

Questions

In 1942 the Polish resistance fighter Jan Karski gave eye witness testimony to the Supreme Court judge Felix Frankfurter of the clearing of the Warsaw Ghetto and the systematic murder of Polish Jews in the Belzec concentration camp. Listening to him, Frankfurter, himself a Jew, and one of the outstanding legal minds of his generation, replied, "I must be frank. I am unable to believe him." He added: "I did not say this young man is lying. I said I am unable to believe him. There is a difference."

WHAT EXPLAINS OUR ABILITY TO separate what we know from what we believe, to put aside the things that seem too painful to accept? How is it possible, when presented with overwhelming evidence, even the evidence of our own eyes, that we can deliberately ignore something—while being entirely aware that this is what we are doing?

These questions have fascinated me for all the years I have been working on climate change*. They are what drew me to write this book and to spend years speaking with the world's leading experts in psychology, economics, the perception of risk, linguistics, cultural anthropology, and evolutionary psychology, not to mention hundreds of non-experts—ordinary people I have encountered on the way.

At each step in this journey, as I tried to understand how we make

* Yes, climate is always changing, but here I am following the international legal definition as being "attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."

sense of this issue, I uncovered other intriguing anomalies and paradoxes demanding explanation:

- Why do the victims of flooding, drought, and severe storms become *less* willing to talk about climate change or even accept that it is real?
- Why are people who say that climate change is too uncertain to believe more easily convinced of the imminent dangers of terrorist attacks, asteroid strikes, or an alien invasion?
- Why have scientists, normally the most trusted professionals in our society, become distrusted, hated, and the targets for violent abuse?
- Why is America's most prestigious science museum telling more than a million people a year that climate change is a natural cycle and that we can grow new organs to adapt to it?
- Why are science fiction fans, of all people, so unwilling to imagine what the future might really be like?
- Why does having children make people less concerned about climate change?
- How did a rational policy negotiation become a debating slam to be won by the wittiest and most aggressive player?
- Why can stories based on myths and lies become so compelling that a president prefers to take his climate science advice from a bestselling thriller writer rather than the National Academy of Sciences?
- And why is an oil company so much more worried about the threats posed by its slippery floors than the threats posed by its products?

Through asking these questions I have come to see climate change in an entirely new light: not as a media battle of science versus vested interests 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.

I work for a small educational charity, advising other nonprofits, governments, and businesses on how they can better talk about a subject

that most people don't really want to talk about at all. I spend most of my working life with people like myself—concerned, well informed, liberal minded environmentalists—so it was a pleasant surprise, while writing this book, to discover I often learned the most from the people who are entirely different from me.

Talking to Texan Tea Partiers led me to ask why we climate communicators have so singularly failed to connect with their concerns. Speaking to evangelical leaders made me question the boundaries between belief and knowledge. I have even enjoyed meeting the people whose life work, to which they apply great dedication and creativity, is to undermine my own life work.

So I do not seek to attack the people who do not believe in climate change. I am interested in how they reach those conclusions, and I am just as interested in how believers reach and hold theirs. I am convinced that the real answers to my questions do not lie in the things that drive us apart so much as in the things we all share: our common psychology, our perception of risk, and our deepest instincts to defend our family and tribe.

These ancient skills are not serving us well. In this book I argue that climate change contains none of the clear signals that we require to mobilize our inbuilt sense of threat and that it is remarkably and dangerously open to misinterpretation.

I find that everyone, experts and non-experts alike, converts climate change into stories that embody their own values, assumptions, and prejudices. I describe how these stories can come to take on a life of their own, following their own rules, evolving and gaining authority as they pass between people.

I suggest that the most pervasive narrative of all is the one that is not voiced: the collective social norm of silence. This response to climate change is all too similar to that other great taboo, death, and I suggest that they may have far more in common than we want to admit.

I argue that accepting climate change requires far more than reading the right books, watching the right documentaries, or ticking off a checklist of well-meaning behaviors: It requires conviction, and this is difficult to form and even harder to maintain. It took me many years to reach my own personal conviction that climate change is real and a deadly serious threat to everything I hold dear. This is not easy knowledge to hold, and in my darker moments I feel a deep sense of dread. I too have learned to

keep that worry on one side: knowing that the threat is real, yet actively choosing not to feel it.

So I have come to realize that I cannot answer my questions by looking too long at the thing that causes this anxiety. There are no graphs, data sets, or complex statistics in this book, and I leave all discussion of possible climate impacts until a final postscript at the very end. This is, I am certain, the right way around. In the end, all of the computer models, scientific predictions, and economic scenarios are constructed around the most important and uncertain variable of all: whether our collective choice will be to accept or to deny what the science is telling us. And this, I hope you will find, is an endlessly disturbing, engrossing, and intriguing question.

We'll Deal with That Lofty Stuff Some Other Day

Why Disaster Victims Do Not Want to Talk About Climate Change

WENDY ESCOBAR REMEMBERS FEELING SLIGHTLY nervous as she set off with her children to pick up groceries and saw the distant spiral of smoke on the horizon. But she says she never, ever, could have anticipated the speed or intensity of the disaster that followed. By the time she returned an hour later, the police had erected barricades across Texas State Highway 21. She had nothing but the clothes on her back; her daughter, she recalls, was still in her slippers. Two weeks later, when the road was finally reopened, the only family possession she could find in the ashes of the house was her great-grandfather's Purple Heart medal. It was melted almost beyond recognition.

The Bastrop wildfire of October 2011 was exceptional by any standards. Supercharged by thirty-mile-per-hour winds during a period with the lowest annual rainfall ever recorded, it killed two people, burned fifty-four square miles of forest, and could be seen from outer space. It destroyed 1,600 houses; ten times more than any previous wildfire in Texan history.

What was curious, though, was that, when I visited Bastrop a year later not one person, in a string of formal interviews, could recall for me a single conversation in which they had discussed climate change as a potential cause of the drought or the fire.

As one would expect in rural Texas, many people were unconvinced about the issue: many people, but not all. Wendy Escobar, for example, who laughed about “us being all rednecks out here,” is an intelligent and thoughtful woman who has seen the changes in the weather and concluded that there is definitely something going on that science can explain. The mayor of Bastrop, Terry Orr, accepted the science that the climate is changing, though he was understandably wary of an issue that can be so politically divisive. Neither could recall it ever being discussed.

Cyndi Wright, the editor of the *Bastrop Advertiser*, was more doubtful, suspecting that the extreme weather was part of a natural cycle. She thought it was entirely inappropriate for discussion in her newspaper. “This is a community newspaper,” she told me. “Sure, if climate change had a direct impact on us, we would definitely bring it in, but we are more centered around Bastrop County.”

If climate change had a direct impact on us? This is surprising, that a journalist could not see any possible connection between the wildfire that had burned down her own house and an issue that scientists had, for twenty years, been warning would lead to increasing droughts and wildfires. Even Texas state climatologist John Nielsen-Gammon, who chose his words carefully, suggested the link and regarded the combination of extreme drought and record-breaking temperatures that fueled the fires as being “off the charts.”

Of course no scientist will ever be able to say with total certainty that any single weather event is caused by climate change. But why does this prevent all discussion? What other topic is shut down because of a lack of total scientific certainty? Newspapers usually encourage debate, often ill-informed. Conversations are fueled by hunch and rumor. As I explore later, the lack of certainty is invariably an excuse for silence rather than the cause of it.

Nor were the people of Bastrop short of other things to say about the fire, including some highly conjectural opinions about who started it. Above all though, what they really wanted to share with me was their pride in their community and their capacity to overcome challenges. They spoke of the many acts of kindness, altruism, and generosity from strangers. Wendy Escobar told me how a customer at her cousin's hair salon in Longview sent her a thousand-dollar check in the mail. “The coolest thing to come out of the fire,” she said, “was finding out how

much people really cared, and how it's made people pull together so much.”

One year later, Hurricane Sandy, the largest Atlantic hurricane on record, damaged or destroyed nearly 350,000 homes as it hit the New Jersey seashore. When I visited five months later, the destruction could still be seen everywhere in the small towns that line the shore.

In Seaside Heights the tangled remains of a roller coaster still lay out to sea, where it had fallen after the pier beneath it collapsed. Block after block of pastel-painted wooden houses were dark and abandoned, many homes twisted off their foundations or lying at crazy angles. Thirty miles north, in the small town of Highlands, the residents of the absurdly named Paradise Trailer Park had faced the full fury of the hurricane—one of them told me that he had survived the storm surge by sitting on top of his refrigerator. Now they had wrecked homes, no insurance payouts, and nowhere to go while the park's owner tried to evict them and redevelop the site.

In Sea Bright, just south along the coast, every shop on the main street was gutted, and the seawall was demolished. Two-thirds of the permanent residents were still homeless when I visited, and only eight of the hundred registered local businesses were back up and running.

Certainly, people were more inclined to accept that climate change exists in the Democrat territory of New Jersey than they were in Republican Texas. Dina Long, the charismatic mayor of Sea Bright, agreed that the frequency and power of the storms is changing and that the sea level is rising. Nonetheless, she could not recall anyone in her community discussing climate change in regards to the storm.

When I suggested to Long that she might band together with the leaders of other affected communities and demand federal action on climate change, she rolled her eyes. “Have you *seen* what Sandy did?” she demanded. “Climate change, *duh*, of *course* it is happening. But it is bigger than anything we could make a difference on. We just want to go home, and we will deal with all that lofty stuff some other day.”

As in Bastrop, Texas, the dominant narrative all along the Jersey Shore was one of community cohesion and resilience. As Dina Long warmed to this theme, she flourished a small piece of plastic salvaged from Donovan's Reef, a landmark beachside bar. It is all that remains of the sign that used to hang over the door—a small fragment with two

letters on it: "DO." Long brings out this talisman in every talk she makes to the townsfolk, media, and investors. It became the slogan of the Sea Bright Rising campaign and duly appears on T-shirts and posters around the town.

The strong sense of local pride I found in Bastrop and Sea Bright is entirely consistent with that found in other areas after disasters. Contrary to expectations, people rarely respond to natural disasters with panic, and there is often a marked fall in crime and other forms of antisocial behavior. People consistently tend to pull together, displaying unusual generosity and a sense of purpose.

These are times when people are most inclined to seek common ground and actively suppress the divisive and partisan issue of climate change. To talk about it seems inappropriate and exploitative, just as many people—President Obama's spokesman among them—refused to talk about gun control after the Sandy Hook school shooting.

The pain and loss of the event generates an intensified desire that there be a "normal" state to which one can return, making it even harder for people to accept that there are larger changes under way. The decision to stay, rebuild, and reinvest in that normality is accordingly validated by the community.

After losing all of his stock during Hurricane Sandy, Brian George, the owner of Northshore Menswear in Sea Bright, hung a sign outside his shop saying, "We love Sea Bright—we'll be back." After he reopened, business was great, he said, with many people buying something simply to thank him for staying. He accepted that climate change could bring more disasters but said he is resigned to it. "This is my home," he said, "and I guess we're just hoping another one doesn't come along any time soon."

Across the road, Frank Bain of Bain's Hardware also lost all of his stock—and found that his insurance did not cover floods. "I would have been better off if I'd burned the building down," he said bitterly. Bain, a much-loved pillar of his community, is a Republican and "no fan of Al Gore or his spotted owl," so he had always been unconvinced about climate change. After Hurricane Sandy, though, he had even stronger reasons for wanting to believe that it was just a rare extreme of nature: Not only had he rebuilt his store out of his savings, but he was "self-insuring"—putting money aside in the bank each year and hoping that the next storm was a long way off. He accepted that this was a gamble, but

then again, being in business is a gamble, he said. "This is just how free enterprise works."

