William Shakespeare’s *King Lear* is our starting point, presenting a major theme that runs throughout this book. The theme concerns sight, the accuracy of our views, and the importance of seeing clearly, for a basic premise of this book is that our distorted vision has given rise to climate change. One implication of this is that if we are to successfully navigate the environmental threat of climate change that lies ahead of us, we need to correct this distorted sight. Only in this way can we set a new course of action that will effectively confront this threat.

In Shakespeare’s play, King Lear did not see clearly, and his misrepresentation of reality cost him dearly. A pivotal point in the play occurs when Lear asks his three daughters to profess their love for him. Two of his daughters, Goneril and Regan, have no particular love for their father, but simply say the words he wishes to hear. The third daughter, Cordelia, genuinely loves him in her own way, but finds herself unable to engage in this public stunt. Lear, an old man who wishes to have his ego fed by the pronouncements of his daughters, misperceives the situation. He praises Goneril and Regan for their pronouncements and angrily denounces Cordelia, taking away her inheritance and banishing her from his kingdom.

From this misperception one subplot in the play unfolds. The king, once the highest of the high, becomes a lowly wanderer in the wilderness, perplexed, lost both physically and emotionally, and heartbroken. The tragedy is that all this could have been avoided had Lear been able, at the urging of his loyal attendant Kent, to see better. But Lear, owing to his own vanity and
the veiled and forthright actions of those around him, could not accurately see what was before him. Consequently, in response to a misperceived reality, he acted in a manner that led to tragedy.

As in the case of Lear, tragedies can often be avoided. For example, during the maiden voyage of the Titanic, the ship’s captain, despite warnings of icebergs in the vicinity, continued to proceed at nearly full speed. Whether this lack of caution was due to a sense of invulnerability, a need to keep on schedule, or failed communications, is unclear. What is clear, however, is that the captain, Edward Smith, in an interview before the ship left port, reflected that he could not “imagine any condition which would cause a ship to founder. Modern shipbuilding has gone beyond that” (Wight 2012). A clear misperception, and the tragedy of the sinking is that the deaths of the more than 1,500 passengers who perished, out of 2,224 passengers on board, might have been avoided had the threat been acknowledged.

In general, as you’ll see in subsequent chapters, we often misperceive situations, and at times these misperceptions have dire consequences. Vanity and a misjudged sense of invulnerability are just two factors that have been shown to lead to misperceptions. Hopefully, by articulating these biases, acknowledging them, and taking them into account as we confront the challenge of climate change, we’ll be better able to face this challenge, see it for what it is, and effectively take action.

AVERTING A PRESENT-DAY TRAGEDY
Climate change and the environmental challenges that stem from it are the potential tragedies we need to clearly see and confront today. The point of this book is not to debate whether climate change has occurred. Within the scientific community, there is a resounding consensus that this threat is present, affects our lives, and must be addressed before it worsens. Many articles and books are devoted to the science behind it (e.g., IPCC 2014; Hansen 2010; McKibben 2010). Given this, there is no need for me to reiterate this information. Rather, I’ll simply introduce you to several challenges related to this threat and provide a few implications associated with it.

Climate change refers to what many people call global warming, climate destabilization, or climate chaos. The terms are meant to characterize the
general warming that has been recorded worldwide and the increasingly erratic and unpredictable nature of the climate. Given that people generally think of this issue in terms of climate change or global warming, let’s consider climate destabilization and climate chaos for a moment. These terms highlight the idea that weather events are more commonly occurring in places where they have infrequently occurred before, such as tornadoes in North Carolina and hurricanes increasingly affecting the northeast. Additionally, the term climate destabilization or chaos is preferred to the term global warming, because not every region experiences an increase in temperature at each season of the year. For instance, on the one hand, the general global-warming pattern results in hot days being hotter, more intense heat waves, more intense droughts with resultant wildfires, and milder winters for many. On the other hand, eventually, if the warmer waters from the gulf stream no longer flow north toward Great Britain owing to the snowmelt from Greenland and the Artic, Europe may experience colder winters (IPCC 2014). Overall, then, the terms climate destabilization and climate chaos capture the changing climatic conditions that are leading to more erratic and intense weather events. Increasingly, this is the nature of the climate and weather that we presently face and will be dealing with in the future. When hearing the term climate change, then, keep in mind its varied impacts.

