center for climate protection

Don't Even Think About It:
Why Our Brains Are Wired To Ignore Climate Change

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Chapter Summaries by Jock Gilchrist.
Text in quotations is direct from text in the book.

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Most of us recognize that climate change is real, and yet we do nothing to stop it. What is this psychological mechanism that allows us to know something is true but act as if it is not? George Marshall's search for the answers brings him face-to-face with Nobel Prize-winning psychologists and the activists of the Texas Tea Party; the world's leading climate scientists and the people who denounce them; liberal environmentalists and conservative evangelicals. What he discovers is that our values, assumptions, and prejudices can take on lives of their own, gaining authority as they are shared, dividing people in their wake.

With engaging stories and drawing on years of his own research, Marshall argues that the answers do not lie in the things that make us different and drive us apart, but rather in what we all share: how our human brains are wired—our evolutionary origins, our perceptions of threats, our cognitive blind spots, our love of storytelling, our fear of death, and our deepest instincts to defend our family and tribe.

Once we understand what excites, threatens, and motivates us, we can rethink and reimagine climate change, for it is not an impossible problem.

In the end, Don't Even Think About It *is both about climate change and about the qualities that make us human and how we can grow as we deal with the greatest challenge we have ever faced.*

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Chapter 1: Questions

"I have come to see climate change in an entirely new light: not as a media battle of science versus vested interest or truth versus fiction, but as the ultimate challenge to our ability to make sense of the world around us. More than any other issue it exposes the deepest workings of our minds, and shows our extraordinary and innate talent for seeing only what we want to see and disregarding what we would prefer not to know."

"Climate change contains none of the clear signals that we require to mobilize our inbuilt sense of threat."

Chapter 2: We'll Deal with That Lofty Stuff Some Other Day – Why Disaster Victims Do Not Want to Talk About Climate Change

One would think that in the wake of a climate disaster, like Hurricane Sandy, climate change would be a key buzzword in discussion and consideration for future planning. But climate disasters actually activate coping mechanisms that make it more likely to deny climate change. Marshall's examples are two towns devastated by a fire and a hurricane. The residents' decision to stay and rebuild instead of relocate is essentially a gamble. Gambling augments our sense of future invulnerability: to cope with a gamble one relies on optimism, belief in a positive story, and hope—things that can be impervious to statistics. It makes sense that the climate change narrative, one of "responsibility, austerity, and future hardship," would be unwelcome in a community recovering from climate disaster despite the fact that extreme fires and hurricanes are linked with climate change.

Chapter 3: Speaking as a Layman – Why We Think That Extreme Weather Shows We Were Right All Along

Extreme weather events are a Rorschach onto which we project our confirmation bias. "Weather events can never be ascribed with certainty to climate," so "if we regard climate change as a myth, we regard variable and extreme weather as proof that weather can be naturally variable and extreme. If we are disposed to accept that

climate change is a real and growing threat we are liable to regard extreme weather as evidence of a growing destabilization." Whatever the interpretation, it reinforces one's preexisting view. Linking extreme weather events to climate change can build public solidarity, but is also potentially divisive. Those who already agree will continue to agree, but it might also galvanize deniers and skeptics.

Chapter 4: You Never Get to See the Whole Picture – How the Tea Party Fails to Notice the Greatest Threat to Its Values

Rural Texan Tea Partiers share many traits with grassroots environmentalists. They are "boisterous, opinionated, autodidactic, and tribal." So "what had led them to reject the one issue that, above all others, truly threatens the things that are most important to them: family, property, freedom, their beloved country, and God's creation—one… that has reached this critical stage because of the thing they hate the most: government and corporate self-interest?" Marshall asserts that their denial of climate change is not about the issue itself, but the way it has been told, who tells it, and how it coalesces with their values.

Chapter 5: Polluting the Message – How Science Becomes Infected with Social Meaning

Science becomes polluted with social meaning. "Rational scientific data can lose against the compelling emotional story that speaks to people's core values." And, "Communications from people's family, friends, and those they regard as being like themselves (their peers) can have far more influence on their views than the warning of experts." The worldview of one's social group is of prime importance. Remaining part of a social group and having belonging is an ancient survival mechanism. It is core to the way humans find meaning. It is an instinct not likely to be thwarted by a chart. If data conflicts with the worldview of one's social group, the data is apt to lose.

Chapter 6: The Jury of Our Peers – How We Follow the People Around Us

The bystander effect applies to climate change. "Social conformity is not some preference or choice. This is a strong behavioral instinct that is built into our core psychology." And, "The social cost of admitting a mistake and the effort required to change a behavior may be so great that it is easier to continue with a known lie." This runs the risk of "creating a society in which the majority of people keep silent because they fear that they are in the minority."

Chapter 7: The Power of the Mob – How Bullies Hide in the Crowd

In-group and out-group behavior is typical in climate change discussion, creating an "us vs them" narrative. Such behavior makes people more likely to "exaggerate their own worthiness and denigrate their opponents." We feel our in-group is automatically right. "While the bystander effect emerges from a sense of shared powerlessness… a sense of shared power enables a range of abuses and violence." This plays out insidiously on the internet. Marshall notes that on online forums, Facebook, and comment sections, climate scientists in particular have been vilified to an extent previously unparalleled. "Louis Pasteur never considered learning how to use firearms; Jonas Salk did not need to fortify his house"—both things that Stephen Schneider, a well-known US scientist, did, when he found out he was on a "death list" on a neo-Nazi website.

