His sleep rhythm and psychic entanglement with the forest is vital to his reason, health, and the exoplanet's functioning. In this case, the natives' relationship with the forest extends their mind to the more-than-human world. It enables their psychological entanglement with the trees. The Athsheans' deep relationship with the forest helps them sustain Athshe's ecosystems and harmony under threat by the Terrans' mental disorder and logging.

The Athsheans' dreaming allows entanglement with their collective psyche within the forest. Gabriela Debita, writing on resistance in *WFW*, posits that Athshean psychology, dreams, and forest are inextricably entangled (54). Ian Watson, in his essay on the forest as a metaphor for the mind, argues that the Athsheans' self-knowledge and rationality result from their ability to access their subconscious urges and instincts during conscious dreaming (231). This nondual dreaming ensures their mental balance and harmonious relations with the trees. Moreover, Watson claims the forest functions as the Athsheans' collective unconscious (231). Similarly, Alison Sperling, in her essay on the novel, indicates that the Athsheans share their collective unconscious by dreaming within the forest (53). Hence, the natives' conscious or unconscious dreaming allows them contact with their collective psychology and the forest's psyche. For example, Selver notices paths when he enters the forest:

Little paths ran under the branches, around the boles, over the roots; they did not go straight, but yielded to every obstacle, devious as nerves. The ground was not dry and solid but damp and rather springy, product of the collaboration of living things with the long, elaborate death of leaves and trees (Le Guin 35-36).

Selver's navigation of the forest paths reveals that the trees are entangled with one another and the Athsheans. The reference to "branches" as "devious as nerves" conveys the forest's psychology. The interconnection of the forest's roots suggests it is the Athshean brain. Whereas, the natives' dream-time is the forest's mind. When the Athsheans' dream, they access their collective unconscious within the trees. Therefore, the entanglement of the Athsheans and the forest is both biological and psychological. It renders the natives' psychology more-than-human and ensures Athshe's balance. In contrast, the Terrans'

disassociation from their unconscious source and ecological violence was intrinsic to their total deforestation of Earth.

The natives' integrated waking and sleep allows contact with their psychic roots in the trees. For instance, Lyubov learns from Selver the "Athshean significance of the word 'dream,' which was also the word for 'root'" (Le Guin 117). The natives' dreams and psychological roots in the environment are aligned. Le Guin refers to how finding the Athshean roots provides "the key of the kingdom of the forest people" (117). She emphasises that the natives' contact with their roots in the forest builds cultural identity and environmental ethics. The Athsheans' access to their roots during dreaming reveals a deep mental and physical enmeshment with the trees. Further, their dreaming allows connection with their collective source in the forest and the unconscious. Thus, the Athshean "root" is within the physical world-time and the collective dream-time. When asleep, the natives' collective psychology expands to the nonhuman psyche of the forest. Their connection with their source or roots in the forest violates the principles of the Terrans' dualistic and anthropocentric ideology. The natives' mental and physical entanglement with their ecological roots helps them sustain the forest's interrelations. The Athsheans' adaptive behaviour protects Athshe from a Terran civilisation, whose human-centrism and lack of psychic roots had extinguished the Terran interconnection with their home planet and threatens to do the same on Athshe.

The Athsheans' contact with inner space subverts the Terrans' anthropocentric construction of a psychic human/forest boundary. Le Guin argues that the complexity of the human interior signals its inseparability from the external environment (*Found 1*). Her description of the intersection of human interiority and ecology defines relations with inner space in SF. As

outlined earlier in the thesis, Colin Greenland states that the exterior world's encoding into human consciousness characterises contact with inner space (51). Applying Greenland's construct to *WFW* shows that the forest is encoded into the Athsheans' psychology as they sleep, a feature of relations with inner space. Le Guin represents the forest's incorporation into Selver's consciousness when he dreams: "He had feared that he was cut off from his roots, that he had gone too far into the dead land of action ever to find his way back to the springs of reality. Now, though the water was very bitter, he drank again" (49). Selver's reference to going into a zone of action reveals that his presence in the Terrans' physical world severs his mental contact with the forest. Yet, his ecological roots in the forest become part of his mind during dreams, an element of contact with inner space. Thus, Selver understands that by dreaming in the trees, he returns to the "springs of reality." He experiences deep psychological enmeshment with his home as he sleeps. While consciously dreaming, the Athsheans experience holistic unity with the forest's psychology as an interrelation with inner space. The natives' transformative dreaming restores their consciousness and psychic entanglement with ecology, integral to preserving Athshe's balance. It undermines the Terrans' anthropocentric notion that humans are fundamentally separate from ecologies at psychological and biological levels.