Another critical point to reflect upon is that climate change has already occurred. It is present, affecting our lives today. We cannot somehow avoid it. We cannot make it go away. Our actions have changed the atmosphere of the earth we live on, and this change—even if we stopped using all fossil fuels today, no longer emitting even a single iota of CO₂ into the atmosphere—will remain for generations to come.

Bill McKibben (2010) states that we now live on a changed world, a world he calls “Eaarth.” Human emissions of greenhouse gases have already raised Earth’s temperature by .8 degrees Celsius. If we were to completely eliminate greenhouse gas emissions today, Earth’s temperature will still rise an estimated additional .8 degrees Celsius because of the lag time between emissions and temperature rise (McKibben 2012). In other words, we have already raised Earth’s temperature by approximately 1.6 degrees Celsius, and these changes will last for centuries. Our lives and the lives of future generations will be spent on this new planet, Eaarth.
Other scientists (Crutzen and Stoermer 2000), using different terminology, argue that we have transitioned from the Holocene period to the Anthropocene period, a name reflecting the impact that humans have had on the climate (anthro- meaning “human,” -cene meaning “new”). This transition is important to acknowledge because civilization emerged during the Holocene period, a time of a relatively benevolent climate that enabled humankind to flourish. A major question is whether human civilization can still flourish during this new period.

Generally, scientists agree that, if civilization is going to continue to prosper, it is imperative that Earth warms by no more than 2 degrees Celsius (McKibben 2012b). After that point, it will be increasingly likely that our ability to control the climate will become negligible. At some point after a 2-degree-Celsius increase, climate change may spiral out of control. All of our wants, wishes, and actions will be unable to rein in a climate that will have become uncontrollable. This “tipping point” concept is analogous to a person pushing a precariously perched boulder down a slope. Once it starts rolling, there’s nothing that anyone can do to stop it. We have to do everything possible to avoid pushing our climate into a runaway scenario, for at that point civilization will be threatened. So, when thinking of this issue, the best we can hope for is to avoid the worst that this challenge has to offer, minimizing the difference between our old Earth and Eaarth, which we now live on.

This issue in no way means that we need not continue to focus on environmental sustainability. Sustainability is still the number one goal. Equally important, however, is the need for us to figure out how we are going to live on this new Eaarth. This issue is reflected in the increased discussion of resiliency in the environmental literature (Dodman, Ayers, and Hug 2009; Doherty and Clayton 2011; Reser and Swim 2011). Increasing the resiliency of crops to drought, and the resiliency of individuals and communities to the impact of the intensification of weather, has become the topic of that discussion. In this book, I examine the factors that contribute to personal and community resiliency.

The heat waves we experience today are like none that humans have experienced for generations. This is an example of how Eaarth is different from our old Earth. In fact, the intensity of the heat wave that gripped Europe in the summer of 2003 had not been experienced in over five hundred
years, and the consequences were devastating. More than fifty-two thousand people, many of them elderly, died that summer from heat-related causes. At the peak of this heat wave, in August, over two hundred people died each day in France. Moreover, the parched landscape fueled brush and forest fires, streams and rivers ran dry, and food crops withered (Larsen 2006).

Similarly, Russia had not experienced a heat wave like it did in the summer of 2010 in over 130 years. More than 550 wildfires burned forests, grasslands, and wheat fields over some 430,000 acres. Army units were called into action to assist local fire departments in quelling these fires. Crops were damaged and destroyed by the extreme heat and by fire. A nation that had been a grain exporter placed a ban on exports (Brown 2010). This is one snapshot of Eaarth, on which we now live. The possible future in which these extreme heat waves become the norm and not the exception would be a tragedy. Indeed, these by-products of climate change could cost lives, damage the ecosystems in which we live, and jeopardize our food security.

