COGNITIVE APPROACHES TO CULTURE
Frederick Luis Aldama, Patrick Colm Hogan, Lalita Pandit Hogan, and Sue Kim, Series Editors
Affective Ecologies

Empathy, Emotion, and Environmental Narrative

Alexa Weik von Mossner
CONTENTS

ACKNOWLEDGMENTS ix

INTRODUCTION Environmental Narrative, Embodiment, and Emotion 1

PART I SENSING PLACE
CHAPTER 1 Captivating Evocations: Literary Topophilia and Narrative Perspective 19
CHAPTER 2 Touching Sights and Sounds: Embodiment, Emotion, and Cinematic Environments 50

PART II FEELING WITH OTHERS
CHAPTER 3 Imagining the Pain: Strategic Empathy and the Environmental Justice Narrative 77
CHAPTER 4 Beyond Boundaries: Imaginary Animals and the Intricacies of Trans-species Empathy 105

PART III EXPERIENCING THE FUTURE
CHAPTER 5 Troubling Futures: Climate Risk and the Emotional Power of Dystopia 137
CHAPTER 6 Alluring Visions: Hope, Desire, and the Affective Appeals of Ecotopia 164
EPILOGUE Environmental Narrative Across Media 190
<table>
<thead>
<tr>
<th>viii</th>
<th>CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTES</td>
<td>197</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>221</td>
</tr>
<tr>
<td>INDEX</td>
<td>259</td>
</tr>
</tbody>
</table>
ON THE first pages of Cormac McCarthy’s *The Road*, a nameless man wakes up in the woods next to a sleeping child. It is dark and cold, and both the darkness and the coldness have a brutal and unnatural intensity to them, signaling “the onset of some cold glaucoma dimming away the world” (2006, 3). The man touches the child’s chest for a moment, feeling it rise and fall “with each precious breath;” then he raises himself in his “stinking robes and blankets” (3), his mind flashing back to the nightmare he just had about a monstrous translucent creature, well adapted to a life in utter darkness. As he walks out to the road in the first light of day, readers are cued to imagine the environment he beholds as he gazes through his binoculars at “the valley below. Everything paling away into the murk. The soft ash blowing in loose swirls over the blacktop” (4). They are invited to enact the visual perception of “segments of road down there among the dead trees,” as the man looks out “for anything of color. Any movement. Any trace of standing smoke” (4). But there is nothing to be seen, and so the man just sits there, “holding the binoculars and watching the ashen daylight congeal over the land” (4).

The post-apocalyptic scene that opens McCarthy’s Pulitzer Prize–winning novel is brimming with visual imagery that signals abandonment, death, and decay, allowing readers to create a vivid mental image of a barren and lifeless
environment. Other sensual perceptions are also evoked—the feel of air so cold that the “ashen daylight” appears to harden and turn to ice, the touching of the child’s chest, the stink of their dirty clothes, and the utter lack of natural sounds—each contributing to readers’ understanding that this environment is dead, lacking sunlight, warmth, and life, devoid of food and potentially lethal. All of this plays out on the purely imaginary level, cued by verbs, nouns, and adjectives of movement and sensual perception.

Now consider the same moment in John Hillcoat’s 2009 film adaptation of the novel, which relies on cinematic modes of narration to make the scene perceptually and emotionally salient. The first thing to note is that it is preceded by a dream-like flashback to an earlier time. Hillcoat opens his version of the story with a series of light-suffused shots showing lush green, colorful blossoms, a smiling woman (Charlize Theron), and a man (Viggo Mortensen) stroking the head of a healthy looking horse in the golden glow of the setting sun. The soundtrack features bird voices and the buzzing of insects, completing on the auditory level the visual impressions of a hot summer day. The lighthearted music score further supports the positive affective valence of the images and it is only when a closing screen door slowly darkens the view that things begin to change. The music continues across the cut to the nocturnal interior of the house, but now it seems arrested on a single note, sounding increasingly ominous as the man is woken by flickering light that penetrates the curtains. He looks outside and runs to the bathroom to fill the tub with water. The woman is awake now too, holding her pregnant belly. As the camera moves closer and the distant muffled shouts of humans become more audible, viewers are cued to focus their attention on the look of horror on the woman’s face. The narrative then jumps forward to the moment that opens the novel: the man awakens from his dream, touching the chest of the child next to him with his hand. The image is almost devoid of color now, drowning everything in shades of brown and gray. The protagonists’ dirty winter clothes and the presence of discolored ice suggest that it must be very cold, and the sight and sound of a waterfall next to their makeshift bed further strengthens that perception. We see the man’s breath misting as he gets up and stumbles to the opening of what looks like a cave. Outside, the world is just as gray as inside, and the only thing to be seen is charred mountains and dead trees as far as the eye can reach.