The extreme events themselves had already seemed like a gamble. In Bastrop and New Jersey alike, everyone was perplexed about how the wildfire or storm surge could destroy some houses and leave others untouched. "It was like Russian roulette," said Sharon Jones, sharing a birthday drink with her husband at the one bar still operating in Seaside Heights. Her house was entirely destroyed; the house across the road was left almost untouched. "Go figure," she said, raising her glass to the vagaries of fate.

After a disaster like Sandy or the Bastrop wildfires, people are presented with a stark choice about whether to admit defeat and leave or whether to stay and rebuild. When they decide to stay, as most people do, they are taking a gamble, and like any gamble, it predisposes them to undue optimism about the future and their own chances.

Psychological research finds that people who survive climate disasters, like people who escape car accidents unscathed, are prone to have a false sense of their own future invulnerability. A large field study in an Iowa town that had been hit by a Force 2 hurricane found that most people had become convinced that they were less likely to be affected by a future hurricane than people in other towns. The people in the areas that had suffered the most damage were often the most optimistic. So it is hardly surprising, following the extreme floods in 2012 in Queensland, Australia, that few people made any attempt to reduce their vulnerability to flooding, and many residents chose instead to spend their disaster relief and insurance premiums on general home improvements such as installing new kitchens.

Revealingly, then, extreme weather events provide an initial insight into why and how people can come to ignore climate change. At every stage their perceptions are shaped by their individual psychological coping mechanisms and the collective narratives that they shape with the people around them.

People yearn for normality and safety, and no one wants to be reminded of a growing global threat. As they rebuild their lives, they invest their hopes along with their savings in the belief that the catastrophe was a rare natural aberration.

At a community level they collectively choose to tell the positive stories of shared purpose and reconstruction and to suppress the divisive issue

of climate change which would require them to question their values and way of life.

On reflection, it is hard to imagine any social environment in which a narrative of responsibility, austerity and future hardship would be less welcome than a community recovering from a climate disaster.

Speaking as a Layman

Why We Think That Extreme Weather Shows We Were Right All Along

"UNPRECEDENTED, UNTHINKABLE. THE DEVASTATION IS staggering. I struggle to find words." Choking back his tears, Yeb Saño, head of the Philippine government delegation, told the opening session of the November 2013 Warsaw Climate Change Conference of the devastation caused when Typhoon Haiyan hit his country three days earlier. He announced that he would fast in solidarity with the orphaned, the dead, and his own brother, who, he said, had still not eaten and had been gathering the bodies of the dead with his own hands. "To anyone who continues to deny the reality that is climate change, I dare you to get off your ivory tower and away from the comfort of your armchair and pay a visit to the Philippines right now."

Climate change can seem distant, uncertain, and incomprehensible. Saño made it seem real, immediate, and deeply moving. These personal stories and strong images, compounded by the constant repetition they received through the news media, spoke far more strongly to our sense of empathy and direct threat than the abstract data of graphs and scientific reports.

This is why climate change communicators are convinced that extreme weather events can, in the words of Elke Weber, an environmental risk specialist at Columbia University, "be counted on to be an

extremely effective teacher and motivator.” Tony Leiserowitz, director of the Yale Project on Climate Change Communication, calls them “teachable moments.” Michael Brune, the executive director of the Sierra Club, tells me that he sees severe weather as a kind of direct action. “Obviously,” he stresses, “not in an organized or manipulative way—these are tragic events—but with the same capacity to change consciousness and political direction.”

Extreme weather events have already played a major role in the political momentum on climate change. In 1988, a severe drought and heat wave across the Midwestern states provided the backdrop for Dr. James Hansen of NASA to declare in a congressional hearing that there was a 99 percent certainty that global warming had already started. The rise of consciousness about climate change in Europe that led to the signing of the Framework Convention on Climate Change in 1992 was helped enormously by severe storms in the spring of 1991, which were freely interpreted by the media as a warning of the climate change to come.

Those campaigning for action on climate change do everything they can to keep these connections alive in the public’s minds. As mayor of New York City, Michael Bloomberg personally approved the cover of the November 1, 2012, *Bloomberg Businessweek*, with a picture of Hurricane Sandy and bold block text reading, “IT’S GLOBAL WARMING, STUPID.” Referring to Hurricane Sandy, Al Gore said, “These storms—it’s like a nature hike through the Book of Revelation on the news every day now. People are now connecting the dots.”

Environment America global warming program director Nathan Willcox is also convinced that “the more Americans see extreme weather events in their backyards, the more they will reach out to their politicians for action.” However, his own research suggests that the relationship between experience and conviction is far from straightforward. In the seven years up until 2012, the Great Plains was consistently, and by a wide margin, the region worst affected by climate-related disasters. Nonetheless in the 2010 Senate elections, all the winning Republican candidates for the Plains states publically refuted climate science or opposed action to reduce greenhouse gas emissions.

Across the entire United States, the state most consistently affected by extreme weather has been Oklahoma. In 2008, voters there were offered a clear choice in their Senate election between Andrew Rice, a Democrat candidate with a moderate but balanced acceptance of climate change,

and incumbent James Inhofe, the most active and aggressive climate denier* in the Senate. In a year when national concern about climate change was at an all-time high, Inhofe still won by a large margin, cleaning up in the five Oklahoma counties that were experiencing, on average, more than one federally declared weather emergency every year. As I write this, the so-called polar vortex is sweeping across the Midwest, and temperatures in Nowata, Oklahoma, have just fallen to 31 degrees below zero, three degrees lower than the previous state record. They keep getting hit and they keep voting for Inhofe.

Inhofe is as keen as any other campaigner to use climate events as a “teachable moment” for his own arguments. In February 2010, when an extreme blizzard deposited two feet of snow on Washington, D.C., Inhofe enjoyed some interactive family fun with his grandchildren by building an igloo on the National Mall. Alongside it, he erected a sign reading, “Al Gore’s New Home!” and “Honk If You ♥ Global Warming.”

At the same time, the West Coast was experiencing record-breaking warmth that forced organizers of the Winter Olympic Games in Vancouver to run fleets of trucks and helicopters, day and night, to bring in snow for the freestyle skiing and snowboarding events. Across North America as a whole there was enough evidence available to support any number of positions on climate change. Maybe *New York Times* columnist Thomas Friedman described the overall situation best when he simply called it “global weirding.”

The problem is that, in a field normally dominated by technical specialists, weather events appear to be well within the range of laypeople’s personal expertise. We might be in no position to judge the levels of trace greenhouse gases in the atmosphere, or sea levels, or the extent of glaciers, but we all think we know about the weather.

This is especially true in Britain, where, for some inexplicable reason, variations in our bland, damp weather are the subject of intense public interest. In his weekly opinion column in the *Daily Telegraph*, a national conservative newspaper, London mayor Boris Johnson pontificated on his own climate expertise:

* In this book I refer to those who, for ideological reasons, actively reject or undermine climate science, as *deniers*. I call those who legitimately raise scientific challenges, *skeptics*. And I recognize a third group of people who are simply not sure as the *unconvinced*. These are different kinds of people, with different motivations, and merit different titles.

Two days ago I was cycling through Trafalgar Square and saw icicles on the traffic lights; and though I am sure plenty of readers will say I am just unobservant, I don't think I have seen that before. Something appears to be up with our winter weather, and to call it "warming" is obviously to strain the language.

Johnson likes to cycle around town noticing things. When Franny Armstrong, director of the climate change documentary *The Age of Stupid*, was attacked by muggers, she was astonished to see the huge wild-haired bulk of the London mayor cycling into view, shouting, "Clear off, you oiks!" Johnson's public persona, you see, is that of a decent, up-for-a-laugh sort of fellow who makes up his own mind on the basis of common sense.

Johnson concluded his column, no doubt resonating like a tuning fork with the middle-age conservative readership of the *Telegraph*, by writing, "I am speaking only as a layman who wonders whether it might be time for government to start taking seriously the possibility—however remote—that the skeptics are right."

Because weather events can never be ascribed with certainty to climate change, we are therefore prone to interpret them in light of our prior assumptions and prejudices. 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.

These selective processes are called *biases* by cognitive psychologists because they draw on preformed assumptions and intuitions to influence decisions. *Confirmation bias* is the tendency to actively "cherry-pick" the evidence that can support our existing knowledge, attitudes, and beliefs. These create a mental map—what psychologists would call a schema—and when we encounter new information we modify it to squeeze into this existing schema, a process psychologists call *biased assimilation*. We exercise both of these biases of selection and modification compulsively: to confirm our choice of restaurant, the attractiveness of our partner, the cleverness of our children, and to prove to ourselves that we have been "right all along" or that some personal mistake is "not as bad as all that." These two terms are subtly different in their academic usage, but, for ease of reading, I will use just one term for both: "confirmation bias."

Research finds that both of these cognitive biases are guiding our

interpretation of extreme weather events and climate science as a whole. When asked about recent weather in their own area, people who are already disposed to believe in climate change will tend to say it's been warmer. People who are unconvinced about climate change will say it's been colder. Farmers in Illinois, invited to report their recent experiences of the weather, emphasized or played down extreme events depending on whether or not they accepted climate change.

Researchers discovered similar patterns in Britain. Interviews with flood victims in England found that their interpretation of the event largely depended on their views on climate change, and a wider poll found that Labour Party voters were twice as likely as Conservative voters to ascribe extreme weather to climate change. Consistent with my observations in Texas and New Jersey, people who had been personally affected were significantly less likely overall to ascribe it to climate change than those who were far away from the flooding.

Attitudes toward climate change are so politically polarized that it is not surprising that independents are the most likely to form views drawn from their direct experience of the weather. Sociologists at the University of New Hampshire found that 70 percent of independents were inclined to believe in human-caused climate change when they were asked about it on an unseasonably warm day. On abnormally cold days, that fell to 40 percent.

These contextual decisions display yet another form of bias—*availability bias*—that disposes people to make up their mind on the basis of the evidence that is most readily at hand. It can be just as misleading as any other form of confirmation bias, leading people to hugely overestimate the dangers of recent events and disregard the threat posed by more distant ones that they have not experienced.

Despite these biases, Tony Leiserowitz at Yale remains convinced that the teachable moment of changing weather is changing attitudes over the long term. He cites his own research showing that around two-thirds of Americans believe that global warming made specific extreme weather events worse. The highest number, not surprisingly, agree that the heat wave of 2011 and the warm winter of 2010–11 were linked to global warming.

These polls show that extreme weather is affecting ever-larger numbers of people and prompting them to consider climate change when the subject is raised. The larger question, though, is whether the growing

experience of extreme weather will bring people together in a shared commitment to action, or whether their confirmation bias will push them even further apart. And if the weather extremes continue to intensify, whether the experience of coping with loss and anxiety will make people push it aside as something that they would rather not think about.

As the changes in the climate accelerate, new opportunities are emerging for us to engage or deny. Extreme weather events of entirely unprecedented scale and duration are now occurring regularly. Climatologists may be reluctant to ascribe a single weather event to climate change but are far more willing to agree that it is influencing widespread patterns of ever more extreme and bizarre weather.

As I complete this book, hail is falling in Cairo, snow in Israel, Syria, and Jordan. The United States is having the most extreme arctic cold it has ever experienced. Meanwhile Scandinavia has record-high temperatures, and Australia is entering its second year of unprecedented drought after temperatures reached so high that weather forecasters created a new color scale for the weather maps to accommodate them. Britain is ringed with more than a hundred flood alerts, and my hometown of Oxford has just had the wettest January since record keeping began in 1760. The day after I visited my nearby seaside town, the entire seafront was ripped apart by thirty-foot waves. The locals say they have never seen anything like it.

But they are still not talking about climate change. What is going on?