On Eaarth today, not only are episodic heat waves more extreme, but also droughts last longer. The American plains states and the Southwest have been especially hard hit by drought. For instance, in 2011, Texas had the driest year in over 100 years (the driest since 1895, to be exact), and in 2013 California had the driest year on record. In fact, the western United States has been in a drought since the year 2000 (Rice 2014).

With increased droughts, farmers and ranchers in the West have few options but to become increasingly reliant on reservoirs of underground water. These underground reservoirs are called aquifers. The major aquifer in the Great Plains is called the Ogallala Aquifer. One of the world’s largest aquifers, the Ogallala Aquifer is located under portions of eight states (Texas, Oklahoma, Kansas, Nebraska, New Mexico, Colorado, Wyoming, and South Dakota). Many farmers and ranchers in these states rely on this water for irrigation of their crops and for cattle and other animals. Eighty-two percent of the people living over this aquifer rely on it for drinking water. This reservoir is being used up faster than it is being replenished. Drought only accelerates this problem. In fact, there are estimates that this aquifer will be dry within 25 years (BBC News 2003). This constitutes a major challenge not only to the livelihoods of farmers in this region but also to the general habitability.

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of the region. This is a food security issue, too. We need to avoid the tragedy of the United States’ breadbasket turning into a dust bowl, of megadroughts, lasting from 30 to 100 years, turning agricultural lands and ranchlands into parched deserts. In fact, megadroughts are projected for the Southwest if we do not change our present course of action (McIntee 2015).

On a related note, warming trends also lead to less snowfall in mountain regions of the world, affecting what some refer to as “reservoirs in the sky.” During summer, many farmers rely on snowmelt for irrigation. Ranchers rely on this for their animals. Others rely on it for drinking water. For instance, on April 1, 2015, the snowpack reading in the Sierra Nevada was the lowest it had been in sixty years. This led the governor of California, Jerry Brown, to announce an executive order. To highlight the ongoing drought that California is facing, Brown made his announcement from a high meadow in the Sierra Nevada, beginning his speech by saying, “We’re standing on dry grass. We should be standing on five feet of snow.” He went on to order towns and cities across California to cut water use by 25 percent. Emphasizing that the drought might very well persist, he acknowledged that “it’s a different world” we live in today, and that, accordingly, “we have to act differently” (Megerian, Stevens, and Boxall 2015).

This issue of reductions in the snowpack is far reaching. It certainly relates to the snowmelt from the Sierra Nevada that nourishes the farmlands in the Central Valley of California and towns and cities throughout the state. Similarly, the snowmelt in the Rockies feeds the Colorado River. Snowmelt from the Hindu Kush, Pamir, and Tien Shan mountains provides water to many countries in Central Asia (e.g., Uzbekistan, Turkmenistan, Kyrgyzstan, Tajikistan, and Afghanistan). And snowmelt from the Himalayas feeds every major river in Asia, where half of the people in the world live.

Himalayan snowmelt feeds the Yellow River. Having less water in the Yellow River will directly affect China’s wheat harvest. And if reduced snowmelt lowers the level of the Yangtze River, China’s rice production will be directly affected. Similarly, if the water in the Ganges and the Indus Rivers is reduced, shortfalls in India’s wheat harvest will occur, while if the Mekong River receives less water, Vietnam’s rice harvest will suffer. In this Asian region that is so heavily populated and projected to have a dramatic rise in population in the coming years, food shortages would lead not only to
human suffering but also to possible political instability and conflict. This is where we are heading as a human race if we don’t curb climate change.