The relationship between the two sequences and the ways they have been realized no doubt poses many interesting questions about transposition and authenticity in intermedia adaptation, but that is not my concern here. My concern is with the ways in which both narratives appeal to our sensual perception and embodied cognition—if in very different ways—in order to
immerse us into their storyworlds and engage us in the gruesome tale they
tell about environmental disaster and human suffering. Cognition is embod-
ied because it “is deeply dependent upon features of the physical body of
an agent” (Wilson and Foglia 2011, para. 1), and cognitive scientists like the
Italian neurologist Vittorio Gallese have suggested that processes of embodied simulation play a crucial role in our engagement with the world as well
as in aesthetic response (2015, 442). Both reading and watching are highly
embodied activities not only in that we need our senses in order to be able
to perceive things, but also in that our bodies act as sounding boards for our
mental simulations of storyworlds and of characters’ perceptions, emotions,
and actions within those virtual worlds. When we read that McCarthy's name-
less protagonist “lowered the glasses and pulled down the cotton mask from
his face and wiped his nose on the back of his wrist” (2006, 4), we literally
map those movements onto the motor cortices of our brains as the mental
processing of action verbs activates the respective neurons. When we watch
the expression of horror on Charlize Theron's face in the film adaptation, we
inevitably engage in affective mimicry and feel vaguely anxious as a result of
the simulation, although we do not see what she sees. Even more intrigu-
ing, there is evidence that we use our bodies not only to understand human
characters, but also for our grasping of the environments that surround them,
including the deliberations, emotions, and actions of nonhuman agents and
even the movements of inanimate objects (Currie 2011; Freedberg and Gallese
2007). More crucial still, philosophers (M. Johnson 1994; 2014) and psycholo-
gists (Mar and Oatley 2008; Decety and Cowell 2014) have shown that embodied cognition plays an important role in the simulation of social experience
and moral understanding.

This is why throughout this book I will argue that embodied cognition is of particular relevance for our theoretical and practical investigations of
environmental narratives and the emotional responses they cue in readers
and viewers. Environmental narrative, broadly defined, includes any type of
narrative in any media that foregrounds ecological issues and human–nature
relationships, often but not always with the openly stated intention of bringing
about social change. Focusing on the American cultural context—and pre-
dominantly on American literature and film—I will suggest that an ecocritical
approach that draws on the insights of cognitive science and the equally inter-
disciplinary field of cognitive cultural studies can give us a better understand-
ing of how we interact with such narratives on the mental and affective level
in ways that are both biologically universal and culturally specific. How do we
experience the characters, events and environments we encounter in literature
and film on the sensory and emotional level? How do environmental narra-
tives invite us to care for human and nonhuman others who are put at risk? And how do we relate to the speculative futures presented to us in ecotopian and ecodystopian texts and films? These are the central questions that are explored in the three parts of *Affective Ecologies*, questions that are important not only for ecocritics but for anyone with an interest in the rhetorical strategies and persuasive power of environmental narratives.

**EMBODIED COGNITION AND THE ANALYSIS OF NARRATIVE**

Throughout this book, I will frequently draw on empirical research in cognitive science in order to support the theoretical arguments and close readings I offer in individual chapters. What I will present in these chapters could be called a cognitive ecocritical approach to narrative emotion, though I am not attached to labels. The term “cognitive” is often misunderstood or unjustly narrowed down to some version of computationalism or connectionism, which treat the mind as a disembodied information processor or neural network. In this unduly simplistic view of cognitive science, the diversity of approaches within the larger field is often neglected, and the same is true for the considerable differences within the group of so-called “second-generation” neuroscientists who work within the larger framework of embodied cognition. Despite such differences, neurologists such as Antonio Damasio (1994, 1999, 2003, 2010), Joseph LeDoux (1996), Marco Iacoboni (2009), Vilayanur Ramachandran (2010), and Vittorio Gallese (2005, 2014) all stress the central importance of the feeling body and its mental representation in human experience and reasoning, As Damasio declares in *Descartes’ Error*, “the organism interacts with the environment as an ensemble: the interaction is neither of the body alone nor of the brain alone,” which is why “mental phenomena can be fully understood only in the context of an organism’s interacting in an environment” (1994, xxvii). Understanding the mind as both embodied (in a physical body) and embedded (in a physical environment), this view of the mind embraces the first two of the so-called 4Es of embodied cognition, which states that the mind is embodied, embedded, enactive, and extended. It does not necessarily embrace the second two Es, whose proponents can mostly be found in philosophy departments.