Chapter 8: Through a Glass Darkly – The Strange Mirror World of Climate Deniers

Climate skeptics and deniers twist the same arguments levied by climate activists and throw them back. Marshall spoke with a prominent denier: "Our discussion is marked by a banter in which every criticism that might be made by climate change campaigners is repeated and returned with interest. Greens are corrupt. Greens are political extremists. Greens distort the science for their own ends. Skeptics ... are the underdog in a corrupt world fighting for a just cause."

Chapter 9: Inside the Elephant – Why We Keep Searching for Enemies

Marshall describes the search for, and creation of, enemies in the climate battle, and identifies a narrative template, subject to inversion, that could fit both advocates and deniers. "They (the other side) needed a new enemy after the end of the Cold War and needed a political cause that would enable them to exercise political influence. So they created a story around their political worldview designed to play to people's fears and

weaknesses with us as the enemy. They try to play the moral high ground but their real motives are money and political influence. They claim that they are weak, but actually they are much more powerful than us because they have the support of large funders with overt political interest and because they are promoted by a lazy and biased media. We get abused and sometimes even get hate mail and death threats, but it's our duty to expose these lies in the interest of the world's poorest people and to save civilization from the greatest threat that has ever faced." Such a narrative works for climate deniers and activists alike. Marshall believes the enemy narrative distracts from a more productive approach of building consensus and action around climate, namely a narrative around "cooperation, mutual interests, and our common humanity." In fact, "**history has shown us too many times that enemy narratives soften us up for the violence, scapegoating, or genocide that follows**." The potential paradigm shift involves moving instead to a story about our shadow, our inner demons, our internal struggle writ large. According to ABC telejournalist Bill Blakemore, there has been "'a grave failure of professional imagination about how to advance this great and transformative story, which never should have been 'shoveled into the environmental slot.'" Maybe climate change should be a people issue, not an environmental one. "…I have become convinced that the real battle for mass action will not be won through enemy narratives and that we need to find narratives based on cooperation, mutual interests, and our common humanity."

Chapter 10: The Two Brains – Why We Are So Poorly Evolved to Deal with Climate Change

Evolutionary psychology suggests that "we apply to climate change the psychological tools we have evolved to cope with previous challenges, and that these may turn out to be inappropriate for this new threat." The "rational brain" and the "emotional brain" communicate in the decision-making process, but ultimately the emotional brain, mediated by the amygdala, decides where the organism goes. Moreover the emotional brain is adapted to evaluate and respond quickly, and climate change presents no immediate evidence of danger. Thus, jumping into action can be hard. We are "convinced" by data, theory, and graphs about climate change but not spurred to action by them. Thus "the view held by every specialist I spoke to is that we have still not found a way to effectively engage our emotional brains in climate change." To effectively communicate about climate change, we must appeal to both brains, so that the issue is both credible and actionable. Marshall suggests that climate deniers begin with the emotional side of the picture – a worldview informed by social cues, their in-group, and a compelling narrative they buy into – and then move to the rational side, seeking justification for their view in data. But "they are convinced that they have built their emotional argument on the back of a rational evaluation of the data."

Chapter 11: Familiar Yet Unimaginable – Why Climate Change Does Not Feel Dangerous

Paul Slovic, a psychologist studying the perception of risk, says that climate change does not activate our risk responses that impel people to action. A lot of behaviors and technologies that drive climate change are accepted into the status quo and thus don't feel dangerous, such as cars, planes, and power plants. Extreme weather events provide an initial shock, but are ultimately accepted as part of modern life, as people tend to "dust themselves off and focus on reconstruction." And, "…climate change does not *feel* frightening unless you actively *choose* to see it that way."

Chapter 12: Uncertain Long-Term Costs – How Our Cognitive Biases Line Up Against Climate Change

Daniel Kahneman, Nobel-prize winner for his work on the psychology of decision making, told Marshall, "'I am extremely skeptical that we can cope with climate change. To mobilize people, this has to become an emotional issue. It has to have the immediacy *and* salience. A distant, abstract, and disputed thread just doesn't have the necessary characteristics for seriously mobilizing public opinion." Climate change is on the wrong side of all of our cognitive biases for decision making: it involves losses and no gains, is in the distant future rather than immediate, and involves substantial uncertainty.

Chapter 13: Them, There, and Then – How We Push Climate Change Far Away

When a frog is placed into warm water that slowly rises to a boil, and the frog boils alive. When a frog is tossed into boiling water, it is shocked enough to hop out alive. Climate change is like the first scenario.

“Scientists… only start to express confidence in their models in the time horizon that most people see as being beyond their immediate concerns—typically 2050, a date that researchers have found to be set so far in the future as to be ‘almost hypothetical’… The lack of a definite beginning, end, or deadline requires that we create our own timeline. Not surprisingly, we do so in ways that remove the compulsion to act. We allow just enough history to make it seem familiar but not enough to create a responsibility for our past emissions. We make it just current enough to accept that we need to do something… but put it just too far in the future to require immediate action.”

