DON'T EVEN THINK ABOUT IT

WHY OUR BRAINS ARE WIRED TO IGNORE CLIMATE CHANGE

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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.

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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 tornado found that most people had become convinced that they were less likely to be affected by a future tornado 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.

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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 though 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

The pool of worry is a metaphor for cognitive processes by which we select what we wish to pay attention to, and what we choose to ignore. The past twenty years have seen a huge increase in research into the processes of attention and there is a growing consensus that such selection processes are fundamental to our thinking at every level.

According to the Canadian sociologist Erving Goffman, we manage our attention through "schemata of interpretation," which, thankfully, he also described using the far more memorable term: *frames*.

Goffman explained that frames are constructed of our values, our life experience, and the social cues of the people around us. We decide what information we wish to pay attention to—placing what is relevant, important, familiar, or rewarding to know inside the frame.

Frames are active too. They seek out, scan, and select new information. George Lakoff, a cognitive linguist at U.C. Berkeley, argues that frames have a physical presence in our brains, are embodied in our neural circuitry, and are strengthened through use. This is, he stresses, a dynamic process in which new frames build onto existing, established frames to form a coherent system.

Climate change is not a frame, but it has become framed. That is to say that people have applied their existing frames to the issue, allowing them to decide whether it is important to them and what position they should take on it. Everything we see and hear about climate change triggers frames: responsibility, resistance, freedom, science, rights, pollution, consumption, waste—all are frames with their own associations.

However, the nature of framing is that it does not just select what to pay attention to; it also selects what to ignore. Frames are like the viewfinder of a camera, and when we decide what to focus on, we are also deciding what to exclude from the image we collect. Research suggests that our ability to choose what to ignore may be just as important for our psychological functioning as our ability to choose what to attend to—and that it is this skill that enables us to cope with the information-supersaturated modern urban environment.

So far this book has focused on what is said about climate change, including the loud and intensely politicized debate and the arguments about cost, certainty, and impacts. But of equal interest is what is deliberately *not* said, and the extent to which climate change is not just marginalized but also entirely removed from the public consciousness—sitting permanently on the beach but never in the pool.

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Don't Even Talk About It!

The Invisible Force Field of Climate Silence

I AM CONSTANTLY DROPPING THE term *climate change* into conversations with strangers. I may talk about my own work or relate it to the weird weather or some other issue that is hogging a prime spot in their pool of worry. I am very relaxed and casual about it—after all, no one wants to find herself sitting next to a zealot on a long-distance train journey.

Really, though, it doesn't seem to matter how I say it, because the result is almost always the same: The words collapse, sink, and die in midair, and the conversation suddenly changes course. It is like an invisible force field that you discover only when you barge right into it. Few people go that far, because, without ever having been told, they have somehow learned that this topic is out-of-bounds. That is why they know that if someone else inadvertently enters this zone, it is a good idea to find something new to talk about.

In America I find that the native friendliness dissipates the instant the words *climate change* enter a conversation. If I am talking to a couple, one person will continue to talk with me (it would be rude not to) while the other will instantly turn away and find some adjacent distraction.

When pressed two thirds of people admit that they rarely or never talk about it, even inside the close circle of their friends and family members. Women talk about it far less than men do, and as a group, younger women talk about it less than anyone, especially, as I will explain later, those with children. Another survey found that a quarter of people have never

discussed climate change with anyone at all. In real life, it seems that the most influential climate narrative of all may be the non-narrative of collective silence.

None of this is of any surprise to Eviatar Zerubavel, a professor of sociology at Rutgers University. Zerubavel is an expert on the sociology of socially constructed silence, which, he says, is as much a part of our communication as speech, "like a substance that fills in the pauses and cracks and crannies of our discourse."

I ask Zerubavel how we can study a silence—how we can measure something that people do not recognize as being absent. He puts it this way: "We have not talked at all about zoological gardens. That is not because we are deliberately avoiding it; the subject has simply not come up in our conversation. I would call this *inattention* because we can easily explain why we have not talked about it. But *disattention* is something very different. That is when we deliberately fail to notice something and cannot even explain that silence."

"So," he continues, "what I look for is a silence about the silence—what I would call a meta-silence. The meta-silence is that we don't talk about the elephant in the room, *and* we don't talk about the fact that we don't talk about it." And that, as Zerubavel points out with glee, means that the refusal to talk about the elephant becomes an even bigger elephant. Presumably, both have escaped from the zoological gardens we have been not talking about.

My friend Mayer Hillman, a senior fellow at the Policy Studies Institute and a passionate climate change campaigner, tells a story that shows this meta-silence at work. He was attending a dinner party with retired liberal professionals like himself. People were talking about their latest holiday trips, and Mayer could not resist bringing up the issue of climate change and the impacts of their airline flights on future generations.

The room went very quiet. Then a guest decided to break the ice. "My word," she said, "what a *lovely* spinach tart." Oh yes, everyone agreed emphatically, it was a *very lovely* spinach tart. According to Mayer, they spent the next ten minutes talking about the tart, the fresh spinach, and the recipe. In Zerubavel's terms, this inability to talk about the issue or to even verbalize the reasons for not talking about it is a meta-silence.

Zerubavel cites the nineteenth-century sociologist Emile Durkheim's

observation that there is a distinction between individual facts—things that you do at an individual level—and social facts, the behaviors that operate at a collective level. So, he says, "it makes a lot of sense to talk about denial and silence about climate change as operating both individually and totally differently at the collective level."

In a pioneering study, Kari Norgaard, an associate professor of sociology at the University of Oregon, set out to understand how people in a remote coastal town in Norway came to terms with climate change. In the course of her forty-six interviews, Norgaard repeatedly hit the invisible force field of silence I described. Most telling, she wrote, was that the issue often killed conversation: "People gave an initial reaction of concern, and then we hit a dead zone where there was suddenly not much to be said, 'nothing to talk about.'"

Yet people openly recognized that the weather was changing dramatically. In particular there was deep concern that the ski hill, an essential component of the town's local economy and identity, was opening later and later in the holiday season and even then only with the help of artificial snow. As I found in Bastrop and New Jersey, despite the evidence seen with their own eyes, people refused to discuss climate change. Norgaard found that it formed a detached reality—or, as a local teacher put it to her, "We live in one way and we think in another. We learn to think in parallel. It's a skill, an art of living."

Norwegians have particularly good reasons for ignoring climate change. Norway's cultural identity, Norgaard explained, is based around a mythic narrative that it is a small and humble nation that lives simply and close to nature. Norwegians pride themselves on being honest and conscientious global citizens and their government speaks often of being a world leader on climate change.

Norway is a leader all right, though not in the way it would like us to think. It is the eighth largest exporter of crude oil in the world, and its emissions grew five times faster than its already generous allowances under the Kyoto Protocol. Everyone in Norway has a direct personal stake in this oil economy, thanks to the six hundred billion dollars saved in the state oil fund, which now includes a two-billion-dollar stake in Alberta's tar sands. All in all, Norway is a spectacularly large contributor to climate change and, thanks to its egalitarian traditions, it has shared that responsibility across its entire population.

Norgaard found that Norwegians have responded to this internal

conflict by placing climate change outside their "norms of attention," which she defines as "the social rules that define what is or not acceptable to recognize or talk about." Thus, she says, people deliberately chose not to know too much in order to maintain their cultural identity as responsible citizens. "'Knowing' or 'not knowing,'" she says, "is itself a political act."