With the melting of the arctic ice, the Greenland glaciers, and the general warming of the oceans, sea-level rise will increasingly affect low-lying coastal areas. Already, some seaside communities on the Eastern Seaboard, ranging from north of Boston south to Cape Hatteras in North Carolina, are experiencing the initial challenge of sea-level rise (Sallenger, Doran, and Howd 2012). Many coastal cities in the United States are expected to experience ill effects from rising sea levels later in this century (New York Times 2016). For instance, in Boston, a five-foot sea-level rise would result in parts of Logan Airport disappearing. Boston Harbor would begin to infringe on the downtown area, and the Charles River would flood much of southern Cambridge. As for Charlestown, South Carolina, the coastline is projected to move several miles inland. A similar fate is in store for the Miami area, where the sea is expected to submerge the barrier islands, Miami Beach, and much of suburban Miami. In New York, given a five-foot sea-level rise, La Guardia Airport would be threatened by the encroachment of the East River and the port complexes would be flooded. Much of Atlantic City, too, would be flooded, as would the Meadowlands. I could go on and on, but I’m sure you get the idea. The implications of this are staggering. If we do not act to prevent such damage by limiting sea-level rise, tough decisions will have to be made. Do we spend vast sums of money to protect these areas—the facilities, the airports, and the people whose homes are located in these areas—or at some point do we simply decide that these areas are no longer habitable? And if the latter decision is made, where do these people go?

Of course, this issue affects communities and nations around the globe. Millions upon millions of individuals live in coastal areas. In southeast Asia, Bangladesh, a country of 156 million people, experiences flooding each year, which covers a quarter of the country. Climate change is making flooding worse. A number of small islands, such as the Maldives, Tuvalu, and Tegua, are being threatened by sea-level rise. Many of the residents of these islands have already packed up their belongings and relocated (The Guardian 2009).

As time passes in this century, climate change will increasingly force people to relocate. In 2008 alone, some 20 million people were displaced by climate-related natural disasters (The Guardian 2009). As President Mohamed

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Nasheed of the Maldives stated in testimony to the Environmental Justice Foundation, the people in his country do not want to “trade a paradise for a climate refugee camp.” Yet, if climate change goes unabated, over the next forty years an estimated 150 million climate refugees will be forced to move to other countries. This is a tragedy on a global level. We need to see that this threat never becomes a reality.

Climate change has a myriad of problems associated with it. I’ve touched upon only a few. Other issues include health concerns associated with tropical diseases moving farther north with the warming of the planet. For example, mosquitoes that carry malaria and dengue fever are moving north as the climate warms. Warmer summers and milder winters have also led to an outbreak of mountain pine beetles, which have devastated millions of acres of ponderosa and lodgepole pine forests in the western United States and Canada. Not only does the devastation of these forests negatively affect the removal of CO₂ from the atmosphere, but also the presence of millions of acres of dead trees exacerbates the threat of forest fires. The uptake of CO₂ by the oceans has led to increased acidification of these waters and the undermining of marine ecosystems, such as the bleaching of coral reefs.

This is Eaarth, on which we now live, and these projections tell us about Eaarth of the very near future. In response, actions are being taken. Water conservation measures in California are one action. Efforts to limit the construction of new CO₂-emitting coal plants are another. Miami is taking steps to deal with flooding caused by sea-level rise. These and similar efforts are important and necessary steps to take, but they are limited. Let me explain why.

In an interesting discussion of cures versus symptom relief, Martin Seligman (2011) says that there are two kinds of medications: cosmetic drugs and curative drugs. A curative drug, such as an antibiotic, kills the bacterial invaders. With the pathogens dead, the person can stop taking the antibiotic without fear of the disease recurring. On the other hand, a cosmetic drug removes the symptoms, providing relief, but doesn’t cure the disease. For instance, when treating malaria, taking quinine results in temporary relief, or suppression of the symptoms. However, if a person stops taking quinine the symptoms return. While this relief is important, it is not a cure.

When confronting the “illness” of climate change, I view many of the present interventions as more cosmetic than curative. Think, for a moment,
of CO₂ emissions and overconsumption as symptoms. Interventions aimed at suppressing these symptoms are important, then, since they provide relief from these ever-increasing threats. But are they cures? Is a carbon tax really a cure, or an attempt to suppress this symptom? Is the attempt to have people turn off their televisions or not purchase anything for a day really a cure, or simply another attempt to suppress an unwanted behavior? Or, when considering the consequences of CO₂ buildup in the atmosphere, such as sea-level rise, is building a seawall to confront sea-level rise really a cure? We can build seawalls and spend millions on pumps to fight the flooding. Similarly, we can spend millions of dollars trying to suppress unwanted actions, such as overconsumption. These actions aimed at suppressing symptoms like overconsumption and CO₂ are meaningful actions that need to occur, but what about treating the underlying cause? Have many of our efforts in the past failed because they were directed at the symptoms and not at the underlying cause?