Human immanence within ecology is a variant of psychological entanglement. Philosopher Gilles Deleuze publishing in 1968 posits that immanence refers to how a subject is an inseparable part of another subject (*Difference* 28). The "subject" can refer to humans or nonhuman animals and environments. Humans and nonhumans are inextricable from other subjects in a collective, like the Earth. Serge Hein in a 2021 essay on Deleuze and immanence, defines immanence as "being internal to", or dwelling within, a collective, with no singular humans or environments (512). Hein's explanation of immanence is that it is

analogous to entanglement because it suggests that humans are always mentally embedded in ecology. In a new materialist position, Haraway argues that there is no unitary starting subject who then intra-acts, in her theory of sympoiesis (*Staying* 33-34). Rather, singular entities do not exist as all entities are inseparable from others within an assemblage. This lack of separation between entities and the group is a characteristic of both immanence and entanglement. Entities exist within an assemblage defined by inseparable interrelations (Haraway, *Staying* 33). Outlining the characteristics of immanence, Deleuze states that, “Immanence is not related to Some Thing as a unity superior to all things or to a Subject as an act that brings about a synthesis of things” (*Immanence* 26-27). The concept of immanence means there is no synthesis of human and nonhuman, no binary relation between these subjects, or transcendental unity. Immanence does not allow synthesis because integrating two subjects implies they are separate, which is inconsistent with the unity of entities in phenomena. Significantly, immanent relations are not binary, as subjects form an inextricable whole. This whole cannot be broken down into dualistic elements, as one subject is necessarily part of another subject. Moreover, immanence is incompatible with a transcendental position as entities’ nondual relations are always shifting and do not form a final or superior unity. To extrapolate, the Athsheans’ presence in the forest’s psychology displays these features of immanence as mental entanglement.

Immanence refers to the psychic embeddedness of the Athsheans and forests, contrasting with the Terrans’ alienation from ecology. The idea of immanence suggests there is nothing external to the natives or forests. Le Guin commentator, Barbour, argues that while dreaming, the Athsheans exist within world-time and dream-time (171). The natives consider psychic dream-time and physical world-time as being equal parts of their psyche. The nondual relation between Athshean dreams and the nonhuman world reveals their immanence within

the forest's psychology. The native Athsheans' mental connection with the forest shapes their values and environmentally sustainable practices, such as caring for trees. An example of this immanent relationship is Selver's ability to "translate into waking life the central experience of vision: one serving as a link between the two realities, considered by the Athsheans as equal, the dream-time and the world-time" (Le Guin 123). The Athsheans' understanding that dream-time and world-time are equal demonstrates a balance of conscious and unconscious. This harmony suggests that natives' dreams and the forest are immanent in one another. When dreaming, Selver learns that the dream/world and conscious/unconscious divides are false. His translation across these divides means he is immanent in the forest's consciousness, and the forest is immanent in his consciousness. Selver's mutual immanence within the forest renders his psyche more-than-human. Richard Erlich, writing on Le Guin and Arthur C Clarke, claims that human immanence within the environment provides a universal connection between humans and nonhumans (122). Athshe consists of the mutual immanence of the Athsheans' dreams and the forest (Erlich 115). This universal relation deconstructs the human/nonhuman dualism. Moreover, Selver's immanence and mental entanglement with the exoplanet bolsters his reverence for the forests and his sustaining of ecosystem balance. Nevertheless, the Terran rationalist construct of psychic human/ecology separation and lack of immanence endangers Athshe's enmeshments.