Like other academics who challenge climate change denial, Norgaard discovered for herself the mechanisms by which these politicized norms are policed and transgressors are punished. In 2012 a University of Oregon press release announced that that her research argues that cultural resistance must be "recognised and treated." The offhand comment—which did not even come from Norgaard—was eagerly distributed by Rush Limbaugh and other vocal climate deniers and led to a torrent of Internet abuse and pack bullying. A modest and diligent young academic now has her face permanently scattered across the Internet, photoshopped with swastikas, posted onto nude models, and stamped with vicious schoolyard abuse. One video about Norgaard was so offensive that YouTube removed it.

Martin Bursík, the former environment minister of the Czech Republic, described to me a similar distinction between individual facts and social facts in his country. Former Czech president Václav Klaus denied climate science—the only head of state in the world to do so. This, and a deeply entrenched social silence about the pollution of the coal industry, helped create a virtual taboo on public discussion of the topic. There is, Bursík said, not a single person in the Czech government who would be prepared to speak at an event on climate change. Privately, 92 percent of Czechs regard climate change as a serious or very serious problem, but, as Bursík explained, forty years of communist dictatorship has taught people to be very aware of boundaries defining what it is permissible to know. He says that they have learned "not to talk too loudly because the neighbors can listen through the wall."

In this context, it is not surprising that there are multiple similarities between the mechanisms of climate change denial and the socially constructed silence found around human rights abuses.

The late Stanley Cohen, a sociologist at the London School of Economics, drew strongly on his own experience as a Jewish South African to document the processes by which entire societies avoid dealing with collective human rights abuses. He highlighted the difference

between ignorance (not knowing), denial (the refusal to know), and disavowal (the active choice not to notice). Of the latter, which he argued applied especially well to climate change, he wrote, "We are vaguely aware of choosing not to look at the facts, but not quite conscious of just what it is we are evading." So, Cohen pointed out, we notice that our neighbors disappeared in the night, or that cattle trucks are heading east full of people but returning empty, but somehow we also know that we should not talk about it.

Such comparisons are useful for the light they throw on human behavior, but we need to be careful of applying such historical experience too literally to climate change. There were real personal dangers in challenging the Gestapo or NKVD. Even within the Tea Party, the worst that would come from acknowledging climate change would be a degree of social estrangement.

It is, though, revealing that human rights organizations, which should be alert to the processes of social disavowal, have been so slow to acknowledge climate change, especially given that security analysts regard it to be a key driver of future conflict and forced migration. In 2006, the year that *An Inconvenient Truth* came out, I found that Amnesty International had not one mention of climate change on its website. It consistently received less than five mentions on the websites of many other leading progressive organizations—Physicians for Human Rights, the AFL-CIO, Oxfam America, CARE, World Vision, and the YWCA among them.

By way of comparison, I searched for two control terms that had no reason at all for being on these groups' websites: "donkey" and "ice cream." On each site, these irrelevant terms appeared far more often. Human Rights Watch mentioned donkeys four times more often than climate change. Refugees International mentioned ice cream nearly eight times more.

My interviews with decision makers in these organizations confirmed that they had *deliberately* framed climate change as being outside their norms of attention because they were unsure how they could intervene, had no capacity for uncertain emerging problems, and had decided that it was an environmental problem and therefore outside their mission. Only now that they have begun, belatedly, to make their voices heard, is climate change beginning to be recognized as a leading social rights issue.

Formal science is also subject to its own norms of attention about what

it seeks to know or not know. A growing field of study is the "sociology of ignorance," which explores the field of "non-knowledge"—information that is deliberately not acquired because it is considered too sensitive, dangerous, or taboo to produce.

In-depth interviews by Joanna Kempner at Rutgers University found that scientists were committed to a heroic narrative of their pursuit of knowledge. "Our job," one said, "is to explore truth, not determining whether that truth is dangerous or that truth is unpleasant." However, while they welcomed controversy in their fields, they all wanted to avoid public controversy, which would take up their time and potentially threaten their funding streams. And who would not want to avoid the death threats or vicious abuse dished out to Kari Norgaard or Michael Mann? Scientists seek, in their own jargon to "lunatic-proof" their lives and to protect their families, and inevitably, this will determine what they study.

Ignorance is also generated by the academic process itself. As academics become ever more specialized and bury ever deeper into their silos, it becomes harder for them to acquire more generalized knowledge. There is a knowledge-ignorance paradox that the ever-increasing growth in knowledge leads to a simultaneous growth in what is not known.

By this reckoning, there is a great deal that is not known about climate change. As noted throughout this book, the people who take ownership of climate change consistently attempt to shape it in their own image, defined by their own discipline. Climate change, though, requires a much more creative and flexible approach that also considers what is not known or not said. It is not surprising that the vast majority of the specialists I have interviewed for this book are creative pioneers who resist easy categories and explore the boundaries between disciplines.

It was in this spirit of opening climate change to new perspectives and challenges—what is sometimes called *post-normal science*—that one of the largest British science research funding agencies invited me in 2012 to join its peer review board. I assumed it would be a chance to learn something about the scientific process. It turned out to be a far more interesting object lesson in socially negotiated silence.

The proposals we considered were mostly concerned with the impacts of climate change. Mostly. But interspersed throughout the backbreaking stack of photocopies were cuckoos: elegantly worded funding requests from oil companies asking for geologists and earth scientists to assist in the development of new oil and gas fields.

When I raised a question about the guidelines for funding oil companies, it was met with utter silence. No one said anything. It all felt very uncomfortable, but I took a gulp and pushed on regardless—because, I said, "if we were in the Medical Research Council and had received a research proposal from a tobacco company, I think we would at least discuss it."

None of the imposing senior professors on the panel could answer the question. The proposal, they said, was well prepared. That was all. At this, the chairman brought down his guillotine. "We're not going to close down oil companies, are we?" he said, sighing. The proposal went through. As did every subsequent oil proposal for which the chair, with increasing grumpiness, repeated that "Mr. Marshall's objections are noted," without noting anything.

Eviatar Zerubavel laughs when I tell him this story—this was a textbook meta-silence. It was as if I had said nothing at all. It was all polite enough. We made empty small talk over the lunchtime sandwiches, again over the tea and biscuits, said our farewells. I have not been invited back.

Politicians and the media also have internal cultures that establish what can or cannot be recognized. The policy specialist Joseph P. Overton argued that there is a "window" that swings from left to right and defines what is politically possible to say or do. Overton argued that if politicians favor a policy that lies outside that window, they need to ensure that the window shifts to accommodate it—for example, by encouraging outside pressure or, as Naomi Klein argues in her book *The Shock Doctrine*, by enabling the emergence of social and economic crises that can then be used to justify radical measures.

Similar things happen in the climate change discourse. Extreme events, such as Hurricane Sandy, Hurricane Katrina, and Typhoon Haiyan, can shift the window to favor a political response, just as, the climate scientist Michael Mann argues, the leaking of scientific e-mails in 2009 combined with a cold winter swung the window in the direction of denial arguments and then silence.

The result was that politicians and campaigners increasingly stopped talking about climate change at all. Barack Obama made no major policy speech on climate change during his first term and, for the first time in twenty-four years, it was not mentioned once in the debates for the 2012 presidential election. John Kerry, to his credit, made an impassioned floor

speech in the U.S. Senate denouncing the "conspiracy of silence . . . a silence that empowers misinformation and mythology to grow where science and truth should prevail."

At a state level, Republican legislatures then began to systematically remove all mention of climate change from policy. In North Carolina, state lawmakers passed a bill that forbade the use of any climate models for predicting future sea levels. In Texas, scientists had to mount a vocal revolt when officials attempted to purge all mention of climate change from their report on the environment of Galveston Bay. In 2013 nine states failed to mention climate change at all in their State Hazard Plans.