ENVISIONING PSYCHOLOGY AS A FOUNDA TIONAL SCIENCE TO CONFRONT THE ENVIRONMENTAL THREAT OF CLIMATE CHANGE

Thinking about climate change and other environmental threats, Stuart Oskamp (2000) wrote an interesting article titled “Psychological Contributions to Achieving an Ecologically Sustainable Future for Humanity.” In that article, he states, “It is essential for us to realize that [climate change and environmental threats] are not solely technical problems, requiring simply engineering, physics, and chemistry for their solution. There is a crucial role for the social sciences in these problems because they are all caused by human behavior, and they can all be reversed by human behavior” (375, emphasis in the original). More recently, Robert Gifford (2014) underlined the idea that since climate change is predominantly caused by greenhouse-gas-emitting human activities, it can largely be reduced by changing human behavior. The problem, however, is that “human behavior is the least understood aspect of the climate change system (Intergov. Panel Climate Change 2007). Thus, unfortunately, the main cause of the problem is the least understood element. Understanding behavior at the psychological level of analysis therefore is essential, given that the cumulative impact of individuals’
decisions and behaviors is the key factor driving climate change” (Gifford 2014, p. 554). My intent in writing this book is to shed light on the psychology behind climate change.

In 2009, a summary of psychological research on climate change was presented to the American Psychological Association Task Force on the Interface Between Psychology and Global Climate Change. As a follow-up to this report, a series of articles appeared in a special issue of the American Psychologist. In one of these articles, titled “Psychology’s Contributions to Understanding and Addressing Global Climate Change,” several of the leading researchers in this area—Janet Swim, Paul Stern, Thomas Doherty, Susan Clayton, Joseph Reser, Elke Weber, Robert Gifford, and George Howard (2011)—presented an interesting model of the interplay between human and environmental systems related to climate change. I’ve modified this model and have used it as a framework for the contents of the present book (see figure 1.1).
Commenting on this model, I can say that the main task I see before us is to create harmony between “human systems” and “environmental systems” (the A–E relationship). In relation to climate change, this means we need to consider how, as part of the human systems, the cultural worldview that characterizes the United States influences “psychological processes” (i.e., thoughts, feelings, and motivations) that cause the “human contribution to climate change” that negatively impacts “environmental systems.” In the model, this is the flow from A to B to C to E. I discuss this part of the model in chapter 2.

Mitigation (D in the model) refers to actions people can take to lessen their impact on the climate. There are various barriers, however, that prevent people from engaging in mitigating actions. Chapter 3 examines these barriers. One barrier concerns the direct impact that the worldview predominant in the United States has on mitigation (the A to D relation), while other obstacles relate to the impact this worldview has on other psychological processes that limit mitigation (the A to B to C to D flow). Moreover, obstacles associated with psychological processes that are independent of this worldview are presented in this chapter (the B to C to D link).

An alternative worldview that is positively associated with mitigation and reducing the human contribution to climate change is presented in chapter 4. An overview of the research illustrating the positive impact of this worldview on creating greater harmony between human systems and environmental systems is presented in this chapter. Additionally, I highlight the positive impact of this alternative worldview on other psychological processes. With reference to the model, chapter 4 explores the same links as in chapter 3, but instead of focusing on the negative impact of the U.S. worldview, my discussion in chapter 4 shifts to the positive impact of this alternative worldview. In a follow-up to this research overview, chapter 5 illustrates how communities and individuals are actually transitioning to this alternative worldview.