Chapter 14: Costing the Earth – Why We Want to Gain the Whole World Yet Lose Our Lives
"Climate change is never presented as a choice... Government policy, in which decisions are more carefully constructed, deliberately removes or sidelines climate change in its choices. Even the people who deny climate change have never chosen short-term personal consumption over long-term collective climate disaster. They have chosen to believe that there is no problem... what is required is a moment of informed choice when people have to decide whether they want to accept this risk and, with it, the responsibility for being wrong. Above all... people will willingly shoulder a burden—even one that requires short-term sacrifice against uncertain long-term threats—provided they share a common purpose and are rewarded with a greater sense of social belonging."

Chapter 15: Certain About the Uncertainty – How We Use Uncertainty as a Justification for Inaction
Uncertainty stalls action on climate change. But inaction because of uncertainty is peculiar to climate change. Marshall quotes Mitt Romney: "we don't know what the world is going to throw at us down the road. So we have to make decisions based upon uncertainty." (Regarding increased military spending.) And he quotes Dick Cheney: "even if there is only a 1% chance of terrorists getting weapons of mass distraction, we must act as if it is a certainty."

Chapter 16: Paddling in the Pool of Worry – How We Choose What to Ignore
Worry is more emotional than risk. Risk can trigger rational evaluation. And climate change has never registered very high on surveys of how worried people are about it. People have limited capacity for worry, and select what to worry about and what to ignore in order to get through daily life. The vastness of issues to worry about produces “emotional numbing – a protective indifference to issues that are not of immediate personal concern…” “…our ability to choose what to ignore may be just as important for our psychological functioning as our ability to choose what to attend to – and that it is this skill that enables us to cope with the information-supersaturated modern urban environment.”

Chapter 17: Don’t Even Talk About It! – The Invisible Force Field of Climate Silence
"The processes that define the norms of attention contain powerful feedbacks that can amplify change as well as suppress it." "…a quarter of people have never discussed climate change with anyone at all. In real life, it seems that the most influential climate narrative of all may be the non-narrative of collective silence." Climate change can be socially taboo to talk about, and there is also a "meta-silence," where we don't talk about that fact that we don't talk about it. "I searched for two control terms that had no reason at all for being on these [human rights organizations'] websites: 'donkey' and 'ice cream.'... Human Rights Watch mentioned donkeys four times more often than climate change. Refugees International mentioned ice cream nearly eight times more." Marshall interviewed the leaders, who confirmed that since they felt that climate change was something they couldn't intervene on, and was "environmental" and outside their scope, they actively left it out. Politicians avoided the phrase like the plague and instead resorted to "green jobs" and "energy independence." Looking at other successful campaigns, what may be needed is a “prolonged struggle by dedicated social movements…with a central tactic of confronting a socially constructed silence.”

Chapter 18: The Non-Perfect Non-Storm – Why We Think That Climate Change Is Impossibly Difficult
Tony Leiserowitz: "you almost couldn't design a problem that is a worse fit with our underlying psychology." Climate change is a "wicked problem," one that is "incomplete, contradictory, and constantly changing... there

is no point at which one has enough information to make decisions." "Tame problems can be solved by a series of distinct steps: first, understand the problem, then gather information, then pull that information together, and then work out and apply solutions... One cannot understand a wicked problem without knowing about its context, one cannot search for information without knowing the solution, one cannot first understand, then solve... Climate change refuses to fit any structure of cause and effect because it is never clear whether one is looking at the actual cause, or a cause created by the way we have chosen to define the problem." "…it is these socially constructed stories, not climate change itself, that people choose to accept, deny, or ignore."

Chapter 19: Cockroach Tours – How Museums Struggle to Tell the Climate Story
Marshall chronicles two major science museums that have displays that take a neutral tone on climate science instead of acknowledging that it's anthropogenic. The first is in the Smithsonian: "The narrative that the Hall of Human Origins promotes to the million-plus people who visit every year is that the climate has always changed, that we have always coped with these challenges, and that adapting to them is what has made us strong and smart... the Kochs are men of many interests who like to spread their largesse around, including—oh, did I mention this?—twenty million dollars for the David H Koch Hall of Human Origins." Similarly, climate scientist Chris Rapley was appointed director of the Science Museum in London, and attempted to install a gallery about climate change. The backlash was strong and the museum accepted money from Shell. The exhibit also sports a neutral tone about climate change and energy solutions.

Chapter 20: Tell me a Story – Why Lies Can Be So Appealing
"Stories are the means by which we make sense of the world." "Stories strip facts away, seeking what is most narratively satisfying, not what's most important or truthful." Story links emotion, facts, and data gathered by the rational brain. And a compelling story, even if inaccurate, can gain more traction than boring or complicated truth. Storytellers identify that simplicity of cause and effect, credibility, consistency, repetition, a focus on individuals or distinct groups, and a positive outcome make for the best stories. "It is hard to think of any story that could be more different from the complex, multivalent, collective, and boundless reality of climate change."

Chapter 21: Powerful Words – How the Words We Use Affect the Way We Feel
Specific word usage triggers the frames that we use to make sense of the world. "In one experiment, Republicans were five times more willing to pay a 2% climate change surcharge on an airline ticket when it was described as a "carbon offset" than when it was called a "carbon tax." Renewable and clean energy is a frame that has (deliberately and successfully) become associated with progress, purity, health, youth, bright sunlight, and freshness. Research demonstrates bipartisan support for clean energy and action against pollution (associated with dirtiness, corruption, illness).