While the first two Es, and the related research in neuroscience and cognitive psychology, are of central importance to my argument throughout the book, I am somewhat more skeptical about the notion that the mind is enactive and extended. I will occasionally draw on moderate forms of enactivist
thought, which posits that consciousness arises\textit{ exclusively} in a body’s interaction with its environment, and I also embrace the fifth E (or A) that has recently been added by some researchers to the 4E approach, namely that the mind is emotional or affective.\textsuperscript{7} However, I will not take up the related, and much more radical, idea forwarded by philosophers such as Daniel Hutto (2000), Andy Clark (2005, 2010), and Alva Noë (2010) that minds are \textit{extended}.\textsuperscript{8} The notion that “the content of our thoughts is determinable by features of the environment, and that the proper faculties of cognition are not limited to the brain and neuronal system, or even the body as a whole, but that they are spread out into the environment” (Clark and Chalmers 1998, 18) might look immediately attractive for ecocritics because of the great importance it attributes to the environment. However, in my view it simply does not offer a convincing argument against neuroscientific simulation theories that place the mind \textit{inside} the experiencer as her body interacts with her environment.\textsuperscript{9}

Over the past two decades, humanities scholars have begun to draw increasingly on theories of embodied cognition and the neuroscience of perception, attention, mental processing, and emotional response.\textsuperscript{10} In the field of literary studies, postclassical narratologists in particular have begun to reevaluate storytelling in the light of these new insights.\textsuperscript{11} The last decades of the twentieth century already saw some recognition of reading practices though reception theory and reader-response criticism (Barthes 1974; Booth 1961; Eco 1979; S. Fish 1980; Iser 1978; Jauss 1982).\textsuperscript{12} For most of these critics, however, textual interpretation is a disembodied mental activity that is first and foremost linguistic in nature. Early work in the emerging field of cognitive narratology, similarly, mostly ignored the role of the body in literary reading, as it was influenced by computational approaches in cognitive science and predominantly focused on information processing (Crane 2000; Hart 2001; Palmer 2004; Richardson and Steen 2002; Spolsky 1993; Turner 2006; Zunshine 2006).\textsuperscript{13} The physical and emotional dimensions of literary reading were first explored by psychologists such as Keith Oatley (1992, 1999, 2002) and Raymond Mar (with Oatley, Hirsh, de la Paz, and Peterson 2006; with Oatley 2008; with Oatley and Peterson 2009; with Oatley, Dijikic, and Mullin 2011), and Richard Gerrig (1993), as well as by literary scholars such as David Miall, who frequently collaborates with the psychologist Don Kuiken in order to examine reading practices empirically (Miall 1988, 1989; Miall and Kuiken 1994a, 1994b, 2001). In more recent years, cognitive narratologists such as Patrick Colm Hogan (2003, 2011a, 2011b) and Suzanne Keen (2007, 2010) have focused on the affective dimensions of our engagement with literary texts. Peter Garratt (2016), Marco Caracciolo (2013a, 2013b, 2014, 2016)
and Anežka Kuzmičová (2012, 2013, 2014, 2015) are among the literary scholars that have tried to integrate insights from cognitive neuroscience with those of phenomenological and enactivist philosophy, resulting in a strong focus on embodiment and environmental situatedness. Within film and media studies there exists an even richer tradition of cognitive approaches that includes philosophers such as Noël Carroll (1999, 2003) and William Seeley (Carroll and Seeley 2013, 2014) and film scholars such as Torben Grodal (2009), Carl Plantinga (2009a), Greg Smith (2003), and Murray Smith (1995). Embodiment and the affective dimensions of cinematic response play central roles in such approaches, which draw heavily on the insights of second-generation cognitive science for their analysis of the visual and narrative dimensions of film.