Alternatively, Lyubov's immanence in the forest's psychology indicates that Terrans can contact their psychic roots within a world's ecology. According to Erlich, Le Guin represents the underlying reality of the universe as immanent to interior consciousness rather than the external environment (108). In this respect, *WFW* accentuates how human psychic entanglement with ecological systems is conducive to planetary order. For example, the Terrans' violence fractures Lyubov's immanent entanglement with the forest: "The mass and

jumble of various competitive lives all pushing and swelling outwards and upwards towards light, the silence made up of many little meaningless noises, the total vegetable indifference to the presence of mind, all this had troubled him” (Le Guin 105). Lyubov initially experiences the forest as a chaotic assemblage. As a result, he is disconnected from ecology. In this way, Lyubov’s separation from the future Earth fractured his psyche and prevents his connection with the forest. Eventually, the forest’s indifference to his mental presence shows it possesses psychology and accepts him. Lyubov then feels at ease: “he was completely at home under the trees, more so perhaps than anywhere else” (Le Guin 105). Lyubov’s comfort signifies that his psyche is immanent in the forest’s consciousness; this is an example of entanglement. Like Selver’s entangled relationship with the forest, Lyubov experiences deep, immanent, and psychic embeddedness under the trees. His immanence within the forest allows his merger with the human collective unconscious and roots. Lyubov’s immanent entanglement promotes Athshe’s order. In contrast, the other Terrans deliberately fracture planetary interconnections.

Alongside immanence, Athshean embeddedness in the forest’s geological time is crucial to Athshe’s vitality. Environmental philosopher Michel Serres highlights the entanglement of humans and the slow environmental time of the atmosphere, deserts, and forests throughout human history (31). In SF, Joseph Donaldson argues that the Athsheans are inseparable from a slowly changing and inactive time resembling tree growth (135). Natural landscapes’ long-term, passive, and inactive time is geological time. Thus, the natives’ world-time is equivalent to geological time. Athshean enmeshment with this slow temporality grants them ecological and cultural stability. Furthermore, the natives display stable entanglement with world-time. For example, the Athshean Coro converses with Torber about Selver: “Nor the Lyre-player nor the Carver nor the Hunter, though he comes in the world-time like them. We

may have dreamed of Selver these last few years, but we shall no longer; he has left the dream-time. In the forest, through the forest he comes” (Le Guin 45-46). Selver’s existence within Terran society as a slave severs his psychic enmeshment with the forest and its temporality. As a result, Selver cannot dream like the Athsheans. Thus, he moves from dream-time into the forest’s world time. In this respect, when healthy, the Athsheans are mentally entangled with the forest’s time during sleep. Further, Le Guin’s depiction of the natives’ musicians, hunters, and carvers suggests their culture, world-time, and dream-time are inextricable. During sleep, their unity with the forest and geological time accentuates Athshe’s cultural, psychological, and temporal entanglements. In contrast, the natives’ contact with Terran civilisation, most notably, endangers interrelations between world and dream-time. In conclusion, the natives’ enmeshment with the trees during dream-time is vital to their preservation of the planet’s vibrant forests.

The Athsheans’ cultivation of the forest’s balance challenges the Terrans’ adherence to exceptionalist ideologies, their psychic schism with tree ecosystems, and their logging. In addition, the invaders’ rationalist perspective that forests lack agency and mind ethically legitimises their deforestation, for economic and political gain. Le Guin, through individual characters of Davidson and Mr Gosse shows how their modern ideology instils an anthropocentric separation between human/Athshe. Moreover, the Terrans’ instrumental view that forests only have value for economies and society justifies their mass logging. In contrast, Athshean psychological entanglement with the forest during dreams helps them sustain the health of Athshe’s ecosystems. For example, the natives’ dream-time allows contact with their collective unconscious roots, ensuring their deep mental enmeshment with the trees. Also, the Athsheans incorporate the external forests into their psyche during sleep; this is a feature of Greenland’s definition of contact with inner space (51). The natives’

porous dream-time and world-time suggest their immanence within the forest's consciousness. Further, their deep cultural entanglement with trees during dreams renders them psychologically more-than-human. In sum, Le Guin represents a stark difference between the Athsheans' cultivation of Athshe's psychic entanglements and equilibrium and the Terrans' mental divide from the forest and logging. Therefore, *WFW* is an insightful New Wave SF allegory for human threats to the current Earth's ecologies.

Conclusion

The New Wave SF representations of ecological crises on future Earth and fictional exoplanets echo the environmentalism and psychological changes of the 1960s and 1970s. They resonate with contemporary concerns about the effects of climate change, drought, aridity, and deforestation on human civilisation and the current Earth's ecologies. A striking feature of the New Wave SF movement is the idea of contact with inner space, as espoused by J. G. Ballard, John Priestley, and Colin Greenland. This concept involves characters' interior psychology fusing with external ecosystems—such as water, deserts, and forests—encompassing the mutual and inextricable dimensions of “entanglement.”