Chapter 22: Communicator Trust – Why the Messenger Is More Important than the Message
Discourse on climate change becomes stale and stultified when dominated only by opinionated experts. In contrast, Scott Craven produced a video about the pros and cons of action vs inaction on climate change that went viral, making him one of the most successful climate communicators ever. He appeared relaxed, likable, relatable, ordinary, and friendly. Those who "swap sides" on the issue, risking ostracization to stand for their beliefs from denier to advocate or vice versa, are often regarded as authentic, trustworthy, credible, and therefore influential. Marshall describes two projects that interview average citizens about climate change and lauds them as warm and genuine. "The answer to the partisan deadlock and public disinterest starts, I am convinced, with finding new messengers rather than finding new messages, and then creating the means for them to be heard." "What climate change really needs are the voices of ordinary people who might not be fluent speakers or skilled orators but can bring an authenticity and genuine sense of common ownership to the issue."

Chapter 23: If They Don't Understand the Theory, Talk About It Over and Over and Over Again – Why Climate Science Does Not Move People

It is unfortunate that we expect scientists not only to use rationality in their work, but in their presentation as well. They are humans too and their individual stories and passions are what could be most moving about the topic of climate change. Throwing more information at people who don't agree or don't understand (the "information-deficit" model—that if people just had more information, they would believe or act) doesn't change their minds. "Ironically, one of the best proofs that information does not change people's attitudes is that science communicators continue to ignore the extensive research evidence that shows that information does not change people's attitudes." "…what truly engages the emotional brain are personal stories, and what convinces us of the trustworthiness of the communicator is our evaluation of his or her own commitment." Scientists are "the most trusted communicators not just for their personal qualities but also for the quality of the scientific method they embody."

("There are culture wars between scientists too, in particular the so-called paradigm wars between positivism (which uses experiments to establish findings that are declared to be universally true) and constructivism (which insists that knowledge is always situated in a time, in a place, and in a culture). The few skeptics who have a legitimate scientific background invariably come from the positivist disciplines of physics, chemistry, and geology – particularly, it would seem, those with a background in the nuclear and petroleum industries. Their criticisms that climate science is being distorted for political or ideological reasons are reflections of deeper resentments about constructivism.")

Chapter 24: Protect, Ban, Save, and Stop – How Climate Change Became Environmentalist
Environmentalist messaging speaks to environmentalists but can turn other potential allies off. "As my work has taken me away from my fellow greens into quite new groups... I have become aware of how poorly that environmental language works outside its own constituency. The problem is that in the absence of any competing narratives, these environmental words and images are so very--well, so very environmental." "Environmentalists are drawn to an anti-human rhetoric too, some of them talking about humans as a plague or virus that eats up the natural world." "The visual and metaphorical language that surrounds climate change marks it, irredeemably, as an environmental issue. These images, constantly reinforced in every news story and media item, create a tightly interlinked schema by which climate change is detached from the other issues (employment, economy, crime, defense) that people care most about." "For many working people, meatpacking plants, factories, power plants, and traffic jams mean development and paid employment," whereas for environmentalists these are practically symbols of the apocalypse. One example of such mixed messaging is the earth hour. The "earth hour," when people around the globe turn off the lights for an hour, is a powerful symbol of solidarity – "politicians like it because they love big, cheap empty gestures" – yet also invokes a universal frame for decline and death (darkness). Environmental messaging about climate change isn't intentionally exclusive to those already converted on the issue, but often is.

Chapter 25: Polarization – Why Polar Bears Make It Harder to Accept Climate Change
Polar bears frequent the iconography of environmentalism and climate change. But Marshall argues it is a misplaced focus – we have focused on a symbol that represents what will go away, what we will lose. "This focus on what is vanishing means that we are perpetually looking backward rather than forward, gazing at what might be gone rather than at what might come into being. It is a visual iconography that speaks of loss, and is tinged with melancholy." It hampers motivation, and perhaps installs a background guilt that makes one more likely to avoid the issue in the future.

Chapter 26: Turn Off Your Lights or the Puppy Gets It – How Doomsday Becomes Dullsville
"To what extent should communications concentrate on climate change as a disaster?" Only people who already have a predilection to be engaged by this type of messaging (based on their cultural and social ties) are likely to respond to doomsday scenarios. "The problem... is that when people feel threatened and isolated, they can adopt a range of strategies to diminish their sense of internal fear: denial, uncertainty, playing down the threat, fatalism, and anger toward the communicator." "Dan Kahan... stresses that the perception of risk is formed by the norms within social groups and that effective communications need to respond to these values, rather than seeking some perfect cocktail [of fear and hope]." Those who hold a view that the world is

just, stable, and fair tend to loathe apocalyptic messaging. "The idea that they could be subject to arbitrary impacts upsets their belief that the worthy are rewarded and only wrongdoing is punished." It's important to note that whether or not that's true is irrelevant – effective communication speaks to people in their language so that they can respond.