In the cognitive sciences, there is also growing recognition of the central part that narratives of all kinds play in processes of meaning making, as is attested by the film- and literature-related work of psychologists such as Ed Tan (1995, 1996), Arthur Shimamura (2013), Jeffrey Zacks (2015), Marco Iacoboni (with Zanna Clay 2011), and Vittorio Gallese (with Hannah Wojcieszowska 2011; with Michele Guerra 2014). Such researchers have begun—often in collaboration with humanities scholars—to explore not only the ways narrative is processed in the brain but also what larger social repercussions such processing may have. In the coda to *Imagining Minds* (2010), literary scholar Kay Young and neurologist Jeffrey Saver assert the centrality of narrative to how we understand the world and ourselves. “When we choose to be in the company of a story by reading a novel or seeing a film,” they explain, “the narrative sets itself off as a narrative, not as a part of our lives. . . . However, the storytelling we experience as an event in life can lose its appearance as narrative by virtue of its integration in life” (2010, 186). According to this definition there are two types of narrative, one that we consciously consume and one that is part of the texture of our lives. And yet the two modes are bound to overlap and influence each other.14 Storytelling plays a central role in memory formation and counterfactual thinking; it is what allows us to communicate events we have experienced or imagined to others, who can then in turn imaginatively simulate those events and therefore share our experience to some degree. This might happen in everyday life or on the pages of a novel or film script. As Patrick Colm Hogan has shown, the creative imagination of authors is a function of simulation that “is continuous with our ordinary cognitive processes of counterfactual thinking” (2013, xiii).15 Functionally, the brain does not really differentiate between consciously constructed and consumed narratives and other, less conscious forms of narrativization. “Whether we experience events in real life, watch them in a movie, or hear [or read] about them in a story,” explains Zacks, “we build perceptual and memory representations
in the same format” (2015, 150). This is why we can learn from stories in ways that impact the narratives of our everyday lives.16

Narrative, then, is a means for making sense of the world; not only of the imaginary world on the pages of a book or on the silver screen of a movie theater, but also of the actual world in which we live out our lives. In David Herman’s influential definition, it is “a basic human strategy for coming to terms with time, process, and change—a strategy that contrasts with, but is not inferior to, ‘scientific’ modes of explanation that characterize phenomena as instances of general covering laws. Science explains how in general water freezes when . . . its temperature reaches zero degrees centigrade; but it takes a story to convey what it was like to lose one’s footing on slippery ice on a late afternoon in December 2004, under a steel-grey sky” (2007a, 3). Herman’s example encompasses both modes of narrative—the one that structures our present and past experiences and the one that we consciously construct and consume in storytelling. The second one arguably is already an example of an environmental narrative because it focuses on the conveyance of the sensual experience of and physical interaction with one’s environment: the experience of losing one’s footing on slippery ice on a winter day. That conscious experience of one’s environment tends to be subjective and unique and therefore involves what cognitive scientists call qualia. As Janet Levin explains, the term qualia is “most commonly used to characterize the qualitative, experiential or felt properties of mental states” (1999, 693). In his essay “What Is It Like to Be a Bat?” the philosopher Thomas Nagel puts the problem in simpler terms: qualia are the sense or feeling of “what it is like” for someone to undergo conscious experience (1974, 435). A narrative, in Herman’s example, is different from a scientific account in that it will allow those who receive it to imagine that sense or feeling of what it is like to lose one’s footing on slippery ice. It will cue recipients—be they viewers, listeners, or readers—to simulate that sense or feeling in their minds, using their own real-world experiences as models and their own bodies as sounding boards for the simulation. Psychological research suggests that the events we mentally simulate in response to a story can continue to impact our emotions, attitudes, and behaviors after we have finished engaging with it (Mar et al. 2011; D. Johnson et al. 2013). To date, only very little of this exciting research has made inroads into ecocriticism or the environmental humanities more generally. This is remarkable not only because these fields have always been more open to scientific approaches than many other critical discourses within the humanities, but also because scholars working in these fields are often so intent on changing human–nature relationships for the better.
ECOCRITICISM AND THE STUDY OF AFFECTIVE AND EMBODIED COGNITION

From its inception in the early 1990s, ecocriticism has placed great trust in the ability of environmental narratives to have lasting effects on the attitudes and behaviors of their readers. Many ecocritics have also had an eye on perceptual and affective processes in that context, asserting that they are important not only in the production of environmental narratives but also for their societal effects. Lawrence Buell, for example, claims in *The Environmental Imagination* that for nature writers like Henry David Thoreau and John Muir “aesthetics was continuous with environmentalism” and that “a deeply personal love and reverence for the nonhuman led, over time, to a deeply protective feeling for nature” (1995, 137). That sensual pleasure and personal love for the nonhuman found expression in texts such as Thoreau’s *Walden*, which, according to Buell, had an affective impact not only on specific readers but on American society as a whole. This implies that the affective and propositional understanding of readers—and even that of non-readers—can be shaped or at least influenced by environmental narrative.