You Never Get to See the Whole Picture

How the Tea Party Fails to Notice the Greatest Threat to Its Values

I SPEND ALMOST ALL OF my working life with people who understand and accept climate change, so I decided to spend some time with people who are no less passionate in their conviction that we are completely wrong. This was how I came to find myself cruising along Texas State Highway 71, some thirty miles south from Bastrop, in the largest car I have ever seen: a seven-ton Ford Excursion, a car so huge that you need to lower a step before you can even climb inside.

My companions have little patience for environmentalists like me. We are arrogant, so arrogant, they said, to even think that we humans could possibly change this beautiful land enough to affect the world's weather systems. Our differences are directed by the selective vision of our respective confirmation bias—ironically the views to the left and right of our speeding SUV. Looking to the *right* they saw the wide-open fields and woodlands. Looking to the *left* I saw the railroad track that runs alongside the highway and a coal train reaching the end of its thousand-mile journey from Wyoming. The train was so long that I could see neither the front nor end, though I could see, silhouetted by the setting sun, the smoke stacks of its destination, the Fayette Power Project, pumping as much carbon dioxide into the air as the entire nation of Guatemala.

We were heading for the ranch home of Debra Medina, the feisty, fast-talking, take-no-prisoners mother of four who won one-fifth of the state vote as a wildcard candidate in the 2010 Texan gubernatorial election. On the first Friday of every month, forty Tea Party activists gather at her house to share home-baked food, their visions, and their frustrations—and to have a good laugh. It was with some trepidation that I accepted Debra's invitation to talk with them about climate change. I enjoy challenging audiences, but rarely ones that are this opinionated. Or this well armed. During her campaign for governor, Medina appeared across Texas TV channels waving her semiautomatic pistol, which is always loaded and ready to go. "It stays right here beside my car seat, where I can reach to it easily," she told the cameras, lifting the flap between the front seats where normal people keep their small change.

Scarcely two weeks before my visit, the Texan Republicans released their policy platform calling for protection from "Extreme Environmentalists," who purposefully disrupt the oil and gas industry, and demanding that climate change should be taught in schools only as "a challengeable scientific theory subject to change." This was going to be new territory for a former Greenpeace campaigner who founded a climate education charity.

So I presented Debra with a peace offering between our rival tribes: a King Edward VII tea caddy, and asked her to cough up two centuries in unpaid tax. Luckily, they laughed. Then I said, tell me what you think about climate change.

They hated *everything* about climate change: they hated the science, the scientists, Al Gore (especially Al Gore "and his garbage"), the United Nations, the government, solar power, the hypocritical environmentalists.

It was soon clear that climate change, or rather the narrative they had constructed around it, fit perfectly into a set of pre-existing ideological grievances about the distribution of power. The word they kept using was "control." James said that "carbon is a universal element that the government want to control." Denise added that climate change "is a convenient crisis. The government is using this as a tool of control." David said that the whole thing has been invented to create a "global tax for a one-world government"—this was clearly a familiar phrase and several people joined in to say it at the same time.

Which brought us rapidly to Agenda 21, a long, dull, and largely forgotten resolution proposing local goals for sustainable development that emerged from the 1992 U.N. Conference on Environment and

Development. To the Tea Partiers, Agenda 21 is the constitution for a one-world government containing the detailed plan for how "they" will create the issue of climate change to control us and suppress our local freedoms. It is unthinkable to them that there would not be a constitution of some kind for global dominance—after all they regard the U.S. Constitution as a sacred text and can quote it from memory. After the meeting, Dave signed his own copy and presented it to me. It was exactly the same color and shape as my British passport, causing predictable confusion later on in my travels.

But even with a written constitution to hand, the truth remains complex and elusive, because, they tell me: "You never see the whole picture—you have to draw the line a little segment at a time." They maintain that they have to be constantly vigilant and ask questions: "We're not anti-intellectual people in this group. We want to know the truth. We think outside the box and search for our own answers."

And they certainly ask a *lot* of questions—it is a hallmark of their conversational style. People's statements frequently broke down into a string of questions: Which way is the wind blowing? Where does the money come from? What happened to the scientists? What happened to their opinion? Could they also have been misled? Or they could be mistaken? What's the baseline? What is normal? When was normal? Was there ever supposed to be a normal?

This admirable willingness to challenge things makes them feel somewhat superior to other people. They said that the reason people believe in global warming is that they aren't logically minded and are "just not educated properly at school anymore."

Like climate scientists, or environmentalists, these Tea Partiers stress the overwhelming importance of information. The problem is that it is so hard to get the right information—meaning they have to get it from people who share their values: "My favorite radio show host, Dave Champion, always says, 'The government lies. It lies all the time, and it lies even when the truth would serve it better.'" So, all the conventional providers of information are corrupt and suspect, and, they say, scientists know all too well that "if you can get the population scared to death, they will be willing to write a check for their research."

Passion is a word they use frequently: "The passion is not that we cover our ears with our hands and don't want to hear the facts. The passion is we don't want to be controlled." They are especially passionate about their

independence. One man said, "I'm not with the environmentalists. I'm not with the oil companies. I did not come to take sides; I came to *take over!*" Everyone loved this, and the whole room erupted into laughter, claps, and cheers.

It is easy to focus on differences, and certainly rural Texan Tea Partiers are quite unlike urban liberal environmentalists. But the real surprise for me was to discover that being with them felt entirely familiar. They have exactly the same boisterous, opinionated, autodidactic, and tribal spirit as the grassroots environmental campaigners I have worked with in campaigns to save forests, stop open-pit coal mining, block new superstores, and, yes, demand action on climate change.

And they have plenty in common with environmental activists in their political instincts. They are outsiders driven by their values, defensive of their rights, and deeply distrustful of government and corporations: ExxonMobil and Monsanto both came up for attack in our conversation. Indeed, strange alliances had already been built around the campaign against the Keystone XL pipeline, which is opposed by environmentalists for its contribution to the carbon economy and by the Texan Tea Partiers for its use of eminent domain to seize land from property owners.

While the Tea Partiers had lots of questions, I left with just one of my own: 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, what is more, that has reached this critical stage because of the thing they hate the most: government and corporate self-interest?

Is it because climate change feels too far away? Perhaps, though the Tea Partiers are quite prepared to agitate about other complex international issues that catch their fancy. Is it because they feel powerless to do anything about it? Probably not, as they seem to thrive under conditions of powerlessness. Is it because it is depressing and frightening? Hardly: The entire Tea Party movement is built on fear and the warnings of disaster.

Is it because it is scientific and technical? No, these are people who willingly seek out information. Is it because climate change is contested and uncertain? Absolutely not: To be honest, the Tea Partiers appear to be entirely capable of believing any number of uncertain things on very limited evidence.

The answer must lie elsewhere—not with the issue itself but with the way it has been told. It must be something about the way the story of climate change has been constructed and communicated, the people who tell it, and how it has attached itself to their values.

5

Polluting the Message

How Science Becomes Infected with Social Meaning

PROFESSOR DAN KAHAN, THE LEADING light of the Yale Cultural Cognition Project, is an expert on how conflicting cultural values influence decision making. So when I notice that a garish plastic figurine of Gene Simmons from the 1980s übercamp rock band Kiss has taken pride of place on the mantelpiece of his sober Yale Law School study, I ask him if this is some ironic academic joke—maybe a comment on the disjuncture between Simmons's support for George Bush and his anti-authoritarian stage persona? “Nah,” Kahan says, “I just like him . . . because he *rocks!*”

This is how Kahan speaks—at very high speed, in a hyperintelligent soup of cognitive jargon and hip slang. Clearly he is not someone who fears challenging conventions or crossing cultural boundaries.

For Kahan, the defining quality of climate change is not any lack of overall concern—he says there is plenty of that. Nor does he agree with the opinion of many activists that the key influence on attitudes is the politicization of the media coverage. “Face it,” he says, “even if it does get mentioned on MSNBC or Fox News, ten times more people will always be watching funny animals.”

Kahan is a cultural omnivore and is intrigued by funny animal videos. He urges me to watch “The Crazy Nastyass Honey Badger” on YouTube because “it’s even more bad-ass than Gene Simmons.” More than

sixty-five million people have watched that honey badger video. Over on the Intergovernmental Panel on Climate Change channel, the climate scientists have a hard time reaching an audience numbering in the four digits with their decidedly un-crazy-ass slideshows.

For Kahan, the reason why people do not accept climate change is nothing to do with the information—it is the cultural coding that it contains. He argues that people obtain their information through the people they trust, or, beyond that, from the parts of the wider media that speak to their worldview and values. Most of the time, this is a highly effective shortcut and works fine, unless, in Kahan’s words, the information becomes “contaminated” with additional social meaning and becomes a marker of group identity.

Kahan cites gun control as a case in point. Polls in West Virginia show that 65 percent of people want more gun control but, he says, you would be a fool to run for election in that state campaigning for gun control. “What you don’t know—and no poll has told you—is that 85 percent of people in West Virginia know that you can’t *trust* politicians who say that they want gun control.”

Attitudes on climate change, he argues, have become a social cue like gun control: a shorthand for figuring out who is in our group and cares about us. Just because polling shows a high level of concern about the issue does not mean that there is an equally high level of support for the people who promote it.

Kahan’s extensive work on understanding people’s resistance to vaccination forms a direct analogue for how they form their opinion on climate change. There are few issues in which the science has become so contaminated so rapidly. In Britain a single research paper in 1998 arguing that the combined mumps, measles, and rubella (MMR) vaccine might cause autism in children was accepted as proof by one-quarter of the public, and immunization rates plummeted. Scientific data was soon abandoned in the dirty public battle that contrasted the cold, mechanistic approach of the scientists with the raw emotional appeal of the parents convinced that their children had changed immediately after their immunization shot. Fifty percent of people took the presence of a media-generated debate as evidence that the science was in doubt.

In the United States, there was a similar disaster when the state of Virginia decided that the package of compulsory vaccinations for entry into middle school should include one against human papilloma virus, a

very common sexually transmitted disease that causes cervical cancer.

So, you have the government knocking at the door of a conservative Christian community, saying, according to Kahan, "You know your twelve-year-old daughter? Well, she's going to be having *sex* in the next year and getting a venereal disease, so we're going to give her a shot. And if you don't like that, she can't come to school." This was a toxic brew of government interference, moral challenge, and offensiveness.

The lessons for climate change are clear. First, rational scientific data can lose against a compelling emotional story that speaks to people's core values. As I discuss later in the book, these cultural meanings become deeply attached and therefore cannot be removed by applying more scientific argument.

Second, 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 warnings of experts'.

Third, attitudes toward climate change fit into a larger matrix of values, politics, and lifestyles. Thus, as Kahan, Leiserowitz, and others at Yale argue, there are identifiable "interpretive communities": people who believe or disbelieve in climate change—and one can predict with some accuracy who they are, how they live, who they trust, and where they receive their information. Over the past ten years, detailed profiles have emerged.

Homo credens (the convinced) are most likely to be middle-age, college-educated liberal Democrats. Women are more likely to be believers, which is consistent with the observation that women tend to be responsive to other health, safety, financial, and ethical risks.

Homo negator (the unconvinced) are almost always strongly conservative in politics—very few are not—and tend to be from the more affluent and powerful social groups. They are very likely to be men and may display a low level of risk perception in other areas. This is a familiar group to risk researchers, who have named the "white man effect" after the danger that men in this group can seriously distort their social research.

Putting it together, one could predict that middle-age male motorbike riders are not well disposed to believe in climate change even before reading a Canadian survey that found that, indeed, two-thirds of them did not accept climate change.

Many other studies have identified further attitudinal subgroups (one study names them the Cautious, the Doubtful, the Alarmed, and the

Disengaged) each with their own sociopolitical demographic and distinct values.