In other Republican states, planners have been allowed to develop long-term measures to [redacted] impacts on the understanding that [redacted] itself is never actually recognized or mentioned. And so the bizarre situation has arisen that Florida's and Arizona's populist leaders, who denounce [redacted] science (Arizona governor Jan Brewer once punched a reporter for having the temerity to ask her whether she "believed in [redacted]"), are mandating their state, city, and county authorities to incorporate the latest [redacted] models of drought and sea level rise into their long-term planning. Like Harry Potter, they have been actively preparing for a threat that cannot be named.

In March 2009, as momentum was building for a national climate bill, the White House distributed a memo to the leaders of U.S. environmental organizations demanding that they should not use the phrase "climate change" in regard to the bill and instead focus on "green jobs" and "energy independence." The bill itself was called the American Clean Energy and Security Act. Bill McKibben, alone among those present, stood up and protested. "This is going to come back and haunt us," he said.

Many environmental organizations concluded that their best chance of getting any political movement at all was by expunging all mention of climate change. Betsy Taylor, a specialist in environmental communications, complained that 2010 was the year when "it became a mantra inside big environmental groups. Talking about climate change is toxic. Some still don't use the 'C' word."

The C-word, indeed! In the year that the biggest-selling music hit, lauded at the Grammys, was rapper Cee Lo's bouncy ditty "Fuck You," climate change could only be referred to as *the C-Word*.

The removal of climate change from the political discourse in turn influenced the media, or more precisely, the editorial policy defining what areas may or may not be explored by journalists. David Fogarty, the former Reuters climate change correspondent in Asia, said that getting a climate story published became "a lottery" with editors "agonizing, asking a million questions, and too frightened to take a decision." In developing countries, journalists reported similar frustration in getting climate change stories past their editors.

In 2010 the *New York Times*, the so-called newspaper of record that sets the editorial agenda for much of the U.S. news media, did not run a single lead item on climate change. Two years later only 10 percent of U.S. television coverage of the unprecedented heat waves made any mention of the issue. The media silence is, apparently, a matter of policy rather than circumstance.

There is no simple model for socially constructed silence but rather another circulation system of complex feedbacks. Climate change finds no foothold in the conversations between workmates, neighbors, or even friends and family. It is not mentioned in the focus groups that define electoral messaging. It is polluted with cultural values. It becomes a toxic C-word for politicians and communicators. It is largely ignored by the media.

Each silence appears to be built on the other silences, but they have a common basis in the need to avoid anxiety and defend ourselves. From a psychoanalytic perspective, denial and anxiety are closely linked. Things that cannot be assimilated are repressed. As Stanley Cohen wrote about human rights abuses, "Without being told what to think about (or what not to think about), and without being punished for 'knowing' the wrong things, societies arrive at unwritten agreements about what can be publically remembered and acknowledged."

Of course this may yet change. The Overton window appears to be swinging back, pushed along by highly salient weather events. Action against climate change may not yet be a safe topic for a barroom conversation in Tulsa, but it is appearing again in the jokes of the late-night talk shows. The processes that define the norms of attention contain powerful feedbacks that can amplify change as well as suppress it. Over my lifetime, there have been remarkable (and hopefully unstoppable) shifts in public attitudes to race, homosexuality, child abuse, and disability. However, none of these occurred without a prolonged struggle by

dedicated social movements, often with a central tactic of confronting a socially constructed silence. The lessons of history show that this is winnable, but it could be a long struggle.

18

The Non-Perfect Non-Storm

Why We Think That Climate Change Is Impossibly Difficult

PSYCHOLOGISTS WORKING IN THE FIELD of decision making often describe climate change as the perfect problem—so perfect, in fact, that one could easily conclude that we don't stand a chance in hell.

Tony Leiserowitz, of the Yale Project on Climate Change Communication, says, "You almost couldn't design a problem that is a worse fit with our underlying psychology." Daniel Gilbert says that "it really has everything going against it. A psychologist could barely dream up a better scenario for paralysis." And Daniel Kahneman is, of course, "deeply pessimistic."

As I continued to speak to people working in other disciplines, I found that, curiously, climate change happened to be the perfect problem from their perspectives too. Economists like Lord Stern describe it as the "perfect market failure." The moral philosopher Stephen Gardiner describes it as the "perfect moral storm."

This view was writ large in a major conference held at Yale University in 2005, which concluded that climate change is "almost perfectly designed to test the limits of any modern society's capacity for response—one might even call it the 'perfect problem' for its uniquely daunting confluence of forces."

So, is climate change really a perfect problem from all of these perspectives? Or does it just seem that way because the narratives that are

around it. And, as I will show, it is these socially constructed stories, not climate change itself, that people choose to accept, deny, or ignore. Climate change may not be the perfect problem, but it does not generate the perfect story either, and this, as I will explain, may be its biggest problem of all.

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Cockroach Tours

How Museums Struggle to Tell the Climate Story

THERE IS A SCHOOL CLASS inside the Hall of Human Origins at the Smithsonian Institution's National Museum of Natural History when I visit, and a young girl is reading out the panels to her friend. Some of the language is a bit tricky, but she is giving it her best. "This ex-hibit shows how the charact-character-istics that make us human evolved over six million years as our an-cestors struggled to survive during times of dramatic climate change." She gives me a big grin and asks, "How did I do?"

The hall has molds of footprints and skulls in well-designed if somewhat staid displays to show evidence that climate change has been a driver in human evolution. This theory is generally supported by paleontologists, though it is a simplification and excludes the many other factors that contributed to brain development, such as sexual selection, cooperation in social groups, hunting, and cooking. Museums like to tell a clear and digestible story, and so have kept this one simple.

Actually, though, the Hall of Human Origins is telling two stories: One is about evolution. The other is about climate change. The first thing one sees on entering is a ten-foot-wide video screen on which the phrase "Extreme Climate Shifts" is repeated over and over again on top of images of the cracked earth, deserts, and melting ice sheets—all familiar images

from the B-roll of environmental documentaries. Climate change carries powerful and resonant frames and these are triggered by the language and images in every display inside the hall.

Yet, while toying with these associations, there is a strange absence of discussion about climate change as a threat in our own times. A single panel, tucked over to one side, tells us that carbon dioxide levels are increasing and that these are "associated with" a warmer planet and sea level rise. Alongside is an interactive video game that weaves this potentially distracting information back into the central theme of the gallery. It invites visitors to consider what useful new features we might evolve to cope with this greenhouse future. "Imagine all the land is underwater," it says. "Would you have big webbed feet like a duck or long stilt legs like a flamingo?" "The temperature is really hot—do we have a tall narrow body like a giraffe or more sweat glands?" Each time you press a button, the cartoon figure alongside develops a new body shape or a shower of droplets pours from his armpits. The schoolkids are shrieking with laughter as they put together the freakiest possible future man.

This is not unlike the deliberately provocative proposal by the philosopher S. Matthew Liao of New York University that we should genetically engineer humans to reduce emissions. We could have cat eyes so we need less lighting. We could have a choice between two medium-size children or three small-size children in order to save energy. "Examining intuitively absurd or apparently drastic ideas can be an important learning experience," Liao says.

If so, the children in the Smithsonian are learning nothing about climate change. There is no information about the issue, its causes, or its solutions. But they *are* learning some powerful frames. The narrative that the Hall of Human Origins promotes to the million plus people who visit every year is that the climate has always changed, that we have always coped with these challenges, and that adapting to them is what has made us strong and smart.