Lastly, chapters 4 and 5 also consider our life on this new planet, Eaarth. These chapters touch upon the A to B to F to G set of relationships. Given the “human consequences of climate change,” issues concerned with how we are to adapt to living on this new planet, Eaarth, need to be addressed. Overall, this model illustrates the various issues and questions I address in this book.
The Psychology of Perception versus Reality

A basic premise of this book is that the worldview that characterizes the United States is the underlying cause of climate change. This worldview leads us to misperceive our relationship to the natural world, and the distorted view that results from this worldview has led us into an environmental trap. From this perspective, if we are to truly avoid the tragedy associated with climate change, we need to change our worldview. We need to remap or reorient ourselves, so to speak, to the way we see ourselves relative to nature and, in this remapping, to discover a new collective path to take. Before venturing further into this argument, however, let me lay a bit of groundwork.

First, I need to elaborate on the distinction between perception and reality: “see better” is not just a statement that Kent makes to Lear. From psychology’s very beginning, psychologists have been interested in helping people to more clearly see themselves, their motivations, the impact that they have on others and that others have on them, and why they act the way they do. In doing so, psychologists have identified a number of factors that lead people to misperceive the world in which they live.

For instance, since early in psychology’s history the distinction between perception and reality has been of paramount importance. As depicted in my adaptation of Brunswik’s (1939, 1952) lens model (figure 1.2), the objective image of reality is transformed through specific constructive processes of the mind. These constructive processes include knowledge structures, principles of unit formation, and the desires of the self, or self-motives. As you can see in this figure, the unit formation principle of good continuation might lead a person to perceive the snake as being a “better form” (i.e., perceive it more clearly) than the objective reality may warrant.

Knowledge structures include our shared cultural worldview and other idiosyncratic knowledge structures. For instance, the constructive processes of the mind, as related to the shared cultural worldview regarding snakes, may lead a person to fear snakes. Generally speaking, our shared knowledge structure of snakes is one of concern, wariness, and fright. However, our idiosyncratic knowledge of snakes may also come into play. For example, I grew up around snakes. I know that certain snake species, such as the rattlesnake, are to be feared, while others, like the king snake, are
harmless. In other words, my idiosyncratic experience (i.e., my unique experience, which is generally not shared by others) may lead me to operate in a perceived reality very different from that of someone who relies only on the cultural worldview. I would be calm in the presence of a king snake. I might even approach it and pick it up. On the other hand, my wife (who did not grow up around king snakes) would not act nearly so calmly. Thus, even under identical objective realities, the perceived realities we operate within can dramatically differ from those of another person, owing to how our minds transform this objective information.

Early work on the constructive processes of the mind emphasized how experiential factors can serve as part of the constructive process of the lens. The constructive process transforms the objective reality into a perceived reality that is often very different. The distinction, then, between the distal

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stimulus and the final percepts is critical, for what we “see” may greatly differ from what is objectively “out there.”

For an illustration of this point, look at figure 1.3 and then figure 1.4. What do you see? Most people see the second image as consistent with the first image (i.e., as an old woman). Now show figure 1.5 to someone and then figure 1.4. What do they report seeing? Most people who view figure 1.5 first
will see figure 1.4 as the image of a young woman. Think about this for a moment. When presented with identical images (i.e., figure 1.4), people more often than not see them differently because of their prior experiences (i.e., depending upon whether they first saw 1.3 or 1.5). Their prior experiences lead to expectations, and these expectations lead them to “see,” not the reality of an ambiguous figure, but an articulated image consistent with their expectations.

**Schemas and Misperceptions**

In Brunswik’s day, one’s initial exposures to an image were thought to create a mental set, a cognitive framework that became part of the constructive process of the mind, which predisposed people to view an ambiguous image in a manner consistent with the mental set. Today, mental sets are called schemas. Schemas are defined as organized bodies of knowledge. In the young woman/old woman example, the organized body of knowledge was the unambiguous old or young figure to which a person was initially exposed.

For a real-life example, think of the city of Los Angeles for a moment. We all have an organized set of beliefs and attitudes about L.A. For myself, congested freeways, urban sprawl, sunny beaches, the Lakers, and Hollywood