Chapter 27: Bright-siding – The Dangers of Positive Dreams
An alternate to doom and gloom scenarios is called "bright-siding": messaging that emphasizes the opportunity that climate change presents. MLK Jr's "appeal to the American conscience started with the upbeat words 'I have a dream' not 'I have a nightmare.'" So "bright-siding... is a narrative antidote to the negativity of the apocalypse, in which the real problem is pessimism itself." Environmentalist David Orr, however, notes that this was not the optimal tone during actual crises such as Pearl Harbor or the London Blitz: "leaders told the truth honestly, with conviction and eloquence." (This enhances trust of the messenger.) Marshall's critique of this optimism is its naïveté: "bright-siding turns down the volume of threat. It is only a few more notches on the dial before one is deep into outright denial.... bright-siding is ultimately a regressive narrative that validates existing hierarchies. It promotes an aspirational high-consumption lifestyle while ignoring the deep inequalities, pollution, and waste that make the lifestyle possible."

Chapter 28: Winning the Argument – How a Scientific Discourse Turned into a Debating Slam
Scientists are often at a disadvantage in debate settings against skeptics/deniers. According to a journalist who has interviewed most outspoken skeptics/denialists, they are "detached internally from the substance of what they are naysaying and motivated by the gamesmanship of showing how clever they are – as though it is all a game of chess." As expected, who "wins" a "debate" is the one who puts up the best fight. And "the mere existence of a debate is enough to persuade people that climate change is still debatable." NPR hosted a debate. Pre-debate, the climate change advocates had a clear lead in a ballot of the audience; afterwards they had lost a third of their support. Skeptics won the debate through their use of social cues reinforced by humor. They won the contest of "who would you rather have a beer with?" Some of the scientists got exasperated, condescending, or over-intellectual.

Chapter 29: Two Billion Bystanders – How Live Earth Tried and Failed to Build a Movement
"Live Earth" was a simultaneous concert in 11 cities around the world, whose goal was to raise awareness and generate movement on climate change. While it featured major celebrities and artists, it lacked a clear message and goals. "It was hoped that bringing so many people together would itself create the historic moment; as though the concert alone could single-handedly create a social norm for action. But in the absence of a clear objective and a movement that could galvanize the audience into action, it created a global bystander effect: two billion people waiting on the sidelines to see if someone else would do something." It was a great show but didn't hook into anything deeper, says Marshall.

Chapter 30: Postcard from Hopenhagen – How Climate Negotiations Keep Preparing for the Drama Yet to Come
Copenhagen UN Climate Change Conference, 2009. The gallant oratory focused continually on "setting the stage" but did nothing that resembled real action. Marcus Brigstocke sums it up: "so they blew it, and wasted the greatest of chances/instead they all frolicked in diplomat dances,/and decided decisively, right there and then,/the best way to solve it's to meet up again./and decide on a future that's greener and greater,/not with action right now, but with something else later."

Chapter 31: Precedents and Presidents – How Climate Policy Lost the Plot
Early efforts at climate legislation were based on three deceptively similar issues that had recently had success through international cooperation: arms reductions, ozone depletion, and sulfur emissions causing acid rain. However, these were tame problems "with well-defined and achievable ends." "The Number of factors involved in both issues was very small – a mere 25 power utilities and 110 plants were involved in the Acid Rain program. Twelve companies and their subsidiaries accounted for the vast majority of the production of ozone-depleting chemicals." Their timeframes were clearer – both could be reversed within a generation.

"These issues created an optimistic narrative of resolution and renewal that was entirely inappropriate for the irreversible and open-ended problem of climate change." Since these wrongly became the frames for climate policy, "they defined climate change as an environmental issue and therefore not a resource, an energy, an economic, a health, or a social rights issue. They determined that it would be best managed through emissions trading, and therefore not through regulation, taxation, and rationing."

Chapter 32: Wellhead and Tailpipe – Why We Keep Fueling the Fire We Want to Put Out
Marshall points out that climate change is unique in that policy solutions ubiquitously focus on the "tailpipe" end of the issue (gas emissions) and ignore the "wellhead" end--exploration, development, production of more fossil fuels. Why? Leading environmental campaigners who have been involved in major policy discussions since the 1990s say the issue was simply never framed that way. The common enemy-themed narrative is that this frame, or lack thereof, is due to lobbying and huge influence of oil companies.

But Marshall suggests that is the less significant explanation. This leads to cognitively dissonant situations like Britain's Minister of Energy and Climate Change one month boasting about "the allocations of new licenses to release twenty billion barrels of oil around British coasts. The next month... [announcing] an ambitious plan for the Government to reduce its emissions by 10%." So-called "radical" environmentalists are the only group attempting to connect the wellhead and tailpipe in policy and zeitgeist, through concerted mechanisms such as divestment campaigns and the (in this case particularly symbolic) battle over Keystone XL. But "as long as radical activists are the only ones making these connections, their arguments may be marginalized and disregarded."