Buell’s belief in the emotional valence and social efficacy of nature writing and other environmentally oriented texts is shared by many environmental writers and critics. Scott Slovic has argued that Thoreau and other American nature writers were “constantly probing, traumatizing, thrilling, and soothing their own minds” in order to sensually and affectively immerse readers in very similar ways into the natural environments they depicted and thereby provoke some kind of “awakening” or heightened modes of “awareness” (1996, 352). In her introduction to *The Cambridge Companion to Literature and the Environment*, Louise Westling points out that “mid-twentieth-century works such as Aldo Leopold’s *Sand County Almanac* urged an ethics of nature and wildlife preservation, and Rachel Carson’s *Silent Spring* dramatized the devastating ecological effects of pesticides, creating a national uproar that helped to launch the American environmental movement and spread its influence around the world” (2014, 5). The urging in Leopold’s *Sand County Almanac*, the probing in Thoreau’s *Walden*, and the dramatization Westling detects in Carson’s *Silent Spring* all belong to a repertoire of rhetorical and narrative techniques that aim to engage readers sensually and emotionally and thereby move them to action. The belief that the use of such narrative techniques in environmental nonfiction has had tangible effects on individual American readers and the larger public sphere is common among ecocritics. There tends to be more ambiguity and disagreement when it comes to the question of what genres of fiction in literature and film are most effective in changing our
perceptions of and attitudes toward nonhuman nature—and to the issue of whether works of art should be expected to do that at all. Nevertheless, there is a certain consensus that emotionally powerful renderings of human–nature relationships play an important role in our engagement with environmental narrative and that such engagements can have substantial repercussions in the real world.

Much of the evidence we usually rely upon for such assertions is anecdotal and/or phenomenological, as in the case of evolutionary literary scholar Jonathan Gottschall’s acknowledgement that he finished McCarthy’s *The Road* “flopped in a square of sunlight on my living room carpet, the way I often read as a boy. I closed the book and trembled for the man and the boy, and for my own short life, and for my whole proud, dumb species” (2013, xvi). What Gottschall describes here is one highly trained and critical reader’s unabashedly emotional response to a fictional narrative. As it is the case for all readers, his experience of the novel is embedded in his previous experiences and knowledge of the world, and so his emotional response to its ending is not solely a response to the fictional fates of its characters. When Gottschall trembles for the man and the boy, his emotional response concerns the storyworld of the novel; when he does the same for his “own short life, and for [his] whole proud, dumb species,” however, he moves beyond the fiction in his imagination, making the connection to his own existence and even to the future of all of humanity on the actual planet Earth. Of the end of the novel, he writes, “everything is precarious. The whole ecosystem is dead, and it’s not clear whether the people can survive long enough to recover” (xvi). Gottschall’s concern is not explicitly ecocritical, but he does suggest that while science cannot answer what will happen to McCarthy’s virtual world, it “can help explain why stories like *The Road* have such power over us” (xvii). That power involves making a reader consider the potential real-world relevance of the fictional events he has experienced vividly and in an emotionally salient way, and Gottschall suggests that scientific research—including neuroscience, cognitive psychology, and evolutionary biology—can give us a better understanding of how certain narratives impact readers in ways that resonate beyond the immediate reading experience.

There are at least three other possible routes within environmental criticism to approaching these issues, all of them sharing some theoretical ground with the approach I am developing here: ecophenomenology, material ecocriticism, and ecocritical appropriations of affect theory. The first is based on the recognition of the value of phenomenological thinkers for ecocritical readings. Of particular relevance is the work of European philosophers such as Edmund Husserl, Martin Heidegger, and Maurice Merleau-Ponty, which
focuses on our physical dwelling in place and claims that it is only as spatially and temporally embodied beings that perception and understanding can take place. Louise Westling has argued for the particular relevance of Merleau-Ponty because, unlike Heidegger, he was able to embrace physical similarities between humans and other animals, suggesting that “all beings exist intertwined and in constant interaction with the flesh of the world around them” (Westling 2012, 127). As Westling points out, Merleau-Ponty was constantly engaged with the science of his day: Gestalt psychology and neuroscience during the 1930s and 1940s; physics and evolutionary biology during the following decade. Today, his work informs much of the enactivist strand within embodied cognition, which embraces all four of the 4Es—posing that the mind is embodied, embedded, enactive, and extended—and also places great emphasis on the experiential and affective components of meaning making (Kukkonen and Caracciolo 2014).