It is an argument that would chime very happily with the fossil fuel lobbyists and professional contrarians in their K Street offices just a few blocks from the museum, most of whom have been directly funded by those nefarious oil billionaire Koch Brothers. The Kochs are men of many interests who like to spread their largesse around, including—oh, didn't I mention this?—twenty million dollars for the *David H. Koch* Hall of Human Origins.

Talking later with Kirk Johnson, the director of the Smithsonian Natural History Museum, on the well-stuffed sofa in his vast corner office on the fourth floor, I am intrigued to know why the Smithsonian, America's most respected scientific body, took funding from America's most notorious climate change denier to host a permanent display—one that now carries his name—portraying climate change as a natural cycle and positive challenge that we will mutate to survive.

Johnson is up for the challenge. He understands the battlefield of climate communications well. His own initiation came ten years earlier, when he made a keynote presentation on climate science to the great and good of the Albertan oil industry. "They were really mad! I was in the full blast of two thousand really unhappy people. And all the time I was thinking, 'Wow, that's interesting.'"

Maybe I am too easily charmed by Johnson, who is smart and entertaining, but he persuades me that there was never a deliberate strategy to misinform: This was a paleontological display on the effects of *natural* climate change, which just happened to stray, rather naively, into the highly politicized issue of *anthropogenic* climate change. Johnson, who has a background in paleoclimatology, freely admits that the two have been confused in the display and that the cold-to-cool changes described in the exhibition are entirely unlike the devastating cool-to-hot changes we are facing with human climate change.

According to Johnson, there was also a great match between a curator with a specific vision and a large donor who is so passionate about paleontology that he makes regular visits to research sites in the Rift Valley. The enemy narrative would love to read Koch's support as another cynical exercise in public misinformation, but reality is more complex and interesting than that.

Nonetheless, I doubt that David Koch is the "hands off, here's the money, see you later" funder described by Johnson. No one wants to antagonize their largest donor, and I would happily bet that the museum held back on any temptation it might have had to make the hall that bears his name into a showcase for the latest climate science.

Which raises a more interesting question: Why is a single lackluster panel in the corner of a paleontology gallery the only permanent display, across the entire Smithsonian museum complex, of the most important science-driven issue of our times? The real problem seems to be that people at the Smithsonian, like everyone else who works on climate

change, are struggling to find ways of talking about it that are interesting, engaging, and truthful to the science yet able to navigate the politics. And, it would seem, they are not doing a great job of it.

Johnson says that he has never seen any museum, including his own, address climate change effectively. There is, he feels, a consistent mismatch between the subject matter and the audience, which tends to be schoolchildren and families on holiday. You get people for only about two hours, with breaks for food or the bathroom—and so you don't have a chance to educate. Maybe, he says, you can achieve "an inoculation of curiosity" that might trigger people to get more interested. But you have to find techniques that are interesting, startling, and fun to get the message out.

So, surprisingly, museums face exactly the same problems as any artist or entertainer: how to be faithful to the science, honest, and independent while avoiding the poisoned narratives of the partisan debates.

This was the challenge facing Professor Chris Rapley when he was appointed the new director of the Science Museum in London in 2007 and set up a team to design a six-million-dollar gallery about climate change. Rapley, a climate scientist himself, was the former head of the British Antarctic Survey. He feared that critics would accuse him of being an activist and kept a careful distance from the project. In summer 2009, though, with the permanent display still in the design stage and the Copenhagen Climate Change Conference just months away, he personally oversaw a temporary display called "Prove It!—All the Evidence You Need to Believe in Climate Change." The experience, he says, left him "badly burned and shaken."

As its name suggests, the display took the position that the science was beyond doubt and that the museum, with the help of disaster images and apocalyptic framing, could convince any remaining Doubting Thomases. It invited visitors to endorse a message of encouragement to governments at the Copenhagen climate conference to "prove they're serious by negotiating a strong, effective, fair deal." To Rapley's horror, deniers got into the online system with automatic voting software and sent in thousands of opposing votes effectively saying, in his words, "This is all bollocks and you should not support it." Rapley looks crestfallen: "I still blame myself," he tells me.

The museum trustees went into a meltdown. Rapley stepped in to drastically overhaul the flagship project, as yet still on the launch pad. In

interviews he promised the right-wing press that the permanent gallery would not state a position on whether or not climate change is real and driven by humans, so as not to "alienate any people who want to be part of the discussion."

And so the Atmosphere Gallery—a name that embodies this neutrality—tries valiantly to meet its impossible brief. There is certainly a lot of atmosphere in Atmosphere. It's a cavernous blue-black space with five themed islands. It aims to be an "immersive environment," but feels rather like IKEA—once inside and disorientated, you trundle between spotlit zones, filling your brain with things that capture your fancy.

In the fashion of modern museums, the displays have been converted into computer game consoles. When I visit, one schoolgirl is immersed in a game involving loading a virtual gun with insulation and firing it at a house. She seems to have no idea of what this means but is enjoying firing a gun at things. At the next island, two boys tell me with teenage confidence that climate change does not exist and is a natural cycle. Their teachers, flirting in the nightclub gloom, tell me that they love the gallery because "it has lots of things to occupy the kids for half an hour before lunch. It gives us a much-welcome break."

By the critical measure of visitor numbers—known as "footfall" in museum jargon—the gallery has been an unexpected success, with more than a million visitors in its first fourteen months, four times above its target. According to Rapley, the exit polls suggest that it has fulfilled its mission to inform the concerned and engage the unconcerned. Overall, people said that "the tone of voice is what I would expect from the Science Museum."

But, I wonder, is it the tone of voice that we would expect for a crisis that threatens our survival? Nothing in the gallery suggests that this is a disaster, a historical turning point, an opportunity or, indeed, that anyone cares much at all. In fact, it seems that in its desire to avoid the contested narrative, the museum has largely abandoned narrative altogether: except, maybe, to show that scientists can do clever things with fancy instruments packaged with a vague technological optimism that, in Rapley's words, "human ingenuity can lead to a better future."

Rapley accepts that "possibly we overreacted and went too far into the neutral voice in the exhibit." The original idea was to bundle up the more contentious climate change parts into a parallel education program. This dissenting voice now survives largely as the "cockroach tours," in which

people dress up in bug costumes and learn "how strange humans are that they don't confront these huge issues when they should do."

Maybe these quizzical cockroaches might like to linger a while at the entrance to the Atmosphere gallery and ponder the strange plaque honoring its principal donor, Shell Oil. On the plaque, Shell explains that "all of us need energy to develop and grow. That's why, at Shell, we are working hard to build a new energy system while supporting a deeper understanding of climate science."

Rapley is very defensive of the decision to take funding from Shell, saying that "demonizing the corporate world is a route to nowhere. It is much better to enter a dialogue with them." Certainly Rapley entered a very positive dialogue with the chairman of Shell, James Smith, who, he says, "was one of the most thoughtful people you can imagine and takes this issue very seriously." He is less enthusiastic about dialogue with the radical climate change campaign group Rising Tide, whose members invaded the museum with noisy protests and banner drops. Anyway, he insists, Shell "was under a very strict and legally binding contract" that it had no editorial influence over the exhibition.

But then why would Shell need to influence an exhibition that was so determined to say nothing that could challenge its interests? Shell received what they needed—a showcase for their global brand and own corporate story line—that they are good guys who produce energy, find positive environmental solutions, and help solve the climate crisis. Shell's narratives are very much better-written and better-funded than any climate change education program. It is a measure of their success that people not only accept them but cannot even see that they exist.