Moreover, current policy solutions to climate change are unprecedented, compared to other global problems, in their ignorance of the production end of the equation. "Fisheries are managed through fishing rights and production quotas. Illegal logging is prevented through permits and forest management." And drug policy doesn't ignore production, "which is why the US government spends nearly $2 billion per year on international control measures." Marshall returns to the "faulty underlying psychology" premise as an explanation: "it can also be understood as an extreme error of judgment resulting from cognitive error and flawed categorization. Scientists categorized climate change as a tailpipe issue because production was considered a political issue that was outside of their domain. Policy makers then categorized climate change as a tailpipe problem because they drew on recent available experience that suggested viable solutions for tailpipe problems. Confirmation bias and a socially constructed norm of disattention finished off the job... After 20 years of negotiating around emissions, we are now in a bizarre situation. Most Western governments have established programs to subsidize the increasing production of renewable energy, biofuels, and—with less success—nuclear power. And they do so while encouraging, and usually subsidizing, ever-larger investments into exploring and developing new fossil fuels."

Chapter 33: The Black Gooey Stuff – Why Oil Companies Await Our Permission to Go Out of Business
Oil companies internally acknowledge climate change but justify their wellhead expansion by saying society and government haven't given them "permission" to develop the solutions to climate change (such as carbon capture and storage). "The responsibility lies with the emitters who give Shell the 'permission' to extract fossil fuels that they choose to burn...'we need the permission that society gives to us,' [the Shell executive] says, but the oil industry 'is not being given permission to make a transition out of fossil fuels.' And the main reason for this is that 'the international agenda is driven by people with political agendas that are unrelated to solving the problem.'" Cognitive dissonance abounds: "They all said the same thing: that as soon as governments regulate climate change they would become 'energy companies.' In the meantime... they admitted, off the record, that the competitive environment forced them to suppress the truth about climate change and ensure that those regulations do not happen."

Chapter 34: Moral Imperatives – How We Diffuse Responsibility for Climate Change

We diffuse responsibility for climate change, which makes it harder to determine where and how to act. Politicians "deliberately create needlessly complex treaties and unworkable processes to draw attention away from the need to do something." Quoting George Monbiot, "'Government creates the impression that something is being done, while simultaneously preventing anything from happening.'" One of the reasons we do this is there is no clear "intentionality" behind climate change – or at least there wasn't at the start. (McKibben's #ExxonKnew campaign aims to change this perception?) The discussion of who is responsible inevitably leads to blame, and some argue that climate change "needs 'problem solvers not blame seekers.'" Everyone agrees theoretically with "fairness" of reductions in emissions, or regulation, but we usually conflate what we consider fair with our own self-interest. We "give an excessive value to what we already possess. We come to believe that this originates in our own skill, talent, and hard work and is therefore a fair reward."

Chapter 35: What Did You Do in the Great Climate War, Daddy? – Why We Don't Really Care What Our Children Think

You would think that our children would be a good source of moral motivation for climate action. The links to intergenerational effects of climate change "create proximity by showing how future events follow from present choices and imagining the specific moment when they might be brought to account. They avoid the problems of diffused responsibility and bystander effect by creating a direct connection between ourselves and those who will be affected. They build on our hardwired sense of care for our children. And they bring in metaphors from outside climate change, including wartime mobilization or romanticized 'tribal' lore." Yet attitudinal research suggests that parents are equally, or less, concerned about climate change than everyone else. "The choice to have children compels us to write a narrative around climate change in which the overall prognosis becomes more optimistic, our own emissions become less significant, we become less vulnerable, and we accept a world of extreme inequality of future outcomes on their behalf. And, of course, people with children can simply immerse themselves in the daily routine of tears, laughter, and the hunt for the missing shoe and put climate change into that category of tricky challenging things they would prefer not to talk about." Moral pleas, or guilt, is not a good motivator to action. In successful army recruitment, it "was the combination of peer pressure, trusted communicators, social norms, and in-group loyalty that persuaded people to sign up--not a moralistic slogan, however clever it seemed to be."

Chapter 36: The Power of One – How Climate Change Became Your Fault

In the early 2000s, some environmental organizations took the "personal responsibility" approach to climate change campaigning. They encouraged consumers to reduce waste and live ethical lifestyles. The campaigns were largely failures. In Australia, "a third fewer people considered climate change to be their most important issue after the campaign than they had before." Marshall's interpretation: "no one paid much attention to these brutal evaluations because these campaigns had never really been concerned with reducing emissions. In reality, they were a narrative gambit: to define climate change as a problem that lay at the very furthest end of the tailpipe in the purchasing decisions of the individual. Behind their uplifting slogans, and their appeal to national unity, what they were really saying was 'climate change is your fault.' And here lies the problem. As soon as one creates responsibility, one creates blame. Blame creates resentment, and the talk of responsibility in the home makes that resentment very personal indeed." Another snafu in this strategy was that people seem to think in terms of a carbon budget, where a single token act of environmental conscientiousness becomes moral license to justify further consumption. Research demonstrates that "people who buy energy-efficient lights and appliances tend to use them more. People who insulate their houses then turn up the thermostat." So suggestions toward lifestyle change can end up enabling additional consumption for those who are already sympathetic to the issue. And for deniers and skeptics, "demands to change their lifestyle confirm their suspicion that the real threat comes from the environmental liberals who want to control their lives." These two tendencies made the "personal responsibility" efforts unsuccessful. "What is missing, and what is urgently required, is a coherent policy framework that provides a contract for shared participation…not the power of one, but the power of all."