However, new materialist theories of entanglement often lack a distinct analysis of human and ecological psychologies. To address this gap, this study uncovers a “psychological” element in entanglement through the analysis of SF characters' connections with inner space. The selected New Wave SF novels—J. G. Ballard's *The Drowned World (TDW)* and *The Drought (TD)*, Frank Herbert's *Dune*, and Ursula Le Guin's *The Word for World is Forest (WFW)*—illustrate the “psychological” entanglement of characters with various ecosystems, including water bodies, deserts, and forests. Incorporating psychology in a theory of relationality is essential to addressing the mental aspects of the rationalist and anthropocentric human/nonhuman divisions. These divides ethically justify environmentally destructive attitudes and behaviours on the grounds of an absence of ecological agency or psyche. While

this unethical approach to the nonhuman world is conducive to the exploitation of ecosystems, it also, over time, results in environmental deterioration, imbalance, and crises.

This study has thus extended the new materialist notion of entangled human/nonhuman relations to include psychology, answering the first thesis question: how does the intersection of characters' contact with inner space in *TDW*, *TD*, *Dune*, and *WFW* and new materialist theory of entangled human/nonhuman relations suggest an extension of "entanglement" to include "psychological entanglement"? Psychic entanglements in these SF works encompass human contact with inner space, intra-action with water, symbiosis with ecosystems, cultural and psychic embeddedness in deserts and forests, immanence in the forest, and transformative nonduality with water ecology. These representations broaden the new materialist deconstruction of dualistic ideologies undermining planetary vitality and harmony.

Ballard, Herbert, and Le Guin's SF novels creatively explore how psychological entanglement challenges human/nonhuman divides, which endanger Earth's ecosystems. These divides stem from a human/nonhuman dualism and mind/matter binary present in modern Cartesian, scientific rationalist, anthropocentric, and instrumental ideologies. In New Wave SF, this dualistic orientation disconnects humans from nonhumans, based on agency; it ethically justifies environmental exploitation. These two factors are conducive to rapid global warming, anthropogenic drought, desert destabilisation, and deforestation. In contrast, these novels extend psychology to environmental contexts, revealing a targeted approach to the psychic aspects of the human/ecology rift underemphasised in new materialist theory.

Consequently, this thesis articulates how SF psychological entanglement undermines rationalist and anthropocentric assumptions of polarised human/nonhuman relations, addressing the second thesis question: how do Ballard, Herbert, and Le Guin's representations of "psychological entanglement" in these New Wave SF novels challenge the rationalist and anthropocentric assumption of a human/nonhuman dualism? These New Wave SF writers imaginatively deconstruct dualist philosophy by subverting human exceptionalist thinking implicated in perpetuating global warming, climate change, ecosystem disorder, and forest extinction.

Significance and Relevance

Current new materialist theories of ecological disasters and imbalances often present a restrictive material concept of entanglement. On the whole new materialism overlooks psychology, especially its role in postmodern and materialist explorations of relationality. This thesis addresses this lacunae by using new materialist theories of relationality, intra-action, and assemblages to investigate New Wave SF representations of contact with inner space. The result is an SF theory of entanglement that incorporates the human psyche, cultural elements, the material, and geological time. SF representations of psychological interrelation challenge the rationalist, anthropocentric, and instrumental ideologies that assume human/nonhuman and mind/matter dualisms. By undermining these polarising ideologies, the concept of psychological entanglement also subverts exceptionalist reasoning underlying recent environmental exploitation and degradation. This New Wave SF intervention in new materialist theory is relevant today because it highlights the psychological contributors to ecological crises and suggests adaptive and sustainable responses to the human-centric foundations of planetary instability.

New Wave SF warns readers about the destructive impacts of climate change, drought, and deforestation on ecologies, humans, and civilisations. In addition, SF novelists' depictions of psychological entanglements contest the dualistic contributors to environmental disasters. Ballard's *TDW* depicts a far-future Earth undergoing severe global warming, extending ecological issues from the 1960s. Kerans's nonduality, and psychic embeddedness in water, reveal an adaptive approach to ideologies destabilising the climate. Whereas Ballard's *TD* warns that ocean and atmospheric pollution can drive arid climate change. Ransom's transformative nonduality with scarce water and the desert opposes the instrumental manipulation of water for profit and the psychic human/desert divide, serving as an allegory for the current Earth's aridity.