And so a museum with a proud scientific history, led by a dedicated and self-reflective climate scientist, ended up with a nicely lit atmospheric crèche sponsored by a company whose entire business model is, by necessity, based on making climate change worse.

Now that's an interesting story.

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Tell Me a Story

Why Lies Can Be So Appealing

STORIES ARE THE MEANS BY which we humans make sense of our world, learn our values, form our beliefs, and give shape to our thoughts, dreams, hopes, and fears. Stories are everywhere; in myths, fables, epics, histories, tragedies, comedies, paintings, dances, stained-glass windows, films, social histories, fairy tales, novels, science schemata, comic strips, conversations, and journal articles. Before we can even read and write, we have learned more than three hundred stories.

In his book *The Storytelling Animal*, Jonathan Gottschall says, "We are, as a species, addicted to story. Story is for a human as water is for a fish." The author Philip Pullman, who has been among the handful of writers struggling to build stories around climate change, says, "After nourishment, shelter, and companionship, stories are the thing we need most in the world."

Stories perform a fundamental cognitive function: They are the means by which the emotional brain makes sense of the information collected by the rational brain. People may hold information in the form of data and figures, but their beliefs about it are held entirely in the form of stories. Stories are the essence of climate change as a wicked problem—where the problem is shaped by the very process of explaining it.

Professor Walter Fisher, a theorist in communications theory at the University of Southern California, has argued that when non-experts make sense of complex technical issues, they make their decisions based

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Wellhead and Tailpipe

Why We Keep Fueling the Fire We Want to Put Out

In some ways, climate change is actually quite simple. We find fossil fuels. We dig and pump them out of the ground. We process them and sell them. Then we burn them. The waste gases include carbon dioxide, which traps the heat in the atmosphere that leads to global warming. There is, of course, much more to it than this—other gases, sources, and sinks—but this is the basic carbon cycle, which represents the majority of the problem and appears in every textbook and informs every policy.

So, there is a chain, or, if you prefer, a pipeline. At the one end is exploration, development, and production—what I will call the *wellhead* (a term which will include the minehead). And at the other end is the sale and then combustion that leads to emissions—what I will call the *tailpipe*. Policies to manage climate change should, one would think, consider interventions at both ends and all stages in-between.

However, they do not. The focus on tailpipe gases and disregard for wellhead fuels has been the single most important factor in all government and policy framings. Radical environmentalists alone have attempted to connect two issues that, in the minds of most mainstream experts, operate in entirely independent realms. This does not, on its own, explain why we ignore the risk of climate change, but it does explain

the fundamental disconnection that works through all narratives and policies on the issue.

It explains how a climate science funding body can subsidize exploration by oil and gas companies, and how the Science Museum in London can have a display on climate change funded by Shell. It explains how Norway, the world's eight largest exporter of oil, can see itself as a champion of action on climate change. It explains how President Obama, speaking as usual in the first-person plural, can boast in a 2012 presidential debate that "even as we're producing more coal we're producing it cleaner and smarter, same thing with oil, same thing with natural gas" and then, just a few months later, say, "We need to act, but we can't just drill our way out of the energy and climate challenge."

It explains how Hillary Clinton, who calls the climate crisis "the chief threat of the 21st century," could visit Norway in June 2012 to negotiate U.S. access to the nine hundred trillion dollars in Arctic oil reserves. Her internal dissonance came to a head on June 2. She started the day with a trip on a scientific research vessel to see the melting Arctic—an experience she described as "sobering." Back on land, after a lunch of local seafood delicacies, she went straight into a roundtable attended by the CEO of Norway Statoil and the country director of ExxonMobil to plan the expansion of Arctic oil production.

In Britain, energy and climate change are combined into one government department leading to simultaneous action to reduce emissions *and* to boost oil production. One month the Minister of *Energy* and Climate Change brags about the allocations of new licenses to release twenty billion barrels of oil around British coasts. The next month the Minister of Energy and *Climate Change* announces an ambitious plan for the government to reduce its emissions by 10 percent.

Although many campaigners would regard such inconsistency as evidence of the hidden influence of oil corporations, policies to deal with other global problems—even those with powerful vested interests—never ignore production in this way. Fisheries are managed through fishing rights and production quotas. Illegal logging is prevented through permits and forest management. And to take a notoriously wicked problem, it would be unthinkable for drug policy to ignore production, which is why the U.S. government spends nearly two billion dollars per year on international control measures. If, as George W. Bush said, we are addicted to oil, then a policy on climate change that ignores production of

fossil fuels is like a policy on drugs that ignores the poppy fields, cocaine labs, smuggling networks, and dealers and focuses exclusively on the addicts.

In fact, when compared with these other examples, it makes even *more* sense for climate change policies to include production. Two-thirds of the world's oil production is produced by just ten oil companies or, to look at it another way, by just ten countries. Representatives from every one of them could comfortably sit around a single conference table. There would be enough space left over for a couple of extra delegates from China and the United States, which between them account for two-thirds of the world's coal production. This was self-evident to the economist Thomas Schelling, who won the Nobel Prize for his work on negotiation theory. Schelling regards climate change policy to be an "awfully complicated hodgepodge." To him, the answer seems very straightforward: "The way to simplify this is to put the cap on the fossil fuels, not on different industries—a cap on oil and gas at the wellhead, a cap on coal at the minehead," he says. When I asked him why he thought that no one has ever proposed doing this, he said, "I don't have any good theory except to say that hardly any leading politician in the U.S. manages to speak truthfully and candidly about the subject of climate change."

Robert N. Stavins, a professor of business and government at Harvard University, agrees. He supports the model of emissions trading but argues that the precedent should have been the trading model applied during the 1980s to phase out leaded gasoline, which focused on the lead content in gasoline (the fuel input) not the exhaust (the tailpipe output). According to Stavins, the cheapest and most enforceable system is to tax the carbon content of the fuels.

So, I wondered, when had the governments and experts working on the international process weighed up the various options for policy interventions and decided that the best basis for national and international policy was to regulate and trade gases and ignore the fossil fuels that produce them?

The answer is that this discussion has never taken place.

The science of climate change has only ever been concerned with greenhouse gases and their potential impacts. In 1990 the Intergovernmental Panel on Climate Change (IPCC) produced the first tables of national greenhouse gas emissions, which then became the basis of the international negotiations. However the IPCC had no remit to produce tables of

national fossil fuel production. Sir John Houghton, the founding chair of the IPCC, sees no difference between the fossil fuels that are produced and the greenhouse gases they later become. "Of course," he says, "they are all part of the same thing." The problem, he told me, is that "talking about the source of fossil fuels would have moved us from the science arena into the policy arena. Because of the pressure we were under, we needed to be squeaky-clean, maybe too clean, but we needed it to be that way."

In his fourteen years chairing the IPCC Science Committee, Sir John could not recall a single proposal or debate about controlling production at the wellhead. "It's a pity that it never has been addressed, but it is not a science question. It is a policy question."

Except that it was never discussed in policy circles either. Jeremy Leggett, a former oil industry geologist who later became the senior climate campaigner for Greenpeace International, has attended the international climate negotiations since 1990 and sat in on every major policy discussion. Yet he could not recall a single instance when anyone formally proposed a policy that would constrain the exploration and development of new sources of oil, gas, and coal. "Looking back," he says, "I think it was a missed opportunity that we did not make this argument earlier."

"Nor," he adds, "was there any point at which the oil companies or producers actively generated this approach. It just happened to be the zeitgeist that this was how the problem was approached and this just happened to be in the interest of the oil companies."