The fact that attitudes to climate change can be predicted by such specific cultural characteristics is further evidence for Kahan's argument that the science has become polluted with social meaning. Understanding how attitudes to climate change are acquired and held—and how they might be changed—therefore requires understanding how people's social identity comes to have such an extraordinary hold over their behaviors and views.

The Jury of Our Peers

How We Follow the People Around Us

IN THE EARLY HOURS OF the morning of March 13, 1964, Kitty Genovese was assaulted and then stabbed repeatedly in a densely populated residential area of Queens, New York. Thirty-eight people (one of them ironically named Joseph Fink) said they had heard her screams and done nothing to intervene. One man lamely shouted, “Let that girl alone,” out of his window before going back to bed. Another pulled a chair up to the window and turned out the light to better see what was happening. No one thought to call the police until it was too late.

Rather than being a sad testament of a broken society—as the newspapers of the day suggested—this lack of response actually revealed the strength of social conformity. People read the social cues. They saw that no one else was taking any action and decided that it was in their best interest to keep out of a potentially dangerous situation. Knowing that others had heard the cries, they diffused responsibility, assuming, quite wrongly, as it turned out, that someone else had called the police.

The tragic Genovese incident launched a rich and still expanding body of research into the importance of social cues in defining what issues people respond to and what ones they ignore. It is a fascinating feature of this *bystander effect*—as it was subsequently named—that the more people we assume know about a problem, the more likely we are to ignore our own judgment and watch the behavior of others to identify an appropriate response.

A string of experiments confirmed the power of the bystander effect. In one particularly entertaining experiment, an actor faked having a seizure over the laboratory intercom. The last words heard from him were “I could really—er—use some help, so if somebody would—er—give me a little h-help uh er er . . . I’m gonna die,” followed by a choking noise and silence. Of fifteen participants in the experiment, six never got out of their booths, and five others only came out well after the “seizure victim” apparently choked.

Of course, you can only run these kinds of experiments for a few years before your subjects start to get wise to the trick, especially if they are psychology students. Years later, when a subject in a psychology experiment had a real epileptic fit, the other participants were convinced that it was being faked for the experiment and refused to get off their chairs.

Climate change is a global problem that requires a collective response and so is especially prone to this bystander effect. When we become aware of the issue, we scan the people around us for social cues to guide our own response: looking for evidence of what they do, what they say, and, conversely, what they do *not* do and do *not* say. These cues can also be codified into rules that define the behaviors that are expected or are inappropriate—the social norm. If we see that other people are alarmed or taking action, we may follow them. If they are indifferent or inactive, we will follow that cue too.

This social conformity is not some preference or choice. This is a strong behavioral instinct that is built into our core psychology, and most of the time we are not even aware that it is operating. It originated as a defense mechanism during our evolutionary development, when our survival depended entirely on the protection and security of our social group. Under such conditions, being out of sync with the people around us carried a potentially life-threatening danger of ostracism or abandonment.

There are, therefore, real and serious risks involved with holding views that are out of step with your social group and your brain is wired to give them greater weight than other risks, even those that directly threaten you. In experiments on social conformity, people chose to adhere to a social norm even under conditions when there was a real and imminent external threat, such as smoke coming from under the door.

So if your views on climate change differ from the socially held views, you find yourself balancing two risks: the uncertain and diffused risk of

climate change as opposed to the certain and very personal social risk of opposing the norm. As I will show, people often decide that it may be better to say nothing at all about climate change, even with their close friends.

Although conformity is important for functioning societies, a small number of dissenters are required to identify new threats. In the famous Hans Christian Andersen story “The Emperor’s New Clothes,” a small boy has been given the social license to declare that the emperor is naked. Andersen based his story on a Spanish folk tale in which a Moor (an African Muslim) was permitted, by virtue of his outsider status, to defy the social norm. In our own times, nonprofit organizations, such as environmental and human rights organizations, are given some license, even in repressive societies, to raise challenging questions, providing that they remain peripheral.

Andersen added his own astute variation to the original Spanish tale. After the boy shouted about the Emperor’s nakedness, “the Emperor was vexed, for he knew that the people were right; but he thought the procession must go on now! And the lords of the bedchamber took greater pains than ever, to appear holding up a train, although, in reality, there was no train to hold.”

The final moral of “The Emperor’s New Clothes,” then, is that these social norms are highly resilient to change—even when the norm has been effectively challenged, 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.

One way of ensuring against such a challenge is to surround yourself with people who agree with you. In our dispersed and media-driven society, people are able to immerse themselves in a self-constructed social network where the norm is entirely consistent with their own views. They restrict their information sources to carefully selected news media, websites, blogs, and publications—the so-called echo chamber—that reinforce their views. Tea Party members and environmental activists alike share a distrust of the mainstream media and depend on information sources that speak specifically to their interests and values.

Researchers in Australia found that these self-constructed networks had created what they call a “false consensus” effect around climate change, which led both sides to believe that their opinion was more common than it actually was. However, because the loud and very vocal

climate change deniers were also heard far into the mainstream media, both sides tended to hugely overestimate their numbers, guessing them to make up a quarter of the population. In fact they made up less than 7 percent.

When people misread the social norm in this way, it can lead them to suppress their own views, thus widening the divide and further reinforcing the false consensus—and at its most extreme, creating a society in which the majority of people keep silent because they fear that they are in the minority. This process, known as *pluralistic ignorance*, helps to explain the extreme polarization around key markers of political identity such as abortion, gun control, and, increasingly, climate change.

Communicators have long hoped to harness the power of social norms and conformity to steer people away from high-carbon behaviors. They argue that this is particularly appropriate for collective issues, like climate change, in which people require proof that others are contributing before acting—called *conditional cooperation* in the literature. In a widely influential experiment, Robert Cialdini, professor of behavioral psychology at Arizona State University, placed hangers bearing different messages on the towel racks in motel rooms asking people to reuse their towels. By far the most successful message was the one that appealed to a social norm with the message that 75 percent of guests “help save the environment” by reusing their towels. Even then, less than half of them did so, suggesting that people require more evidence of a norm than can be provided by a single hanger tag.

In 2010, the consultancy Opower built on Cialdini’s experiment to use reported social norms to encourage energy conservation. It persuaded Connexus Energy, a Minnesota-based utility, to include with its customers’ electricity bills a report on how their energy consumption compared with that of their hundred nearest neighbors. To prevent backsliding, people who had lower than average consumption received reports covered in smiley faces and with the exhortation “Great.” After all, Opower reckoned, who would ever want to disappoint those smiley faces?

But manipulating norms in this way also has costs. The tactic (which achieved only a paltry 2 percent energy savings) made no attempt to strengthen shared values. It is not surprising that, confronted with all that green messaging and those smiley faces, some conservatives *increased* their energy consumption—apparently as an act of defiance.

It should already be clear that social norms might be powerful, but that

people are correspondingly extremely alert to the cultural codes that they carry. This is why drawing too much attention to an undesirable norm can seriously backfire. When park rangers erected a sign in Arizona's Petrified Forest National Park that read, "Your heritage is being vandalized every day by theft losses of petrified wood of 14 tons a year, mostly a small piece at a time," the rate of theft significantly increased. Although the sign attempted to communicate the undesirability of theft, what it actually communicated far more powerfully was that stealing a small amount of wood was a perfectly normal activity.

Environmental organizations never seem to learn this message. In 2007 the Alliance for Climate Protection, founded by Al Gore, ran a commercial in which young parents at a smart dinner party list the reasons why climate change is a myth while tossing their leftovers onto the heads of their children sitting behind them. The final tagline was "What kind of mess are we leaving our children?" The ad was meant to be ironic but was actually a spectacular mistake—a thirty-second promotion for the wrong arguments that presented climate deniers as attractive young suburban professionals.

Maybe with this in mind, the Alliance's next foray into social norm campaigning was based around common values and appeals to national unity. The three-year advertising program, supported by a staggering three-hundred-million-dollar budget, aimed to recruit ten million advocates for national climate change legislation. It was called We Can Solve It.

The campaign's name was a combination of Barack Obama's campaign slogan "Yes we can" and the Second World War slogan "We can do it!"—forever associated with the iconic poster of the bicep-flexing Rosie the Riveter. Its advertisements drew on other familiar historical images of collective purpose, such as the Normandy landings, civil rights marches, and the Apollo landing, and showed bitter political rivals such as Nancy Pelosi and Newt Gingrich, or Al Sharpton and Pat Robertson, smiling on a couch together and agreeing to cooperate.

It was a brief cease-fire before the growing partisan divide on climate change forced Gingrich and Robertson to issue rebuttals. But it was, at least, a bold attempt to create a social norm that climate change is a historic challenge that can be overcome by American innovation and the "can-do" spirit.

However, the repeated use of the pronoun *we* was more problematic. I

call this the "slippery *we*" because it sounds inclusive and assertive when read in a transcript, but it is actually ambiguous and often meaningless. Unlike the "conventional *we*," which describes a common action or attitude (in which sense it appears throughout this book), the "slippery *we*" is a rhetorical gambit to create a sense of norm while demonstrating what management manuals like to call *transformational leadership*.

The political use of *we* has been escalating with a kind of rhetorical desperation. In their inauguration speeches, George Washington said *we* once only, Jefferson and Lincoln around ten times, John F. Kennedy twenty-nine times, Barack Obama fifty-seven times.

In his keynote policy statement on climate change, delivered at Georgetown University in June 2013, Obama went on an unparalleled *we* spree, using it ninety-six times, sometimes in first-person pileups: "We can figure this out. We've got to look after our children; we have to look after our future; and we have to grow the economy and create jobs. We can do all of that as long as we don't fear the future; instead we seize it."

But who is Obama's *we*? Is it him and his administration, his supporters, the American people, or humanity as a whole? Without such clarity, this is the language of the bystander looking out the window and saying, "We really must do something about this."

The slippery *we* can be deeply alienating for the people who do not consider themselves to be included within it. Unlike the languages of truly cooperative cultures, such as indigenous Australians and Native American societies, English has no means to differentiate between the inclusive *we* (me and you and your group) and the exclusive *we* (me and my group but *not* you).

If you oppose Obama, his avowal of common purpose sounds deeply exclusive and you hear him saying, *me and my fellow global warming zealot cronies* are going to force *you* to do this. No doubt if you are a supporter of Obama, it sounds wonderfully inclusive. And if you are, consider how you feel about this equally stirring rhetoric: "We can and must work together, and re-chart our course toward a better future. We will begin to thrive again when we begin to believe in ourselves again." When I tell you that it is from a 2013 speech by Tea Party founder and climate denier Rand Paul, do you feel embraced in his "we" or repelled?

While politicians use the slippery *we* to create a false norm of action, many people use it to create a false social norm of inaction. For example, a woman in a Swiss focus group explained why action on climate change is

pointless with the following words: "We just consume. We are somehow helpless. We don't care anyway, as we don't exactly know what effects we cause. If we took every problem equally seriously, we would become permanently depressed." She is quite deliberately playing with the power of the social norm, projecting her own views onto a supposed "we" and being resigned in her inability to challenge the norm she has just fabricated.

In focus groups, people who stumble to explain their own inactivity suddenly become fluent in explaining the reasons why *other* people are unable to act, mobilizing the language of popular psychology and talking about anxiety and denial. In a 2012 study one woman, described as being well educated and middle-class, said, "So yeah, I don't think people take it seriously because it's not a thing that affects you here and now, and I think people often react slowly or badly to things that seem very distant."

There are two layers of distancing here. There is the legitimate observation that climate change as an issue doesn't *feel* dangerous—an issue I address in the next section of the book. But there is also her own detachment that enables her to make an observation about why *other people* do not react. Conveniently, this reading of the social norm helps to justify her own inaction.