Chapter 37: Degrees of Separation – How the Climate Experts Cope with What They Know

This chapter describes how climate experts cope with their intimate and uncomfortable knowledge about the potentially catastrophic future. Many climate experts fly copiously to conferences or for vacations. The excuses, Marshall says, are uncannily similar to those used by addicts: "I need to do this, I'm not hurting anyone, everyone else does it, I've worked for it, I can stop anytime, other people are far worse." "All of them could present complex narratives to justify their own behaviors, often containing a moral license or deferring to the social norm among their fellow middle-class professionals." However, a psychologist "argues that it is mistaken to judge these inconsistencies as arrogant or hypocritical or apathetic. They are, she says, best understood as a strategy by which experts defend themselves against their anxiety and the internal dilemmas that cause them pain." She sees this "as a tangle of conflicting needs, or... a tapestry," not a sign of contradiction, inconsistency, or hypocrisy. Another take is that experts have created a bubble with its own norms and internal idiosyncrasies. They have "created 'a huge information machine run by experts, reinforced by other experts, and all they do is sit around in expert committees, and make their expert presentations to each other.'" How can a swordfish conservation biologist eat swordfish at a fancy restaurant? How can a climate scientist fly around the world? "They are managing their own emotional anxiety by policing a strict cognitive divide between work and play, information and responsibility, the rational brain and the emotional brain."

Chapter 38: Intimations of Mortality – Why the Future Goes Dark
Climate change and the fear of death. One social researcher has found that half of the respondents in his study wouldn't like to be born in the future. They "anticipate that humanity will go extinct, most likely from environmental collapse... in Australia a quarter of the children believe that the world will come to an end before they reach adulthood.... Extinction is an emerging narrative around climate change – not just extinction generally, but our own extinction specifically." This narrative fits into "an altogether more flippant and fatalistic" one that it's too late to do anything to fix the problem anyway. Perhaps, Marshall suggests, the idea that "it's too late" is a defense mechanism, "one that bypasses the entire issue of our moral responsibility." Anthropologist Ernest Becker's "terror management theory" says that the denial of death allows us to "invest our efforts into our cultures and social groups to obtain a sense of permanence and survival beyond our death." So when we are reminded of our death, our response is to defend those values, groups, and cultures. Indeed "many of the standard responses to climate change, of extreme rationalization, denial, or placing climate change impacts far in the future, are all consistent with our responses to our fear of death."

Becker's theory further elaborates that "when the reminder of mortality is subtle or so subliminal that people do not even notice it, they display a greatly enhanced sense of the superiority of their own social group, and that can lead them to give increased attention to status, money, and improved self-image." So the consumerist, materialistic, superficial excesses present in our culture may in part be due to our background anxiety surrounding death. Climate change is a particularly salient death reminder. Not only are we all contributing to it, and not only is there nothing we can individually do to stop it—we are already grieving our own deaths—but we used to be able to cope with our death by investing in things that would survive us, contributing to something larger. Now, in the extinction narrative, even that small solace is removed (making climate change particularly unappealing to think and talk about). As Freud wrote: "all the things [my friend] would otherwise have loved and admired seemed to him to be devalued by the fate of transience for which they were destined." All of this makes it not hard to believe that most prefer to look away from climate change and continue to pursue high-carbon, status-driven lifestyles.

Chapter 39: From the Head to the Heart – The Phony Division Between Science and Religion
Climate change and religion have more in common than we think, according to Marshall. However, religions have overall had surprisingly little involvement in the climate issue. "Previous social justice movements, from the anti-slavery campaigns through civil rights, anti-apartheid, anti-debt, and anti-poverty campaigns, arose through church networks." Similarly, "environmentalists are equally wary of religion and seem to form strategic alliances with just about anyone before they talk to religious groups." Yet the apparent differences between climate change and religion—that one is based on scientific data and the other on revealed

knowledge, myth, and ancient text—are a false divide, according to climate scientists who also have strong faith. "People of religious faith have understood all along that there is actually no clear dividing line between the rational and the emotional brains, but rather a conversation between the two." Moreover, climate change and religion actually face many of the same challenges: both rely on the trust in and authority of the communicator, involve spatially and temporally distant events, challenge our normal assumptions about the world, and require us to undergo short-term losses to avoid long-term costs. Religion has successfully navigated each of these challenges. "Religions have found ways to build strong belief in some extremely uncertain and unsubstantiated claims through the power of social proof and communicator trust." "'In the end, climate change is not some facts and figures; it comes down to what's in your head. And that's a belief.'"

Chapter 40: Climate Conviction – What the Green Team Can Learn from the God Squad
This chapter details what the climate movement can learn from religions and their success as social movements. "Churches... sell themselves entirely through the quality of the experience they offer converts. They are... real-time experiments in what moves, excites, and persuades people." Psychologist Ara Norenzayan says that climate activists are missing a major opportunity to learn from the success of religions--"'these people are ignoring the largest social movements in the world and the ones that have proven time and again to have the power to galvanize people into action.'" He says that one of the reasons climate change often feels hopeless is because people are never prepared to make personal sacrifice based on rational calculation. But religion activates that willingness in people. Religions contain sacred values that are so fundamental that they are nonnegotiable, and people will do whatever it takes to defend them, including laying down their own life. Norenzayan suggests "turning action on climate change into a non-negotiable sacred value." For example, protecting our children, honoring our country's heritage and national parks, etc.