Leggett's observation is important. Of course, there were very powerful national and commercial interests protecting fossil fuel production. Attempts to limit wellhead production would have been bitterly resisted. But there were no fights, no struggles, no backroom deals. There did not need to be because it was never discussed.

Jennifer Morgan has dedicated most of her working life to following the climate negotiations. She headed the delegation for the World Wildlife Fund throughout the Kyoto negotiations and has led campaign teams in every negotiation since 1994. Like Leggett, she could not identify any point at which a decision was made to focus on tailpipe emissions. She tells me that "it has just been assumed for a very long time." Morgan and Leggett agree that campaigners and negotiators alike were trying to get the best deal they could on the terms that were available to them—and these were only concerned with the tailpipe.

And so everyone fought bitterly over the mechanisms for sharing,

controlling, and trading tailpipe emissions. The science was only concerned with *gases*. The international process had taken all of its precedents from previous policies to control and trade *gases*. From the very outset fossil fuel production lay outside the frame of the discussions and, as with other forms of socially constructed silence, the social norms among the negotiators and policy specialists kept it that way.

Consequently, the narratives surrounding the environmental impacts of fossil fuels became divorced and disconnected. Narratives around the impacts of oil, gas, and coal production become concerned with health, safety, and compensation for localized environmental damage. Narratives around climate change become concerned with emissions, energy demand, efficiency, consumer lifestyles, and global climate impacts.

In spring 2010 there was a perfect opportunity to bring these two drifting stories back together again. Senators John Kerry and Barbara Boxer were holding intensive negotiations to redesign a climate bill for a vote in the U.S. Senate. To maintain the political momentum, mainstream environment organizations were running the largest and most expensive public outreach campaign ever held on climate change. And then, on April 20, BP's *Deepwater Horizon* oil rig exploded and spilled four million barrels of crude oil into the Gulf of Mexico.

The result should have been a godsend for climate advocates: a media-driven outrage about dirty fossil fuels at exactly the time that legislators were considering an even greater crisis caused by the pollution of those same fuels. This perfect storm of synchronicity happens only once in a campaigner's lifetime.

Only there was no room for making these connections because the U.S. climate bill, following the lead of the international negotiations and the acid rain emissions trading, was entirely concerned with tailpipe emissions. In return for their involvement and support, oil, gas, and coal companies had been offered generous emissions allowances and increased exploration rights. Three weeks before the explosion, as part of a grand bargain to get a climate bill through the Senate, President Obama had announced plans to open up 167 million acres of the Atlantic coast for oil drilling.

So there was no means to connect the narratives—although grassroots groups like the Sierra Club tried valiantly to do so. *Deepwater Horizon* became all about local impacts and corporate health and safety—with a compelling enemy narrative centering on the slippery and evasive performance of BP CEO Tony Hayward.

The more radical environmentalists have always tried to make the connection between wellhead and tailpipe. Patrick Reinsborough of the Oakland-based Center for Story-based Strategy sees this as part of a wider vision of an inclusive movement for social justice. "There is now a new political space opening up," he told me, "in which we see that the problems are fossil fuels, and people who have been on the front lines of fighting fossil fuels are the obvious people who should be on the front line fighting for solutions."

The battle over the Keystone XL pipeline and the movement mobilized to demand divestment from fossil fuel companies are also determined attempts to reframe the issue of climate change in terms of wellhead. A pipeline not only has the proximity of a visible struggle but it also gives tangible form to the transmission of carbon from stored reserves to emissions.

But the problem remains—as with the language and images of climate change as a whole—that for as long as radical activists are the only ones making these connections, their arguments may be marginalized and disregarded.

So, I suggest, the separation of wellhead and tailpipe was not primarily the product of corporate lobbying or global power politics—although these have played a role. It can also be understood as an extreme error of judgment resulting from cognitive error and flawed categorization. Scientists categorized climate change as a tailpipe issue because production was considered a political issue that was outside of their domain. Policy makers then categorized climate change as a tailpipe problem because they drew on recent available experience that suggested viable solutions for tailpipe problems. Confirmation bias and a socially constructed norm of disattention finished off the job.

Because climate change is multivalent and wicked, it can have multiple interpretations but exists only in the form that people choose it to have. This means in turn that it does not exist in the form that they choose to ignore. Production controls are not debated, because they simply don't exist within the debate.

After twenty years of negotiating around emissions, we are now in a bizarre situation. Most Western governments have established programs to subsidize the increasing production of renewable energy, biofuels, and—with less success—nuclear power. And they do so while encouraging, and usually subsidizing, ever-larger investments into exploring and developing new fossil fuels.

In 2012, the global investment in renewable energy was an impressive $244 billion. In 2012, for the first time, the oil and gas sector investment into exploration and development of new reserves broke the $1 trillion barrier. While the renewable sector tries to reduce emissions at the end of the pipe, the oil and gas industries seek to pump ever more fossil fuels into the front of the pipe.

But the procession must go on and the lords of the bedchamber are taking greater pains than ever to appear to be holding up the emperor's train, although, in reality, there is no train to hold.

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The Black Gooey Stuff

Why Oil Companies Await Our Permission to Go Out of Business

SHELL OIL IS VERY CONCERNED about my safety. On a large video screen by reception in its South Bank headquarters in London, the office manager tells visitors, "Your safety is very important to us. We have a policy of Goal Zero: *All* accidents *can* be avoided. Comply with all safety notices. Do not run in the corridors. Report any unsafe behavior by your host. We hope you have a very happy, positive, and *safe* visit."

As I am watching this, the woman at reception is trying to get my attention.

"Your shoe," she says.

"Sorry?"

"Your shoe. Your shoelace. *Shoelace.*" By now, everyone in reception is joining in and pointing. "Your shoelace, *sir*. It's loose. You could trip up and have an *accident.*" "Oh well," I say, "I like to live dangerously."

Following the circular staircase that spirals up to the meeting rooms are cardholders, like the kind they have in fancy cake shops, with smiling faces of the Shell family. It's very exciting—say the people on the cards. Never a dull moment. Vibrant. Exciting. We have a shared vision. We know what we want to be. The head of communications says, "One big challenge is to help Shell show people in the UK that it's really serious about climate change." A big challenge indeed—but then Shell likes challenges.

As I make my way up, reading the cards as I go, the receptionists are concerned again. Now they are sounding more anxious and obviously have me pegged as a dangerous risk taker and threat to Goal Zero.

"Sir. *Sir!* Can you *please* hold the handrail on the stair."

"The what?"

"The handrail—you might trip and have an *accident.*"

It is then that I notice an array of signs all along the staircase warning me of slippery steps and directing me to walk carefully and use the handrail. When I finally sit down with David Hone, Shell's climate change supremo, a look of concern crosses his face.

"Your pen," he says.

"Pardon?"

"Your pen, George. Your pen. It's leaking. It could spill and mess up your clothes."

And I want to say, "Your oil, sir. Your *oil.* It could burn and destroy the biosphere." Seeing that I have been invited to "report any unsafe behavior by your host," there is a lot more that I could have said about the safety of selling products that dump 380 million metric tons of carbon dioxide into the atmosphere each year.

This obsessive focus on personal safety would be odd under any circumstances. The fact that it is so prominent within an institution involved in the most dangerous activity in human history suggests that a major oil company might be just as prone to developing irrational avoidance mechanisms and bizarre self-justifying narratives as any individual or social group. And why not? It is, after all, a social network with its own identity, internal culture, and social norms.

By this reckoning, is it surely relevant that Shell, like all the oil giants, deals with climate change within a single combined Health, Safety and Environment department.