So, a few words of warning. Although our instincts lead us to seek out social cues when forming our views on climate change, these could be deeply misleading. The jury of our peers is hardly impartial, and through our confirmation bias, we could very well be choosing to read the norm in the way that best suits the position that we have already decided to hold.

7

The Power of the Mob

How Bullies Hide in the Crowd

PEOPLE NOT ONLY IDENTIFY STRONGLY with their own social group but also believe that it has a distinctive identity that makes it superior to other groups. *Self-categorization theory* recognizes that there are two processes at work. First, we seek to achieve closeness and similarity with people with whom we feel an identity and kinship: our in-group. Then we seek to establish our differences from the people who are not like us: the out-groups. Our attitudes and behaviors are shaped by the people around us who we want to be like as well as by the people beyond us who we want to be *unlike*.

The effect of this on environmental attitudes was shown in a clever experiment in Britain. When participants compared themselves with people in Sweden—who are generally considered to be highly environmentally aware—they showed *less* interest in energy conservation. In contrast, when they compared themselves with Americans, who they regarded as energy wasters (sorry about this—we are talking here about cultural stereotypes), they suddenly found a zeal for all things green. In other words, people in the in-group sought to move in the opposite direction to the out-group. As well as keeping up with the Joneses, they wanted to keep well away from those clean living Olafsons and those gas-guzzling Yanks.

This in-group and out-group behavior is apparent in all attitudes to the climate change issue. It leads both sides to underestimate the diversity of

views within both their own ranks and those of their opponents, creating false stereotypes around liberal environmentalists and conservative deniers. And it leads them to exaggerate their own worthiness and denigrate their opponents.

The Internet has produced entirely new areas for the formation, expression, and enforcement of social norms and in-group, out-group dynamics. Facebook enables people to broadcast their views far more widely and brazenly than would happen in typical social interactions.

An aggressively contested social norm is at work in the swarms of comments that follow every article on climate change. Experiments have shown that the insertion of aggressive comments into descriptions of controversial issues does nothing to change people's views but greatly increases their in-group identification with the view they already hold.

When scientists post a research paper on the Internet about climate change deniers, the angry responses generate even more data about climate change deniers—like a fast breeder reactor. The psychologist Stephan Lewandowsky received enough aggressive responses to his first research paper on climate denial conspiracy theories to provide the basis for yet another study. It bears the enticing title “Conspiracist Ideation in the Blogosphere in Response to Research on Conspiracist Ideation.”

While the bystander effect emerges from a sense of shared powerlessness, and a sense of shared power enables a range of abuses and violence, the anonymity of the new electronic norm enables outright bullying—abusive and violent e-mails received by high-profile scientists and activists calling them “Nazi climate murderers” and telling them to “go gargle razor blades.”

The late Stephen Schneider, one of the highest-profile climate scientists in the United States, found his name on a “death list” with other Jewish climate scientists on a neo-Nazi website. He had his address unlisted and had extra alarms put on his house. “What else could I do?” he asked. “Wear a bulletproof jacket? Learn to shoot a Magnum?”

Things came to a head around unfounded allegations in late 2009 that climate scientists had been distorting data. Glenn Beck on Fox TV called on scientists to commit suicide; the late Andrew Breitbart, a right-wing provocateur, tweeted, “Capital punishment for Dr. James Hansen”; and the blogger Marc Morano called for climate scientists to be publically flogged.

Bill McKibben, America's most prominent climate change activist and the founder of 350.org, is characteristically phlegmatic: “I think my

working theory is that if someone really wanted to shoot you, they probably wouldn't send you an e-mail first.” I am not sure how much comfort one can find in that thought.

Something is at work here that is far more powerful, and more toxic, than the usual antagonism between different groups. Scientists are not an oppositional culture, and they work exceptionally hard to stay outside political divisions. They are, according to every opinion poll, by far the most respected and trusted of all the professions. The way that climate scientists have been treated is exceptional, and unparalleled in the recent history of science. Louis Pasteur never considered learning how to use firearms; Jonas Salk did not need to fortify his house. Scientists are not enemies and have never sought to be. They have been set up to play that role in a climate story line that, it would seem, cannot refute climate change without demonizing the people who warn us about it.

8

Through a Glass Darkly

The Strange Mirror World of Climate Deniers

FEW PEOPLE HAVE BEEN MORE influential in writing the story of climate change as a struggle between good and evil than Myron Ebell, the director of global warming at the libertarian think tank The Competitive Enterprise Institute (CEI). Ebell is up for the fight, and his biography on the CEI website happily includes a string of accolades from his critics. Greenpeace calls him a “climate criminal,” *Rolling Stone* calls him “a leading misleader,” and *Business Insider* anoints him as “enemy #1 to the climate change community.”

Meeting him, I am struck once again by how closely the opponents of action on climate change mirror the advocates. Just as the Texan Tea Partiers reminded me of other grassroots campaigners, Ebell reminds me of other smart-suited policy wonks in the environmental organizations he despises—all of them fighting over the same narrative battleground with their reports, press releases, strategic lawsuits, conferences, slogans, and videos.

While waiting for our meeting, I get a glance inside Ebell’s office—a very brief peek, as he moves me on rapidly. It is possibly the messiest office I have ever seen, looking as if a hurricane (most assuredly *not* caused by climate change) had blasted through an entire floor and dropped everything in one room. Ebell is meticulously turned out in a smart suit, but his office speaks of pure campaigner.

Ebell is keen to stress that his principles are pure and uncorrupted by vested interests. Yes, he freely admits, he has received funding from ExxonMobil for his climate change work, but he was pursuing the same issues before it funded him and after it stopped funding him. Environmentalists, on the other hand, are hypocrites who denounce fossil fuels while taking money from oil and gas companies when they choose to.

He cites the story that the Baptists and the bootleggers worked together out of mutual interest to demand alcohol prohibition laws. It is a myth (deliberately concocted by the free market economist Bruce Yandle) that is much used by libertarian organizations because it suggests that anyone demanding regulation is morally corrupt.

Ebell is principally concerned with describing climate change as a battle of political principles. “The environment movement,” Ebell tells me, “is not an objective, well-intentioned movement that cares about saving the planet.” It emerges from the New Left, and regardless of the issue, it always proposes the same solutions: more government control, more power for the technocratic elite, and less material standards of living for people. He and his colleagues are, he says, involved in “a David versus Goliath struggle” against big government and corrupt environmentalism.

David and Goliath? I must look a bit taken aback to hear him use the favorite biblical metaphor of progressive social rights organizations. So Ebell repeats himself—yes, he says, David and Goliath.

What is more, notes Ebell, who is now on a roll, his side plays a “decent game.” A decent game, apparently, includes persistent personal attacks on the integrity of climate scientists. The latest tactic, championed by his CEI colleague Christopher Horner, is bombarding high-profile climate scientists with aggressive lawsuits demanding access to their private correspondence.

Ebell is convinced of his virtue. He insists his side is just being critical but would never stoop so low as to smear individuals—unlike environmentalists. And as he says this, he produces with a flourish a printout of a blog I had written that is moderately rude about him and his colleagues. He then takes great pleasure in reading it back to me line by line. Now I see why Ebell agreed to this interview.

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—because Ebell certainly would not consider himself a denier—are the underdog in a corrupt world fighting for a just cause.

These stories are dominated by enemies—the titanic struggle of good versus evil. The issue comes alive through the battle, and the characters and information, it would seem, attach themselves as convenient background for the story line that already exists.

For conservatives, climate change appeared as an issue at just the right time to replace the Red Menace bogeyman that had so long been their mobilizing enemy. Scarcely one year after the collapse of the Soviet Union, the 1992 Earth Summit provided a replacement threat—a shift of cast members in the longstanding opera of international ideological menace. As Rush Limbaugh says, climate science “has become a home for displaced socialists and communists.”

Those on the far right have a particular attachment to demonizing their political opponents. In 2011 the website Right Wing News surveyed forty-three popular conservative bloggers to determine the “worst figures in American history.” Jimmy Carter, Barack Obama, and Franklin D. Roosevelt led the tally, all well ahead of Benedict Arnold, Timothy McVeigh, and John Wilkes Booth.

The inability to differentiate between psychopathic killers and ideological opponents is perfectly exemplified in a notorious billboard erected by the Heartland Institute in Chicago with the photograph of the murderer Ted Kaczynski (the Unabomber) and the caption “I still believe in global warming, do you?” This ludicrous advertisement has inspired numerous Internet parodies, such as a photo of Adolf Hitler with the quote “I still believe kittens are cute, do you?” So much for the decent game.

As our meeting closes, Ebell offers me a bowl containing four small round chocolates. The foil around them is printed with a map of the world to make them look like little globes. I look at them sitting there and recall all those infographics in green publications of the four planets’ worth of resources that we consume each year. He smiles at me—is this a test, I wonder, an initiation rite? Then again, a chocolate is still a chocolate, so I scoff the lot. After all, there is only so much metaphor that a man can bear.

Inside the Elephant

Why We Keep Searching for Enemies

CLIMATE CHANGE—THE REAL CLIMATE change based on scientific facts—lacks any readily identifiable external enemy or motive and has dispersed responsibility and diffused impacts. Issues of this kind are notoriously hard to motivate and mobilize people around. For example, one of the biggest killers in the world is the smoke from indoor cooking stoves. It kills 1.6 million people every year. But it has no enemy, no one is to blame, no one has responsibility—and very little is done to prevent it.

The lack of a clear enemy poses a problem for the news media trying to report on climate change. Mark Brayne, a former senior BBC correspondent, explains that journalism needs events, clear causes, and “a narrative of baddies and goodies.” However, climate change has none of these. “It is slow moving, complex, and what’s more, we ourselves are the baddies. That’s not something listeners and viewers want or wanted to be told,” Brayne says.

In a polarized battle, each side constantly measures itself against its opponent, learning from each other and then adopting the same narratives. This pattern of mirroring, sometimes called inversionism, is familiar from other polarized debates such as anti-smoking, gun control, and abortion. Reading through my own transcripts and dozens of other interviews, I can identify a template that could be equally used by either side when it talks about the other side:

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 interests 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 it has ever faced.

And everyone defends the science—or rather their own science. The language used by Rex Tillerson, CEO of ExxonMobil, could be equally well adopted by any number of climate scientists or activists. The public, he complains, is illiterate in the areas of science, math, and engineering. Interested parties take advantage of this ignorance to “manufacture fear” supported by “a lazy and unhelpful media who are unwilling to do the homework.”

Scientists and mainstream environmentalists share this belief that pure and accurate information is the wellspring of public attitudes and government policy; they regard those who pollute that information or prevent its flow as the enemy. When I asked James Hansen, then a NASA climate scientist, why people did not yet accept climate change, he said, “The answer is very simple—it's money. The fossil fuel industry is making so much money that they control our governments, the media, and everything they tell us.”

Few scientists, not even Hansen, have been so publicly abused as Michael Mann, the director of the Earth System Science Center at Pennsylvania State University, whose iconic “hockey stick chart” mapped temperature changes over the past thousand years. He has been pilloried on Fox News and in the Senate, portrayed as a dancing puppet on YouTube videos, and received, by his own reckoning, thousands of abusive e-mails, including demands that he commit suicide or be “shot, quartered and fed to the pigs, along with your family.” When I invited him to find a metaphor for this struggle, he settled, without any hesitation, on *The Lord of the Rings*. “It's a classic tale of the struggle between good and evil, but the

stakes are the earth itself. The CEOs of fossil fuel companies who fund a disinformation campaign to confuse the public are the forces of Mordor. The scientists are Gandalf.” I would add that, with his goatee beard and twinkling eyes, Mann could also find a place in that battle—a climatological faun, maybe.