One way the church did this was through constant missionary outreach and the subsequent creation of a supportive society--"A community of shared belief through ritual and shared worship." Émile Durkheim said "religion was not just a social creation, it was... society made divine." The fellowship of people who share one's interests, goals, and values is essential to nurturing conviction and allowing for a wider acceptance of climate change. With this in place the church or climate fellowship then becomes a safe space to voice personal problems, struggles, and doubt. The climate movement till now has offered no such space. Additionally, individual moments of revelation can be powerful sparks to commitment. "Lynda Gratton, a chair of the World Economic Forum, reports that the most ambitious sustainability programs in the business world invariably stem from the transformative inner experience of a single influential individual." About three-quarters of people report having had a moment of personal revelation, making it a near universal experience. ("They described their experience as joyous, sometimes frightening, and always 'ineffable' and 'unknowable.' Although these are often called religious experiences, only a quarter the respondents use the word God.") The language around personal transformation invokes terminology such as conversion, affirm, witness, epiphany. Such words never appear in discussions around climate mobilization (and they do appear around religion). "Outside the circles of dedicated environmental activists, there is no community of belief. There is no social mechanism for sharing it, least of all witnessing it. People deal with their hopes and fears in isolation, constrained by the socially policed silence and given no encouragement other than a few energy-saving consumer choices."

Finally, forgiveness needs to be discussed. It is a rapidly growing field of psychology research, but not a single study has been dedicated to forgiveness and climate change. "The climate change narrative contains no language of forgiveness. It requires people to accept their entire guilt and responsibility with no option for a new beginning. Not surprisingly, what happens is that people either reject the entire moralistic package or generate their own self-forgiveness through ingenious moral licensing." This is a massive weakness, as efforts towards action are stalled by instincts towards blame. And without forgiveness, blame is damning. In international negotiations, "the unresolved responsibility for past emissions continues to prevent agreement on a shared approach to future action." Since forgiveness is a process of transmuting destructive emotions like guilt, blame, and anger into positive ones like empathy and reconstruction, the climate movement is suffocated without it.

Chapter 41: Why We Are Wired to Ignore Climate Change… And Why We Are Wired to Take Action
The first half of this chapter summarizes "why we are wired to ignore climate change," which comprises the content of the first forty chapters. The second half of the chapter describes why we are wired for action as well. We have immense capacity to "accept things that might otherwise prove to be cognitively challenging once they are supported within a culture of shared conviction, reinforced through social norms, and conveyed in narratives that speak to our 'sacred values.'" Most of all, "climate change is the one issue that could bring us together and enable us to overcome our historical divisions. This, rather than the self-interest contained in the economic arguments is the real reward of taking action."

Chapter 42: In a Nutshell – Some Personal and Highly Biased Ideas for Digging Our Way Out of This Hole
This chapter, also already in a summary format, describes Marshall's vision for how to better approach climate change and generate solutions. The key shifts he proposes:
-be aware, and wary, of narratives: they are how we talk and think about climate change. An effective narrative follows good narrative rules, but narrative can also take over, and narrative is never the same thing as the issue itself. Resist simple frames. Don't accept your opponent's frames, because within that battleground a false debate can occur and signify uncertainty, whereas in reality, there is no uncertainty in the science.
-move away from the enemy narrative. Instead speak in terms of a heroic quest, centered around cooperation (unity isn't necessary) and common ground.
-emphasize that solutions to climate change can be linked with sources of happiness, including community and togetherness
-present climate change as a journey of conviction that incorporates sacred values.
-engage across the political aisle, affirm wider values, make climate change less "eco," and don't assume that what works for you will work for others.
-create spaces that acknowledge grief and loss involved with climate change. Mourn the end of the fossil fuel age, which gave us a lot. Mourn what is lost and value what remains.

Four Degrees – Why This Book Is Important
In the last chapter Marshall describes what a world with four degrees of warming would look like—aka "why this book is important." Scientists increasingly speak of four degrees as the likely reality we are headed towards, not two degrees. They continually use the word "catastrophic" to characterize it. Heatwaves would become intense and unbearable. And temperatures would rise over land greater than over sea. One potential example: "the warmest July in the Mediterranean region could be nine degrees Celsius warmer than today's warmest July." "Forty percent of plant and animal species will be at risk of extinction." "Overall [food] yields could fall by a third in Africa." "Four degrees guarantees the total melting of the Greenland ice sheet and, most likely, the western Antarctic ice sheet, raising sea levels by a combined thirty-two or more feet... two thirds of the world's major cities and all of southern Bangladesh and Florida would end up underwater." "'The limits for human and natural adaptation are likely to be exceeded.' The World Bank echoes this when it concludes that there is 'no certainty that adaptation might be possible.'" We could reach four degrees between the 2050s and 2070s. Harsh predictions say eight degrees by the end of the century.

About the Author

George Marshall is the founder of the Climate Outreach and Information Network, based in Oxford, England, and over the past twenty-five years he has worked at all levels of the environmental movement, including in senior positions for Greenpeace USA and the Rainforest Foundation. He is one of the leading European experts in climate change communications, is a lead adviser to the Welsh government, and counts major environmental organizations, politicians, faith groups, businesses, and trade unions among his clients. His website is climatedenial.org. Visit the website for *Don't Even Think About It* at www.climateconviction.org.