In *Dune*, Herbert depicts political, economic, and psychic threats to Arrakis's desert to highlight how the interplay of Earth's ecosystems maintains planetary balance. *Dune* alerts readers to the dangers of addressing environmental problems without considering human-centrism and ecosystem complexity. It shows that cultural and psychic entanglements can assist native cultures in sustaining ecosystems from actors' exploitation of resources for profit and political and military gain. Le Guin's *WFW* implies that the psychic human/nonhuman rift and human exceptionalism contribute to environmental disconnections pervading Athshe. These disconnections lead to an acceleration of anthropogenic changes to planetary ecologies, such as logging and ecosystem disorder. Le Guin underscores how sustaining psychic entanglements with ecology preserves them from deforestation driven by economic, political, and anthropocentric interests. *WFW* demonstrates how these enmeshments protect ecological equilibrium from dualistic ideological threats. New Wave SF writers articulate psychological

entanglements in future worlds to deconstruct the psychic barrier between humans and ecosystems, offering an alternative theoretical response to ecological crises and imbalances on Earth.

Future Research

This thesis suggests that ecocritical and new materialist research on New Wave and contemporary SF might further explore humanity's divisive mental relationship with the nonhuman world. A limitation of this research is the lack of detailed analysis of the psychological experience and agency of environments and their effects on humans. Future research might be directed towards investigating SF depictions of the differences between human psychological states and those of ecological psychologies, especially as human understanding of ecological intra-action evolves. Understanding how human and nonhuman psyches overlap and differ will illuminate the interconnected nature of environmental, animal, and geological life. Alongside *TDW*, *TD*, *Dune*, and *WFW*, several 1960s and 1970s SF novels explore how human inner space contrasts with alien psychologies. For instance, Stanislaw Lem's *Solaris* (1961) examines the ocean exoplanet Solaris, where scientists perceive the ocean as a sentient entity due to its interference with their mental states. Lem's novel proposes the existence of an undiscovered form of intelligent consciousness within Solaris's global ocean. This depiction defamiliarises the reader from immediate reality, opening a space that may enhance readerly understandings of human consciousness in the cosmos. A new materialist reading of *Solaris* would extend the analysis of human psychic enmeshment with ecology in New Wave SF by exploring the potential similarities and differences between human, environmental, and alien psyches. Analysing *Solaris*, and other

SF novels from the 1960s and 1970s, could enrich a new materialist analysis of the physical, temporal, and psychological entanglement of humans and agential planets.

My new materialist analysis of four New Wave SF novels underscores the importance of psychological theories of entanglement in addressing human mental rifts with and within ecologies. Such research is integral to understanding why issues like climate change, drought, and forest extinction seem to be so intractable, despite advances in scientific evidence to support the rapid escalation of various forms of anthropogenic change. Rationalism, human-centrism, and instrumentalism are linked to human exploitation of ecologies for profit, societal progress, and cultural and political power, resulting in persistent ecological disasters over time. These disasters, in turn, have severe consequences for human psychology, societies, and the nonhuman world.

However, Ballard's *TDW* and *TD*, Herbert's *Dune*, and Le Guin's *WFW* depict how human inner space connects with water, deserts, and forests to psychologically unify Earth's ecosystems. In *TDW* and *TD*, Kerans and Ransom's transformative nonduality with water and desert are examples of psychic entanglements. These mental interrelations broaden new materialist efforts to deconstruct the dualistic ideologies underpinning global warming and drought. Additionally, *Dune* and *WFW* illustrate human cultural and psychological entanglements with deserts and forests, contesting the imposition of a psychic human/nonhuman dualism on their harmonious relations with environments.

Overall, these four New Wave SF novels depict how characters' reactions to extreme climate crises—on Earth in *TDW* and *TD*, threats to Arrakis's desert balance in *Dune*, and Terran logging and Athshe's disharmony in *WFW*—render their minds more-than-human in physical and psychological entanglements. Ballard, Herbert, and Le Guin's representations of characters' entanglement with water, deserts, and forests challenge the exceptionalist reasoning underlying unethical ecological exploitation and disorder, climate change, drought, and deforestation by incorporating human and environmental inner spaces.

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