Professor John Adams of University College London howls with laughter when I later tell him the Shell story. Adams is the author of the most popular textbook on the social construction of risk and has a particular loathing for health and safety policy, which he calls the "compulsive risk assessment psychosis" (a.k.a. CRAP). He recalls that when he gave a presentation at MI6, the secret intelligence service that supposedly employs James Bond, a hardened security operative complained bitterly about being chastised for unsafe stair walking in the head office.

Adams's academic research concentrates on the role that our

perception of control has on our perception of risk. He observes that the excessive focus on health and safety is common across all resource extraction industries and derives from a culture that sees risks as something that can be managed and controlled. There is, he agrees, a bias derived from definitions of influence and control behind Shell's concerns about safety. "I see cultural bias everywhere I turn," he says. "My own cultural bias is to see the world though cultural bias theory." I guess that's a meta-bias.

Safely seated with Hone, fortified by petits fours from the cornucopian nibbles buffet that fuels Shell's power meetings, familiar cultural biases weave their way through our conversation: in groups, out groups, social norms, bystander apathy, self-justifying enemy narratives, and, as usual, the total separation between wellhead and tailpipe.

Hone is a straight-talking Australian chemical engineer who has worked for Shell all of his life. Like the people shown on the cards on the stairs, he finds it very *exciting* to be working in such a powerful company. He has just returned from Alberta, Canada, and talks with awe of Shell's grand ambition for its operations in the tar sands. Once again, I am reminded that one person's environmental disaster is another person's engineering achievement.

Hone is fiercely loyal despite having the unenviable task of defending Shell's role in an issue that he openly admits is an extremely "inconvenient truth" for his company. I am pleasantly surprised, having expected to hear a flow of carefully crafted PR lines, to find that Hone comes across as a decent and honest person. "It's a bugger," he says.

Back in 2009, he was filmed talking of his conviction, as a father, that it is a "no-brainer that we move to a new carbon pathway" and how excited (that word again) he was about the transformation under way in his company. A few weeks later, Shell froze all of its investment in renewable energy.

The climate activist Bill McKibben says, "This is, at bottom, a moral issue; we have met the enemy and they is Shell." Well, I'm all up for meeting enemies and understanding how they operate. So I am intrigued to know how Hone squares his concerns about climate change with his loyalty to a company that apparently has no brain and has decided to spend ever greater amounts—currently more than thirty billion dollars a year—bringing more oil and gas reserves into production.

Hone's argument, not surprisingly, adheres strongly to the tailpipe

narrative: that the responsibility lies with the emitters who give Shell the "permission" to extract the fossil fuels that they choose to burn. *Permission* is a key word for Hone, and it crops up throughout the interview. "We need the permission that society gives to us," he says, but the oil industry "is not being given the permission to make a transition out of fossil fuels." And the main reason for this is that "the international agenda is driven by people with political agendas that are unrelated to solving the problem."

These distracting agendas include development, social rights, and poverty campaigns, but especially environmentalists who, he says, have written climate change as the old socialist-versus-capitalist fight in a different format.

Hone wants it known that this familiar enemy narrative is his personal view rather than that of his company. Really though, it is just a blunter Aussie version of the language that permeates the future scenarios produced within Shell. The most recent of these warns of a future dystopia in which "powerful climate lobbies" demand "disruptively overreactive, ill-considered, politically driven knee-jerk responses"—including, shockingly, bans on the development of new sources of fossil fuels. This, by some complex self-serving logic, leads the tailpipe emissions to grow "relentlessly."

Shell is understandably nervous about any restriction on its expansion. The British nonprofit organization Carbon Tracker Initiative has been warning institutional investors that the current carbon reduction targets (inadequate though they may be) cannot be met without leaving 60 to 80 percent of the currently listed oil and gas reserves in the ground. This in turn means that the share value of Shell, which is underpinned by these reserves, is grossly inflated. It is hardly surprising that Shell executives prefer to keep their eyes focused on the risks of slippery floors.

So climate change is a collective bugger of an inconvenient challenge. Shell wants to keep finding the stuff and digging it up. We keep burning ever more of it because we are addicted to energy. And everyone is threatened by climate change. The solution to this quandary, which, as usual, Shell is not being given the *permission* to develop, is carbon capture and storage (CCS).

CCS is a group of technologies that can remove carbon dioxide from the waste flue gases (or in the case of gas, from the fuel itself) and then pump it into underground aquifers for permanent storage. Cynics suggest that all that dangerous carbon had been quite safely stored underground to begin with.

There are currently eight large-scale CCS projects and eight more under construction, which, between them, will soon be storing thirty-six million metric tons of carbon dioxide a year. This sounds promising until one considers that we will need sixteen thousand more plants on this scale to deal with current emissions. Emissions are still increasing so fast that we will need another thousand plants each year just to keep up with the annual increase. And transport emissions—which are growing even faster—cannot be captured by any technology.

Legitimate debates continue about whether these technologies could ever be economically viable, whether the carbon dioxide could really be stored permanently, and whether there is enough space to put it. The costs of CCS are extremely uncertain, running at $150 per metric ton of CO_2, and the technology becomes viable only if CO_2 can be captured at a cost of $25 per metric ton. There is a long way to go.

David Reiner, an expert in CCS at Cambridge University, is convinced that it is technically possible, providing that there is economic pressure and political will. He tells me that CCS has no economic justification on its own: It is entirely linked with concern about climate change and, he says, "CCS development moves forward only when there is a lot of interest or concern in climate change."

Of course it does. CCS is the card that gets everyone out of jail. CCS allows governments to carry on talking big on climate change while continuing to expand oil and gas production. It provides the reason that oil and gas companies can stay in business. And it fits perfectly into the industry worldview of engineering solutions. As ExxonMobil CEO Rex Tillerson says, "Maybe I'm biased because I'm an engineer, but I have enormous faith in our technology's ability to find solutions as they present themselves to us." Tillerson named it correctly: There is an explicit bias at work.

Maybe CCS can work. I hope it does—this is one engineering technology that could make a genuine contribution to the transition out of fossil fuels. My fear, though, is that CCS is less of a real solution than a much-needed narrative ploy, providing the vital missing piece in a story that is unstable and incomplete without it. For narrative purposes, CCS does not need to work on a large scale. It doesn't need to be economically viable or ever be competitive with renewable energy. It scarcely needs to work at all. All that is required is that it exist tangibly enough to provide an alibi for the wellhead—a few demonstration sites, some chunky reports. And then lots of creative storytelling about human ingenuity.

Shell, for example, says that CCS is, along with nuclear, the "hinge" on which future emissions depend. BP says that CCS is a "critical technology for reducing emissions." A high-level working group on the future of coal at the Massachusetts Institute of Technology in 2007 also concluded that CCS is the "critical enabling technology." Shell does not anticipate large-scale deployment of CCS until 2030, but then, within twenty years, it predicts that the developed world will convert 90 percent of coal- and gas-fired plants to CCS. There is some textbook temporal discounting and optimism bias going on here.

"Never forget," says Steve Kretzmann, founder of the environmental campaign group Oil Change International, "never, *ever* forget that the oil industry is the most extraordinary wealth-generating machine ever invented by man. That is what it is designed to do and it does that very well. I haven't seen a single intelligent thought about how you could transition the industry out of oil and keep it just as profitable."

Kretzmann has spent twenty years campaigning against oil companies and has watched the same cycle over and over again: "Every so often when they think something is going to happen, they buy a whole load of wind, sun, algae, CCS, whatever. Then their lobbying arms do their jobs, the threat recedes, and they say, 'Nah, we're not going to do this.'"