The early enactive thought first developed by Francisco Varela, Evan Thompson, and Eleanor Rosch in The Embodied Mind (1991) also informs some work within the diverse field of material ecocriticism. As Serenella Ioviono and Serpil Oppermann explain in their introduction to Material Ecocriticism, ecocritics who ride “the new materialist wave of thought” are interested in “the emerging dynamics of matter and meaning, body and identity, being and knowing, nature and culture, bios and society . . . not in isolation from each other but through one another, matter being an ongoing process of embodiment that involves and mutually determines cognition, social constructions, scientific practices, and ethical attitudes” (2014, 5). Material ecocriticism is not the first approach within environmentally oriented literary and cultural studies to have challenged the Cartesian division between body and mind, nature and culture. Cultural ecology, for example, as it has been conceived and developed by the German literary scholar Hubert Zapf, “considers the sphere of human culture not as separate from but as interdependent with and transfused by ecological processes and natural energy cycles” (2008, 851). However, in the material ecocritical approach, nature and culture are seen not only as interdependent, but as an inextricable and inescapable “mesh.” Not only is all cognition necessarily embodied and embedded, the body itself also becomes a site of interpretation. There are literally no boundaries in this approach to embodiment, which also takes cues from quantum physics. Mind is understood as “a medium in which we are corporeally situated and from which we are simply unable to extricate ourselves without ceasing to exist” (Abram 2014, 303) and sympathy as a “mode of natural causality” that “names not only an inner psychological state but, more fundamentally, an impersonal ontological infrastructure, an undesigned system of affinities”
Neither minds, nor bodies, or even sympathies are confined to an individual experiencer in this approach. It is all out in the open, shared and constituted in the interaction of everyone and everything.

This interest in the manifold and complex interactions, exchanges, and circulations between narratives, bodies, and environments is echoed within recent affect theory, which couches its insights in a similarly dense jargon and also shares in the conceptual unwillingness to accept boundaries of any kind. Affect, declare Melissa Gregg and Gregory Seigworth in their introduction to the *Affect Theory Reader*, “is found in those intensities that pass body to body (human, nonhuman, part-body, and otherwise), in those resonances that circulate about, between, and sometimes stick to bodies and worlds, and in the very passages or variations between these intensities and resonances themselves” (2010, 1). Ondine Park, Tonya Davidson, and Rob Shields’s introduction to *Ecologies of Affect* traces the history of affect studies back to Deleuze’s 1978 lectures on Spinoza, in which he revived the Latin concept of *affectus*, defining it as a change in one’s “force of existing” (2011, 4). The affective dimension of experience, in this definition, is nothing more and nothing less than an “increasing and decreasing capacity to act” (4) and necessarily involves a wide range of feelings. Ecocritics have found the work of affect theorists such as Brian Massumi (2002), Sara Ahmed (2004), Lauren Berlant (2008), and Sianne Ngai (2007) productive for the analysis of how the affects produced by a nonfiction text such as Carson’s *Silent Spring* circulate in the public sphere (Lockwood 2012), how narrative fiction envisions the endangerment and technologization of both human bodies and environmental systems (Houser 2014), and how a TV series such as *Northern Exposure* structures its narrative around an ambiguous and protracted affective state such as irritation (Goldberg 2015). There is a growing interest within the field in theorizing our affective engagements with environmental narratives, and an engagement with theoretical work on affect offers one way to do this.

Like ecophenomenology and material ecocriticism, affect studies approaches tend to be firmly anchored in European traditions of philosophical thought, even as they recognize the relevance of contemporary cognitive science. Acknowledging that “phenomenology, trauma studies, psychoanalytic theory, queer theory, and microhistories of the social are just some of the domains where emotion has been a key analytic for several decades,” Houser maintains that “two commitments stand out to affiliate accounts of affect in these areas as well as in the cognitive sciences, aesthetics, and political philosophy: determining how objects and events rise to attention in our personal worlds and how attachments, detachments, and commitments form from that attention” (2014, 5). That certainly is true, but it does not change the fact that
affect studies’ relationship to the insights of contemporary cognitive science is at best tenuous and that the latter often defines and utilizes its conceptual terms in very different ways.

To date there are only a handful of ecocritical scholars who draw on the insights of cognitive science in their work, and even references to the work in cognitive narratology and film theory are rare to find within environmentally oriented scholarship. Nancy Easterlin—the first to speak of a “cognitive ecocriticism” (2010, 257)—has pointed out that this is remarkable, since “knowledge of human perception, cognition, and conceptual articulation is more crucial to the key issues underlying ecocriticism than it is perhaps to any other area of contemporary literary study” (2012, 92). Moreover, as both Erin James (2015) and Markku Lehtimäki (2013) have suggested, cognitive narratology offers valuable analytical tools for ecocritics who are interested in the formal aspects of representations of environment. Econarratology, as James defines and develops it in *The Storyworld Accord* (2015), draws on contextual and cognitive strands within narrative theory and carefully maps out the overlaps between that work and various ecocritical endeavors, while also demonstrating the relevance of such an interdisciplinary approach for the critical analysis of postcolonial literature. Easterlin’s *A Biocultural Approach to Literary Theory and Interpretation* (2012) uses insights from cognitive and evolutionary science in her analysis of “human way-finding” (90) and the embodied nature of human experience.