This disinformation campaign, often referred to as the “denial machine,” contains a wide network of think tanks such as CEI, media outlets, and politicians. But of late, campaigners have consistently set their sights on its most prominent and nefarious funders: David and Charles Koch, sibling inheritors of the second largest privately owned company in the United States.

The Kochs like to spend a small amount of their eighty-billion-dollar wealth on their favored political causes, including the Tea Party, political action committee advertising, and the libertarian think tanks opposing action on climate change, into which they have poured some sixty-seven million dollars since 1997. Not surprisingly, the Kochs are the number-one hate figures of the progressive left and environmentalists alike, and the grinning brothers are often portrayed in activist literature as the twin heads of the “Kochtopus,” surrounded by the spreading tentacles of their gas, oil, and chemical interests. This is the latest in a long cartoon history of rampaging corporate cephalopods, which have included railroad monopolies, ice monopolies, Tammany Hall crooks, Standard Oil, and—campaigners would be horrified to realize—the international Jewish “conspiracy.”

Certainly I would never claim that the Kochs are not major political operators or that the “denial machine” they help fund has not played a significant role in shaping public opinion, as has been superbly documented in recent books such as *The Merchants of Doubt*, *Heads in the Sand*, and *Climate Cover-Up*. And oil companies are blocking action. There is a well-funded politically motivated campaign that distorts and pollutes the science.

But I would argue that the constant goading of the aggressive deniers over the past twenty years has led campaigners and scientists alike to invest too much of their emotional energy into this single struggle and to forget that there is an infinite number of different stories that have yet to be told, and that the vast majority of people are being entirely ignored during their punch-up.

All of these enemy narratives seem entirely natural to the people who hold them. They merge seamlessly with their existing values and belief

systems, build on the metaphors of previous struggles and their own reading of history. I share many of these values and this sense of history. I have spent much of my working life in the environmental movement, leading campaigns against governments, corporations, and international finance. Many issues do come down, in the end, to a struggle against distinct and identifiable vested interests.

But climate change *is* different. The missing truth, deliberately avoided in these enemy narratives, is that in high-carbon societies, everyone contributes to the emissions that cause the problem and everyone has a strong reason to ignore the problem or to write their own alibi. As Joe Friday used to say on the start of the *Dragnet* TV crime shows:

For every crime that's committed, you've got three million suspects to choose from. People who saw it happen—but really didn't. People who don't remember—those who try to forget. Those who tell the truth—those who lie.

This is why 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.

This is not, of course, to ever suggest that those who obstruct political action or deliberately distort the science should be let off lightly or left unchallenged. Oil companies are not just passive energy providers, whatever they like to say. They actively interfere in the political process to protect their interests. However, neither are we blameless dupes. We willingly avail ourselves of their products and the extraordinary lifestyles they enable.

This poses a challenge for generating political change. Change requires social movements. Social movements require physical targets or a product that can be boycotted, blockaded, or occupied. And a narrative of opposition requires an opponent. As Bill McKibben argues, "Movements require enemies," and in his view, this is the fossil fuel industry, which he describes as "Public Enemy Number One to the survival of our planetary civilization."

Rabbi Arthur Waskow converts the same conflict into a biblical context. Citing the biblical plagues that fell on the Egyptians, he says that "today the Pharaohs are giant corporations: big coal, big oil, and big natural gas." He adds, "The only way to deal with a modern-day Pharaoh is to organize the people."

But these targets are not *the enemy* and the struggle against them is not the place where climate change will be decided. They are *an obstacle*, and this is an important distinction. It is a delicate balance—one that mature campaigners like McKibben fully recognize.

Other struggles also need to be recognized. Gill Ereaut, founder of the communications consultancy Linguistic Landscapes, argues that narratives do not have to have an enemy—in fact many mythological tales are constructed around a quest, a challenge, even overcoming an argument, an idea, a weakness, or a way of thought.

She draws on the psychoanalytic theory of Carl Jung to suggest that if there is an enemy, it is really our "shadow"—our greedy internal child whom we don't wish to acknowledge or recognize and who compels us to project our own unacceptable attributes onto others. While climate change develops some lukewarm narratives of guilt, there are none, as I argue later, that really invite us to accept our personal responsibility.

The veteran ABC journalist Bill Blakemore, who has done more than anyone to get climate change onto American television screens, is also convinced that the real story lies in our flawed psychology. There has, he tells me, been "a grave failure of professional imagination about how to advance this great and transformative story" which should never have been "shoveled into the environmental slot."

Blakemore spent most of his working life as a war correspondent, which, one might think, would dispose him to see it in terms of competing sides or national interests. But, he points out, there "are no borders in the constantly swirling air or in the oceans" and for Blakemore the real story is about our fear, denial, and struggle to accept our own responsibility. As he says, "Climate change isn't the elephant in the room; it's the elephant we're all inside of."

Every campaign defines the language and battle lines that will determine our future thinking. If our founding narratives are based around enemies, there is no reason to suppose that, as climate impacts build in intensity, new and far more vicious enemy narratives will not readily replace them, drawing on religious, generational, political, class, and nationalistic divides—especially in the Middle East, where water scarcity could catalyze bitter conflict along religious lines. History has shown us too many times that enemy narratives soften us up for the violence, scapegoating, or genocide that follows.

THIS IS A GOOD TIME to pause and sum up the book so far.

I have already found that we interpret the world in the light of our recent experience and our attitudes. Our confirmation bias then leads us to seek out further information to confirm those existing views, or to reject information that challenges them. I found that Tea Party activists, who prided themselves on their independence, had become so distrustful of outside views that all of their information sources reinforced their existing positions.

I found that we feel compelled, by our desire to fit into our social group, to take our cues for what we should think or do from the people around us. In communities recovering from weather-related disasters I found that their understanding of the event was mediated through the cues contained in shared stories. They were entirely capable of ignoring the role of climate change because it did not fit with the stories they chose to tell.

I also found that our desire to conform leads us to exaggerate the differences between ourselves and people in other social groups. If an attitude toward climate change becomes strongly associated with a group that we actively distrust, then the science can become “polluted” by this conflict. I suggested that campaigners for and against action on climate change were equally bound by this mechanism, and even used the same language and metaphors when describing the other side.

It is already clear that the way we relate to climate change cannot be readily condensed into a simple formula of cause and effect. Our views are constantly being shaped through the negotiation between our own identity, our group loyalty, and our relationship with wider society. We are

active participants, at every stage, influencing those around us as much as we are influenced by them.

The best metaphor I can find for this lies in the way that climate scientists chart the flows within the global energy and carbon systems. In their models each part of the flow is interlinked with the other parts, such that a change in one part may spread and then amplify its impacts through what scientists call positive feedbacks. There are many such social feedbacks operating in our attitudes to climate change—such as the bystander effect or false consensus effect—that exaggerate small differences and widen the divides between people.

But this can only be a partial answer to the question of why we find it so hard to act. Those who passionately accept or passionately deny climate change have one key thing in common: They all regard it as a major threat that they need to mobilize around. But, in between these two conflicting groups, the vast majority of people find it hard to accept the importance of this issue at all. When asked, they will happily tell pollsters that they are concerned about this issue, but, as I will show, they give it little other consideration and rarely if ever talk about it.

So this returns us to the original question: Is there something *innate* in this issue that enables people to disregard it in this way? How else would it be possible for people to know that climate change is a threat but not *feel* that it is a threat?

The Two Brains

Why We Are So Poorly Evolved to Deal with Climate Change

THE IDEA THAT OUR EVOLUTIONARY psychology makes it hard for us to deal with climate change is widespread. Paleoanthropologist Ian Tattersall in the coda to his book *The Masters of the Planet: The Search for Our Human Origins* reflects that “we are notably bad at assessing risk. Inside our skulls are fish, reptile and shrew brains.” This, he says, is why we can ignore climate change and think that we won’t have to face its consequences. Professor Paul Ehrlich, the outspoken population biologist at Stanford University, argues that we cannot deal with climate change because “the forces of genetic and cultural selection were not creating brains capable of looking generations ahead.”

Evolutionary psychology is much contested, debated, and fought over on political and ideological grounds. Climate deniers argue that it underestimates the speed of evolution and that constant environmental and climate changes during evolutionary history have actually left us remarkably well adapted and prepared for the changes of the modern world.

Daniel Gilbert, a professor of psychology at Harvard, disagrees. He tells me that climate change is “a threat that our evolved brains are uniquely unsuited to do a damned thing about.” Gilbert has given this some thought: He is an expert, and now a bestselling author, on the

psychology of happiness, and he has the kind of free-roving hyperactive mind that is fascinated by everything.

Gilbert argues that our long psychological evolution has prepared us to respond strongly to four key triggers that he neatly summarizes with the acronym PAIN:

Personal: Our brains are most highly attuned to identifying friends, enemies, defectors, and human agency.

Abrupt: We are most sensitive to sudden relative changes and tend to ignore slow-moving threats.

Immoral: We respond to things that we find to be indecent, impious, repulsive, or disgusting.

Now: Our ability to look into the future is one of our most stunning abilities, but, he says, it is “still in the early stages of R&D.”

As Gilbert sees it, the problem with climate change is that it doesn’t trigger any of these. Of the four, he is most inclined to emphasize the lack of Abrupt and Now, which “are things that even a rabbit understands.” But he would not underestimate the importance of Immoral. While we recognize that climate change is bad, it does not make us feel noxious or disgraced. He adds, “If global warming were caused by eating puppies, millions of Americans would be massing in the streets.”

Unless, I suggest, Americans already eat puppies. The taboo is socially constructed, and one could readily imagine an alternative culture in which, following the lead of the hungry pilgrim settlers, it was roast puppy that had become the centerpiece of the Thanksgiving table.

Gilbert concedes the point but not the distinction. “To me,” he says, “socially constructed and evolutionary are different ways of spelling the same thing. The most interesting thing about us as a species from an evolutionary standpoint is not really our opposable thumb or our ability with language; it’s our social life.” It is this that determines the social cues, norms, enemies, and in-group, out-group dynamics that, as I have already argued, are so important in shaping our response to climate change.

Gilbert draws on a large body of research, some of it his own, in the field of evolutionary psychology. The founders of modern evolutionary psychology, Leda Cosmides and John Tooby, like to say that “our modern skulls house a Stone Age mind,” which developed to address the specific

threats in what they call the “environment of evolutionary adaptedness.”

In this primeval environment, the main avoidable risks were in our immediate surroundings, and it was this that led us to give such a high priority to proximity and certainty in our judgment of risk. This also makes us innately conservative and defensive of our current circumstances—what cognitive psychologists call our *status quo*. After all, survival prospects are poor for an animal that is not suspicious of novelty.

Cosmides and Tooby describe the brain as being a “Swiss Army knife” containing specialized tools designed to deal with different tasks. Thus, they argue, we are relatively poor at dealing with large issues (like climate change) and can engage with them only by breaking them down into individual tool-oriented tasks.

Like a Swiss Army knife, the brain also contains things that you never need or don't even know what they are for. Evolutionary psychologists call these “exaptations”: behaviors that may have been selected in the past for completely different reasons and become co-opted into their present role following a change in environmental circumstances.

Without entering into the intense debate surrounding exaptation, suffice it to say that it contains a highly relevant core concept: 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 in-group loyalties and defensiveness that evolved to support small hunter-gatherer groups may be an obstacle when dealing with a universal shared threat. As I suggest later, our avoidance of the issue of climate change may be driven by still-deeper mechanisms evolved to cope with our fears of death.

But of greatest relevance to our decision making around climate change is the discovery that this long evolutionary journey has led us to develop two distinct information processing systems. One is analytical, logical, and encodes reality in abstract symbols, words, and numbers. The other is driven by emotions (especially fear and anxiety), images, intuition, and experience. Language operates in both processes, but in the analytic system, it is used to describe and define; in the emotional system, it is used to communicate meaning, especially in the form of stories.

Brain scanning has confirmed that these systems are built into the physical architecture of the brain—the former in the cortex and posterior parietal cortex, the latter in the amygdala at the base of the brain. The

neuroscientist Joseph LeDoux argues in his book *The Emotional Brain* that, as our analytic systems evolved, the amygdala was allowed to maintain its dominance in decision making because of its ability to rapidly assess threats. So, while the analytic system is slow and deliberative, rationally weighing the evidence and probabilities, the emotional system is automatic, impulsive, and quick to apply mental shortcuts so that it can quickly reach conclusions.

There has been a very strong public interest in these findings in recent years and many attempts to name them. Seymour Epstein, who first identified them as two parallel systems, called them analytic processing and experiential processing. Others call them enlightenment reason and real reason, or the reflective system and the automatic system, or System 1 and System 2. I find it easier to call them the *rational brain* and the *emotional brain*. These are not ideal names but they are easy to follow.

One of reasons there have been so many different attempts to name them is that the systems are not separate and isolated but rather in constant communication. Attempting to capture this relationship, Jonathan Haidt, a psychologist at New York University, hit on the image of an elephant and a rider. The rational rider does his best to steer the emotional elephant. He appears to be in control, though, in reality, a six-ton elephant is going to have the last say.

It is a nice image, and the second of many metaphorical elephants to appear in this book. However, this, too, is not entirely satisfactory because it underplays the communication between the two. The research shows that our rational rider will try to convince our emotional elephant and will deliberately shape arguments into stories and images that will appeal to the elephant. And the elephant is no dullard either. It is extremely adept at creating elaborate intellectual rationalizations for the rider to let it go on a path it had already decided to take. The image suggests the rider sitting under a little tent, pulling the reins, but the reality is more like Tarzan riding bareback and talking elephant (perhaps explaining why Hollywood thinks that the African jungle is full of Asian bananas).

Our perception of risk is dominated by our emotional brain. It favors proximity, draws on personal experience, and deals with images and stories that speak to existing values. As I will show later, threats that conjure up strong images or that are communicated in personal stories have disproportional sway over our decision making.

However, because the emotional brain is poorly suited to dealing with

uncertain long-term threats of the kind that constitute climate change, the rational brain sometimes actively intervenes, using its abstract tools of planning and forward thinking. Indeed, experiments show that people deliberately enable this process by making an issue more distant in order to see it in rational perspective and then developing the short-term goals that give it emotional proximity. It is like a little dance—moving far away to admire your partner and then moving in close enough to kiss.

And this is exactly what we do with climate change, both personally and culturally. The theories, graphs, projects, and data speak almost entirely to the rational brain. That helps us to evaluate the evidence and, for most people, to recognize that there is a major problem. But it does not spur us to action. The divide between the rational brain and the emotional brain is embedded in the historical boundaries between science, the arts, and religion, and it is a particular risk for an issue that originates strongly in just one cultural domain—as climate change does with science—that finds it hard to engage our entire cognition. 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. Even if the rider is fascinated by the article in *Scientific American*, the elephant has wandered off looking for a banana.

So, advocates for action on climate change have to do everything they can to speak to both. They need to maintain enough of the data and evidence to satisfy the rational brain that they are a credible source. They need to translate that data into a form that will engage and motivate the emotional brain using the tools of immediacy, proximity, social meaning, stories, and metaphors that draw on experience. Every piece of climate change communication from the National Academy of Sciences to a direct-action protest outside a power station is an experiment in the alchemy of turning base data into emotional gold.

Those opposing action are playing the same game but working backward. They begin with the arguments that can appeal to the emotional brain based around the values, concerns, and emotional triggers of their audiences. They then seek the data and evidence to support these arguments, because, like the advocates, they need to satisfy both the emotional *and* the rational brains of the people they want to convince. Of course, they don't see it like this. They are convinced that they have built their emotional argument on the back of a rational evaluation of the data. And so it seems to them.

The people in between are not passive in this process either. They, too, are deliberately making a calculation about how they wish to interpret these arguments, knowing very well that if their emotional brain becomes too involved, they are likely to feel anxious and worried. As I argue later, they tend to adopt a position of wait and see: Their rational brain is sufficiently aware that they know there is a problem; their emotional brain is sufficiently engaged that it is looking out for social cues about how they should respond. And both of their brains are sufficiently detached that they do not have to deal with the problem unless actively compelled to do so.

Familiar Yet Unimaginable

Why Climate Change Does Not Feel Dangerous

FIVE YEARS AGO, WHEN I was living in Oxford, England, a cell phone company applied for planning permission to install a cell phone tower on the side of the local pub. The area was full of liberal professionals of the kind that congregate in university cities. When prompted, they would agree unanimously that climate change was a serious problem that someone really should do something about . . . sometime. Otherwise they really didn't think about it.

And yet the threat of the cell phone tower galvanized them into immediate personal action. Within a week of the application, two hundred people gathered in the local school hall to express their resistance to the tower, which, they said, was going to spread microwave radiation across the school playground. Some were determined to lay their bodies down in front of the installation van, if necessary.

There are some interesting similarities between the issues of climate change and cell phone towers. Both threaten uncertain impacts that are drawn out long into the future. And in both cases we contribute, through our consumption choices, to the problem we decry. My neighbors in the audience that night all had cell phones in their pockets. In retrospect, I regret not having called them up during the meeting, just to see what would happen.

However, there is one important difference: Climate change poses a vast and unparalleled threat. Cell phone towers, though, are virtually harmless. Applying even the most cautious estimates, it would take more than seventy thousand of these towers to generate enough microwave radiation to cause any health problems. This experience found me asking why highly educated people would become so agitated about an intangible and unproven risk like cell phone radiation and yet be oblivious to the equally intangible yet far-better-proven risk of climate change.

Paul Slovic, professor of psychology at the University of Oregon, is well positioned to answer this question. Slovic is the world's leading expert on the social amplification of risk. He is also a modest, soft-spoken man who might be shy of such accolades. It is, though, impossible to find a single research document on the topic that is not peppered with references to his work.

Slovic faced an uphill struggle to persuade scientists that our perception of risk is socially formed and to overcome their prejudice that, in his words, social science was soft and squishy. It was the issue of radiation—and in particular the question about why people were so much more concerned about nuclear power than they were about the dangers of medical X-rays—that launched his career in the 1970s.

Slovic identified two main drivers of risk perception: a sense of powerlessness in the face of involuntary and catastrophic impacts, which he called dread risk, and an anxiety that comes from the uncertainty of new and unforeseeable dangers, which he called unknown risk. Dread risk is reinforced by being intergenerational and irreversible. Unknown risk is emphasized by being invisible and unprecedented. Radiation is so feared because it involves both types.

Through social testing, Slovic mapped a wide range of threats against these criteria for dread and unknown risk. Chemicals, food additives, and microwave ovens score highly for their unknown risk. Nuclear weapons and nerve gas accidents score highly for their dread risk. The more mundane dangers of bicycle accidents, indoor smoke, alcohol, and home swimming pools have low scores by both criteria even though they are all major sources of fatalities.

Slovic's research explains all too well why my friends and neighbors could become so agitated about a cell phone tower. It contained a near-perfect mixture of threats: a new technology, dread risk fears of radiation, a threat to our children as they played innocently in their school

playground. It also had exceptional proximity: visible, local, immediate, and with a clearly defined deadline. Finally, the coup de grâce: It had an external enemy, the faceless T-Mobile phone corporation, which had, for its own nefarious reasons, disguised this dangerous radiation-emitting tower as a flagpole.

So I ask Slovic where climate change would sit on his scales and why it is not capable of raising the same level of concern. After all, it is also catastrophic, irreversible, new, related to technology, threatening to children, and it makes people feel powerless. Surely, I suggest, this is a royal flush of both dread and unknown risks.

Slovic is not persuaded. He fully accepts that climate change is a massive problem. Indeed, he says he would work on it himself but he is now specializing in genocide and “only works on one impossible problem from hell at a time.”

However, he says, it does not *feel* threatening, and that is the critical distinction. People’s resistance to nuclear power, toxic chemicals, or vaccination tends to emerge at the point when something is about to change: when they take their child for a vaccination or when a nuclear plant (or cell phone tower) may be placed in their neighborhood.

But once things are accepted into our status quo and assumed to be part of normal life, it requires a far higher level of threat to have them removed. People might very well mobilize against a new energy technology that causes climate change, but not against the cars, planes, and power plants that are already woven into the fabric of their lives.

Slovic argues that extreme weather events, even highly visible ones such as Hurricanes Katrina and Sandy, are also part of our accepted way of life—our status quo—in ways that can lead us to accept rather than resist them. He suggests that extreme weather events seem familiar, and we are accustomed—in the developed world at any rate—to regard them as manageable. “Even when they do happen to us,” he says, “the storm goes over. You look out the window and, hey, it’s a beautiful day.” As I found in Bastrop and New Jersey, people are initially traumatized but dust themselves off and focus on reconstruction and moving forward.

In language theory, the term “false friends” recognizes the trap posed by words that look and sound the same but have developed entirely different meanings—as anyone shopping for clothes on the other side of the Atlantic will find when they ask for pants, knickers, vests, or jumpers. Climate change has plenty of linguistic false friends and, as I will show,

there is endless potential for misunderstanding scientific terms when they are used in a wider context. But the weather is also a kind of false friend: It looks and feels familiar, and we have a wide range of available experience to draw on that can mislead us.

Paul Slovic suggests that the third major problem is that climate change is not readily imaginable. “With threats of graphic imaginability, such as terrorism after the 9/11 attacks, you lose all sense of proportion and respond with high alarm to low probabilities. The availability bias that draws on recent experience keeps the threat alive, and the uncertainty of when the next attack might come does not diminish that fear; it amplifies it.”

But because climate change does not have the same stigma, and extreme weather events have a degree of familiarity, the uncertainty of its impacts do not instill dread but rather, Slovic says, “give you the leeway to believe what you want to believe.”

Believe what you want to believe? This is a telling phrase. Slovic is saying that even though it involves so many of the characteristics of dread and unknown risk, climate change does not *feel* frightening unless you actively *choose* to see it that way. If you are already inclined (by your values, politics, or social group) to see climate change as dangerous, then it looks really dangerous. If you are not inclined that way, then it looks exaggerated. Once again, the perception of climate change is being determined by the social lens you see it through, and, once again, there is a powerful feedback that tends to pull people apart.

Uncertain Long-Term Costs

Why Our Cognitive Biases Line Up Against Climate Change

“THIS IS NOT WHAT YOU might want to hear,” says Professor Daniel Kahneman. “I am very sorry, but I am deeply pessimistic. I really see no path to success on climate change.”

I assure him that this indeed what I want to hear and the reason why I wanted to talk to him. Kahneman, after all, received a Nobel Prize for his pioneering work on the psychology of decision making, and his bestselling book, *Thinking Fast and Thinking Slow*, has been a major influence on my own thinking.

In our packed cafe in downtown New York, the background noise is painfully high, and Kahneman delivers his argument a few words at a time in between long pauses for another spoonful from his seemingly bottomless bowl of tomato soup. Piece by piece, he meticulously outlines the reasons why he thinks that climate change is a hopeless problem and why it doesn't have the necessary characteristics for seriously mobilizing people's sense of threat.

His concerns are threefold. First, climate change lacks salience—by which he means the qualities that mark it as prominent or demanding attention. Like Daniel Gilbert, Kahneman argues that the greatest salience belongs to threats that are concrete, immediate, and indisputable—for instance, a car out of control driving right at

you. By contrast, climate change is, he says, abstract, distant, invisible, and disputed.