Such interdisciplinary approaches can bring out previously neglected aspects of the narrative strategies that writers use to create immersive environments for readers. At the same time, they can also highlight the importance of such environments for plot and character development, a point that tends to be downplayed in much of narratology. So far, there has been very little interest in environmental questions and issues within cognitive narratology, and so this field stands to learn much from ecocritical analysis. As James has observed, “all narrative texts, even those that do not seem to be interested in the environment in and of itself, offer up virtual environments for their readers to model mentally and inhabit emotionally” (2015, 34). The same is true for narrative films and their viewers. Open-minded dialogue between cognitive cultural studies and ecocriticism therefore stands to benefit both sides in the investigation of narrative.

In this book, I aim to contribute to and further promote such dialogue. I will be considering film as well as literature and, on the final pages, will also briefly turn to transmedia and digital narratives. In doing so, I will pay attention to a number of issues that have been of concern for scholars with an interest in the relationship between cultural texts and the environment,
among them environmental justice, animal studies, ecological citizenship, and eco-science fiction, and I will suggest that cognitive approaches to literature and film can greatly enrich our understanding of such issues. While they can in no way replace other ecocritical approaches, they can complement them, especially when it comes to questions of perception, embodiment, and emotion, which are highly relevant for the larger questions environmentally minded scholars tend to ask. An approach to environmental narrative that builds on this multifaceted work in cognitive science and cognitive cultural studies cannot only help answering Lehtimäki’s important question about how techniques for consciousness presentation can “be leveraged to suggest how characters’ experiences both shape and are shaped by their engagement with aspects of the natural world” (2013, 137); it can also give us a better understanding of the ways in which environmental narratives engage readers and viewers on the perceptual, cognitive, and emotional level and what consequences such engagement may have. Such an improved understanding, it seems to me, is of particular importance to ecocriticism, and to the environmental humanities more generally, precisely because research in this interdisciplinary field is so strongly invested in questions around the multifaceted interactions and interdependencies between human subjectivity, culture, and the natural environment. Easterlin suggests that “the sooner ecocritics begin to grapple with the how and why of the mind’s constructions, the sooner they will be able to formulate a workable epistemological stance and promote an informed awareness of the dynamic and mutually modifying sets of relationships—the ecologies—that shape life on Earth” (2012, 93).

Affective Ecologies aims to explore some of those hows and whys, and my hope is that it will be useful not only to ecocritics and scholars in the cognitive humanities, but also to those involved in environmental or science communication. The scientist-turned-filmmaker Randy Olson reminds us that humans are narrative creatures, so even scientists need “narrative intuition” if they want to communicate their findings effectively (2015, 20). In Olson’s view, such intuition entails the knowledge of the basic rules of narrative, but I would argue that it is just as important to understand how we engage with narratives and why it is that they can impact us so deeply.

THE STRUCTURE OF THE BOOK

Part I of Affective Ecologies explores the sensory and affective experiences cued by the American environments we find in literature and film. Chapter 1, entitled “Captivating Evocations: Literary Topophilia and Narrative Perspective,”
introduces the neuroscientific concept of *liberated embodied simulation* (Gallese and Wojciechowski 2011) and explores the role of simulation processes in readers’ sense of transportation and immersion into literary storyworlds. The chapter will look at two forms of environmental narrative that have often been hailed for their awareness-raising abilities—nature writing and environmental fiction. John Muir’s *The Mountains of California* (1894) and Bonnie Nadzam’s novel *Lamb* (2011) will serve as examples of such narratives, and they will also provide an opportunity to engage with claims made by scholars such as Richard Gerrig and Patrick Colm Hogan that there is no qualitative difference between fiction and nonfiction when it comes to processes of narrative transportation and readers’ affective engagement with the storyworld that is evoked by a literary text.

Chapter 2, “Touching Sights and Sounds: Embodiment, Emotion, and Cinematic Environments,” will then turn to film, exploring the ways in which audiovisual texts evoke environments in the embodied minds of viewers and how they make such environments, and their characters’ relationships to them, emotionally salient. After offering some theoretical insight into the role of embodied simulation in the viewing of film, it will explore how cinematic environments come to life for viewers on the emotional level in a variety of film genres. A cognitive reading of Jan De Bont’s *Twister* (1996) will demonstrate that *moving* environments are central to both enjoyment and narrative understanding in the disaster film genre. It will also explore the question of whether knowing that the storyworlds presented to us are *authentic* matters for our affective engagement. Josh Fox’s fracking-documentary *Gasland* (2010) will provide the basis for a discussion of the relevance of the fiction/nonfiction divide for viewers’ emotional responses to filmic representations of environments and human–nature relationships.