The second problem, he notes, is that dealing with climate change requires that people accept certain short-term costs and reductions in their living standards in order to mitigate against higher but uncertain losses that are far in the future. This is a combination that, he fears, is exceptionally hard for us to accept.

Third, information about climate change seems uncertain and contested. As long as that remains the case, he says, “people will score it as a draw, even if there is a National Academy on one side and some cranks on the other.”

“The bottom line,” Kahneman says, “is that I'm 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 threat just doesn't have the necessary characteristics for seriously mobilizing public opinion.”

This combination of short-term and long-term decision making under conditions of uncertainty is the essence of Kahneman's lifework. During his twenty-year collaboration with the psychologist Amos Tversky, Kahneman challenged the prevailing economic assumption, called utility theory, that choices are made with a rational evaluation of future benefits.

They argued instead that our decisions are more likely to be directed by a set of inbuilt and largely intuitive mental shortcuts—what they called cognitive biases. Biases help us to apply our previous experience to new information, enabling us to decide what to heed and what to ignore. They are an invaluable tool when dealing with simple day-to-day decisions but can generate serious systematic errors when applied to complex decision making. Kahneman and Tversky found that people are consistently far more averse to losses than gains, are far more sensitive to short-term costs than long-term costs, and privilege certainty over uncertainty.

Kahneman sees climate change as a near perfect lineup of these biases. An issue is challenging enough if it concerns only losses and no gains. And it is challenging if those losses are long-term not short-term. And it is challenging if it has substantial uncertainty. Climate change appears to be the perfect combination of all three factors. I will examine each of them, in turn, in the following chapters.

I ask him whether these cognitive barriers could be overcome if people

understood them better—this is, after all, one of my hopes for this book. Professor Kahneman pauses for another contemplative spoonful of tomato soup. “Actually,” he says, “I’m not very optimistic about that either. No amount of psychological awareness will overcome people’s reluctance to lower their standard of living. So that’s my bottom line: There is not much hope. I’m thoroughly pessimistic. I’m sorry.”

Them, There, and Then

How We Push Climate Change Far Away

POLITICIANS CONSTANTLY DESCRIBE CLIMATE CHANGE as a long-term issue and a threat to future generations. In his keynote speech on climate policy in June 2013, President Obama spoke of how we have to be caretakers of the *future*, stand up for the *future*, look after the *future*, not fear the *future* but embrace the sustainable energy *future*. Christine Lagarde, head of the International Monetary Fund, is more blunt—coming from the land of French cuisine, she fears that “future generations will be roasted, toasted, fried, and grilled.”

The public duly regards climate change in the same light. In surveys, the most revealing answer comes when people are asked whether they think that climate change will affect them or future generations. In both America and Britain they give the same answer: A large majority (usually around two-thirds) say that it will *not* affect them personally. And a large majority—often of exactly the same size—say that it *will* affect future generations.

Time is just one aspect of salience. It is an innate feature of our mental categorizing that we define things in terms of their closeness: prioritizing the things that affect us, here and now, and disregarding those that affect others, there and then. In experiments, people tend to amplify this bias by deliberately choosing to regard something that is distant in one aspect as distant in other ways too.

People’s perception of the risk posed by climate change duly ratchets

up in steady increments the further away its victims lie. With each remove, it becomes more hazardous: first for other members of their family, then for their community, then for other Americans, then for other people in rich countries, then for poor people abroad, then for other species, and finally—the most distant category of all—for people in the future.

This tendency to distance potential impacts works in close partnership with another bias identified by Daniel Kahneman and Amos Tversky: the tendency for people to assume that they face lower risks than others do. This “optimism bias,” as they named it, has been found in many different situations: people believing that other smokers are more at risk of a heart attack than they are, that other housing estates have more crime, that other drivers are more likely to have an accident, and, as I have already mentioned, that the next big hurricane will hit somewhere else.

This also applies to the environment. There is a near-universal belief that the environment is in better condition in one's own area—indeed, in a study in eighteen countries, people in sixteen of them were convinced that they had the best environmental conditions.

Climate change has other timing problems. Daniel Kahneman argues that when impacts come in intervals—such as business cycles—people's availability bias leads them to focus on the most recent event and miss the longer trend. Like Slovic, Kahneman is concerned that each successive extreme weather event then becomes accepted into our status quo and become the new baseline against which we measure change. A heat wave or flood is judged against the level set in the last heat wave or flood and we may not notice the overall scale of change over the longer term.

This is why lesser problems that deliver a single exceptional impact at a predictable moment can galvanize a far higher level of attention. Take, for example, a threat that combined an unprecedented technological cause (what Paul Slovic would call an unknown risk) with a precise and deeply symbolic timing: the prediction that the world's computer systems would collapse when the date changed on New Year's Eve 1999.

I remember vividly my local bookshop building an entire display of the opportunist books warning of the coming social collapse from the “Y2K computer time bomb,” after which law and order would break down, starving mobs would roam the streets, and, as the antinuclear campaigner Helen Caldicott warned, accidental missile launchings could lead to “Armageddon.”

And, of course, nothing happened in either the United States, which had poured an estimated \$134 billion into the pockets of software analysts and computer programmers, or in South Korea, Italy, or Ukraine, countries that had done next to nothing. On January 1, a few slot machines and cash registers became momentarily confused, that was all.

Campaigners have always struggled with climate change's un-engaging timeline and tried to find ways to generate the same compelling sense of urgency and symbolism as Y2K. In 1947, the *Bulletin of Atomic Scientists* had hit on the novel image of the Doomsday Clock, which is always close to striking midnight, to dramatize the risks of nuclear weapons. In 2012, the hands were moved to five minutes to midnight to recognize the coming climate change catastrophe, and the following year, Rajendra Pachauri, the head of the Intergovernmental Panel on Climate Change, announced its latest report with the words “We have five minutes before midnight.”

Environmental campaigns around climate change also manufacture deadlines to create urgency. Back in 1990, I was an intern in the smoke-filled offices of the *Ecologist* magazine as the editorial staff pulled together a new book warning of environmental collapse with the title *5000 Days to Save the Planet*. The deadline ran out in the same year that the British think tank Institute for Public Policy Research released its own deadline report: “Ten Years to Save the Planet.”

And the baton kept being passed on. In 2007, an international team of celebrities united under the banner Global Cool said that ten years was the deadline to “save the planet.” That year, the World Wildlife Fund warned that five years was the “small window of time in which we can plant the seeds of change.” Each successive climate conference provides a countdown, and I am already receiving action alerts on the run-up to the Paris conference in 2015 telling me how many months we have left to save the world.

In 2008, the London-based New Economics Foundation launched the campaign 100 Months to Save the World. Prince Charles became a strong supporter of the deadline, declaring shortly after, from a podium in his modestly appointed pad in St. James's Palace, that there were now only ninety-six months left to reverse what he calls “de-souled consumerism” and that the “age of convenience” was over.

But it was not over at all. Charles may have converted his fleet of cars to run on wine-based ethanol, but in every other respect, life appears to

be largely unchanged. I ask Andrew Simms, who invented that campaign slogan, what happens in 2016 when, as Slovic says, we open up the windows and find that it's still a beautiful day. "Of course," Simms says, "we never said that the sky would set fire and all forests burn. Really what happens is that it becomes more, rather than less, likely that we go over the safe threshold and positive feedbacks kick in."

And here lies the problem. Without an explanation, the deadline can seem to be arbitrary and imposed. However, as soon as it has an explanation, the campaign is immersed back into the tangle of probabilities, uncertainties, and cost-benefit analysis that it originally sought to avoid. No one is ever going to march under a banner of "100 Months Before the Odds Shift into a Greater Likelihood of Feedbacks," especially given that many experts fear that we may have already crossed that line.

But even if climate change has no pressing deadlines, this does not mean that the *anticipation* of future threat will not motivate us and enable us to overcome any tendency we have to discount the future.

For the past twenty years, George Loewenstein, professor of psychology at Carnegie Mellon University, has been exploring the effect of anticipation on our attitudes to future loss. Fearful anticipation is, he says, highly motivating. He agrees that we do tend to discount the future but feels that it is "easy to exaggerate its importance." His research suggests that the anticipation effect is likely to be even stronger in a case, like climate change, in which people anticipate a deteriorating condition, what he calls a "decline sequence."

Anticipation was, for example, a major factor in people's fear of nuclear war, another issue whose future impacts face great uncertainty. Risk specialists talk of the signal value of individual incidents, such as nuclear accidents, which portend future disaster. In this sense extreme weather events offer a string of signal events that feed the anticipation of future loss, which explains why climate disasters can heighten concern among those already disposed to accept the threats of climate change.

However, Loewenstein stressed to me, people's primary response will always be to mitigate the dread, even if this means avoiding the problem itself. There is, he warned, a very narrow boundary between not believing that the problem is happening at all and being so afraid that you are immobilized. So, he says, "from a psychological point of view, the crux—the key issue—is our capacity to generate our own arguments that can

interfere with that fear response." These arguments include our capacity to, in Slovic's phrase, "believe what you want to believe."

So there is a legitimate question to ask: Given our ability to deliberately construct a narrative that can reduce our sense of fear, is climate change really a distant issue for future generations, or have we just decided that we want to see it as one?

Certainly there is nothing new about climate science. The science of the greenhouse effect goes back to the theories of Joseph Fourier in 1824. In 1896 the Swedish chemist Svante Arrhenius first calculated the impacts of doubling the amount of carbon dioxide on global temperatures. He estimated that it would raise global temperatures by five to six degrees Celsius, well within the range that climate scientists, with their powerful computer models, now fear is in the offing.

Nor is there anything new about climate change as a political concern. The first major political warning emerged in 1965 when President Lyndon B. Johnson's Scientific Advisory Council cautioned that the constant increase in atmospheric carbon dioxide could "modify the heat balance of the atmosphere." In 1992, every nation in the world signed the U.N. Framework Convention on Climate Change, and an entire generation has grown up in its wake.

The impacts of climate change are hardly in the future either. I write this after the 350th month in a row that is warmer than that month's historical average. Although temperatures vary from year to year, the trend is also very clear.

Scientists, though, always stress the importance of natural variability in climate systems and 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" for the general public.

Politicians are all too happy to talk about climate change in these terms so that they can postpone difficult decisions as far into the future as possible. Western governments, in particular, wish to look forward and have no desire to remind anyone of their historical responsibility for two hundred years of emissions from industrial growth and land clearance.

So climate change is a future problem. But it is also a past problem and a present problem. It is better thought of as a developing process of long-term deterioration, called, by some psychologists, a "creeping problem." 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 about it but put it just too far in the future to require immediate action.

Costing the Earth

Why We Want to Gain the Whole World Yet Lose Our Lives

ARGUMENTS AROUND CLIMATE CHANGE HAVE always been based on the short-term and long-term costs. Advocates of action tend to emphasize the long-term costs of inaction and, taking a leaf from the book of health campaigners, stress that there are immediate economic benefits from moving to a sustainable economy. Opponents of action play the same game in reverse, emphasizing the short-term costs and the painful disruption to the status quo while playing down the long-term costs of climate change impacts, or rejecting the existence of the problem altogether.

When the issue first emerged in the early 1990s, arguments for government action were often phrased in terms of a cost-benefit analysis. In retrospect, these read as overly rationalist and almost deliberately evasive of any emotional or ethical component. One influential report from 1993 argued that “a comparison between the costs of greenhouse prevention and the benefits of avoided warming is the backbone of an economically rational greenhouse response.” Another, released around the same time by the British Royal Society, argued for an “optimal level of safety where the extra cost of any extra reduction [in emissions] just equals its benefits but goes no further.”

In 2006 Sir Nicholas Stern, the former chief economist of the World