Part II of the book focuses on the moral dimensions of our empathic engagements in environmental narratives that are concerned with issues of exploitation, abuse, and injustice. Entitled “Imagining the Pain: Strategic Empathy and the Environmental Justice Narrative,” chapter 3 introduces the concept of “*authorial strategic empathizing*” (2010, 82) as it has been developed by Suzanne Keen, exploring how environmental justice narratives engage readers’ empathy strategically to make a moral argument about people who have been wronged. The chapter will briefly look at Helena Maria Viramontes’s *Under the Feet of Jesus* (1995) as an example of a text that offers an *insider view* on environmental injustice in the sweltering heat of the orchards of Southern California, discussing how such a narrative perspective implicates readers affectively in what is being told. Percival Everett’s *Watershed* (1996) will serve as an example of a text that uses a different narrative strategy, aligning readers
not with the victims of environmental injustice, but with an outsider who tries to help them—an outsider who himself belongs to a disenfranchised minority group. The chapter then turns to Michael Apted’s *Thunderheart* (1992) and Benh Zeitlin’s *Beasts of the Southern Wild* (2012) in order to demonstrate that the same two basic forms of strategic empathizing—the insider and the outsider perspective—can also be found in film and that they can be equally successful in cueing moral allegiance to the victims of environmental injustice.

Chapter 4, “Beyond Boundaries: Imaginary Animals and the Intricacies of Trans-species Empathy,” will continue the investigation of strategic empathizing in environmental narratives, now turning to cultural texts that focus on nonhuman animals. Questions around anthropomorphism and animal emotions will loom large in this chapter, which uses evidence from affective neuroscience and cognitive ethology—the study of animal minds—to explore the psychological mechanisms behind our emotional responses to the animals we encounter in literature and film. The chapter will look at Louis Psihoyos’s documentary *The Cove* (2009) and Michael Apted’s biopic *Gorillas in the Mist* (1988) to show how strategic empathy has been employed by filmmakers to align viewers with human characters who fight for nonhuman others. It will also consider literary texts as well as animated films such as George Miller’s *Happy Feet* (2006), which purport to offer an *insider perspective* on animal experience, centering their stories on heavily anthropomorphized nonhuman protagonists. Whether such portrayals cue trans-species empathy in their audiences, and whether there is any potential value in them beyond mere entertainment, is another issue that the chapter will explore.

Part III of *Affective Ecologies* will investigate our embodied experience of speculative future environments in eco(dys)topian narratives and the negative and positive emotions cued by such narratives in order to promote more sustainable lifestyles in the Anthropocene. Chapter 5, entitled “Troubling Futures: Climate Risk and the Emotional Power of Dystopia,” is interested in the emotional dimensions of risk perception as it pertains to transnational and global environmental problems such as climate change. Introducing the “affect heuristic” developed by the psychologist Paul Slovic and his collaborators, the chapter explores how popular science books make use of dystopian storytelling to make their arguments emotionally salient, cueing negative emotions such as fear, anger, and guilt. The chapter will also consider dystopian novels that either cue a range of negative emotions or, as in the case of T. C. Boyle’s *A Friend of the Earth* (2000), approach the issue through a layer of irony and satire, thereby providing emotional distance from the nightmarish scenarios they describe. The final section of the chapter will consider the ways in which Hollywood films have presented ecodystopian scenarios to provide audiences...
with entertaining viewing experiences, discussing whether any of these different affective stances can potentially promote social change.

Chapter 6, “Alluring Visions: Hope, Desire, and the Affective Appeals of Ecotopia,” is concerned with a range of positive emotions that might be cued when utopian narratives manage to avoid the much more problematic feeling of boredom. Andrew Dobson’s concept of ecological citizenship (2003) serves as a touchstone for the chapter’s consideration of the potential value of critical ecotopian narratives in instigating social change. Considering Kim Stanley Robinson’s speculative novel Pacific Edge (1988), it explores what—if anything—ecotopian scenarios, and readers’ embodied simulation of them, can contribute to political imaginations of ecological citizenship and environmental sustainability. The chapter will conclude with a discussion of James Cameron’s Avatar (2009), a film that follows the narrative conventions of the classical utopia and then makes its evocation of an ideal world exciting by endangering it. The fact that Avatar became the most successful film in history invites an exploration of the exact nature of the enticing world it depicts and the technical means by which it transports viewers into that alternative world, providing them with an emotionally salient virtual experience. The conclusion of the book will widen the scope of its exploration in a brief consideration of digital technologies that allow for even greater immersion than 3-D film and then closes with some thoughts on the importance of empirical research in the investigation of the affects and effects of environmental narratives.