The journalist Ross Gelbspan interviewed six U.S. energy and oil company presidents for his book *The Heat Is On*. All but one of them agreed that climate change was happening. Like David Hone, they all said the same thing: that as soon as governments regulate climate change, they would become "energy companies." In the meantime, says Gelbspan, they admitted, off the record, that the competitive environment forced them to suppress the truth about climate change and ensure that those regulations do not happen.

Gelbspan tells me he has "pondered a great deal how these men could be loving grandfathers and such cold-minded executives." His only conclusion is that they are outstandingly good at compartmentalizing different areas of their lives and preventing any connections from jumping across those boundaries.

Kretzmann is surprisingly empathetic when he talks about oil company employees and recognizes that many are struggling with these contradictions and "genuinely believe that their chance of changing things is better on the inside."

That being said, when it comes to the battle for public opinion, it's

gloves off. One of the TV commercials produced by Oil Change International contains smiling "executives" chatting to the camera in the intimate way currently favored by corporate advertising: "Begging a fortune in subsidies, destroying your kids' future. At Exxon, that's what we call good business. Here at Exxon we hate your children."

"They don't like it much," Kretzmann says, and chuckles. He makes no bones that the public fight is not really about policies and climate data; it's about identifying enemies and reframing oil. "Whenever the oil industry wants to talk about their great benefits, they talk about energy. When we want to talk about their impacts, we talk about oil—that black gooey stuff."

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Moral Imperatives

How We Diffuse Responsibility for Climate Change

When Dick Cheney, former U.S. vice president, accidentally shot his friend Harry Whittington in the face, he drew on his forty years in politics and the oil industry to create four stages to the process. "Ultimately," he said, "I'm the guy who pulled the trigger that fired the round that hit Harry." His boss, George W. Bush, added yet further levels of detachment—"He heard a bird flush, and he turned and pulled the trigger, and saw his friend get wounded."

Even when they shoot their friends, it seems, politicians will do everything they can to create multiple stages between themselves and responsibility. It is a peculiarity of English that it doesn't distinguish between intentional events and accidental events. In many languages, you would say "I broke my arm" only if you went mad and broke it. But English makes up for this weakness with the ingenious passive voice, which removes intentionality: My arm was broken; my friend got wounded; the climate got fried.

And so it is with climate change. We diffuse the responsibility into multiple stages, each one protected by the passive voice. The oil is produced. It is burned in the car. The climate is changed. Someone's life is destroyed in a climate disaster on TV. Or, as the *Wall Street Journal* says, "climate concerns cannot and must not be

ignored"—this, incidentally, in a quotation from a report arguing for the production of Canadian tar sands.

So where in this chain *does* responsibility for climate change lie? Stephen Gardiner, professor of philosophy at the University of Washington, argues that *all* the decisions concerning action or inaction on climate change are ethical issues—especially in regard to intergenerational rights.

Which, for Gardiner, raises an interesting question: Why is there so little discussion of the ethics of climate change? The answer is that this is yet another area in which people shape the issue to avoid the discussion. Certainly no one is in a hurry to invite ethicists into the policy discussions. In 2010, the United Nations considered creating a Universal Declaration of Ethical Principles in Relation to Climate Change. After ten international consultation meetings, its ad hoc working group concluded that the U.N. "should be given the opportunity to review the desirability of preparing a draft declaration." I don't think that was a yes, even by U.N. standards.

This is exactly the kind of obfuscation that prompts Gardiner to suggest what he calls "a very unpleasant thought" that politicians deliberately create needlessly complex treaties and unworkable processes to draw attention away from the need to do something. This observation is not lost on other commentators. *Guardian* journalist George Monbiot argues that "government policy is not contained within the reports and reviews it commissions; government policy *is* the reports and reviews." He says, "Government creates the impression that something is being done, while simultaneously preventing anything from happening."

The key factor that determines moral responsibility is intentionality. Humans are acutely alert to interpreting people's intentions—even children as young as three respond differently to identical harmful acts depending on whether they regard them as intentional or not intentional.

The reason that an enemy narrative motivates the emotional brain is because an enemy has the clear *intention* to *harm us*. If scientists had discovered that North Korea was pumping greenhouse gases into the atmosphere with the intent to destabilize the world's climate, there would be immediate political consensus to take action, regardless of the cost. That, of course, would be a very big problem but, crucially, a *tame* problem, and far more easily solved.

So climate change struggles with intentionality. No one wanted climate

change to occur. No one ever purposefully wanted to hurt anyone through climate change. As the journalist Gwynne Dyer argues in his book *Climate Wars*: "Nobody is to blame for the crisis that hangs over us—not my mother who had five children, not William Levitt who invented the modern suburb, or Henry Ford."

But that is in the past. It is much harder to argue one's innocence when one *knows* that one's actions are causing harm. If climate change becomes intentionally harmful only when people *know* they are causing it, is it any surprise that most people do everything they can to avoid learning about it or accepting that it exists?

Like many skeptics, U.C. Berkeley physicist Richard Muller would be very happy if there was no discussion about morality at all. Talk of responsibility, he says, is all about blame. Muller recalls a Frenchman accusing Americans of being arrogant for blaming themselves—as though only America could be important enough to count. We both have a laugh at this: Is blaming someone for blaming themselves some kind of meta-blame, I wondered. This issue, Muller says, needs "problem solvers not blame seekers."

But if we want to be problem solvers, we still have to decide exactly where that problem lies. Whether we are concerned with wellhead, tailpipe, or both, we still have to agree who is going to make the changes. And that leads straight into the issue of fairness and back into the ethical dimension. Ethics are unavoidable.

Everyone is strongly in favor of the principle of fairness. The problem is that everyone also defines fairness in terms of his or her own self-interest. This can be taken to a ludicrous extreme. The Republican chairman of the House of Representatives debate on the Kyoto Protocol, David M. McIntosh, argued that the protocol was "patently unfair" because it exempted countries that already had the "competitive advantages of cheap labor, lower production costs, and lower environmental, health, and safety standards." Such, it would seem, are the unfair economic advantages of grinding poverty.

Psychology research suggests two key reasons why it is proving so hard to define fair reductions. The first is that our attachment to the status quo leads us to give an excessive value to what we already possess. We come to believe that this originates in our own skill, talent, and hard work and is therefore a fair reward.

The second reason is that while people are sensitive to losses, they are

even more sensitive to the fair distribution of losses. In experiments, people may tolerate an unfair distribution of gains in the interest of a quick settlement, but they will doggedly insist that any loss is unfair, even if, by delaying an agreement, they end up paying far more.

This problem constantly recurs around the management of shared environmental resources where everyone wants the gain of exploitation but no one wants to accept the loss of constraint. In his highly influential and highly disputed paper published in *Science* in 1968, the ecologist Garrett Hardin argued that we are all forced by our evolutionary drives to maximize our personal benefit from a common resource even when we know that this will lead to its ultimate destruction. He named this phenomenon the "tragedy of the commons."

Not surprisingly, climate change has been called the *ultimate* tragedy of the global commons, although, as usual, the people who use the phrase invariably focus on the tailpipe-emissions-into-the-atmosphere commons rather than exploitation of the common reserves of fossil fuels.

Such is its fame that people tend to forget that Hardin's paper is not a reasoned argument grounded in evidence but an ideological polemic grounded in prejudice. Its primary aim was to confront "liberal taboos" in order to argue that the provisions of a welfare state encourage "overbreeding" by the poor. None of this concern about overpopulation prevented Hardin from pursuing his own hard-wired self-interest and having four children of his own.

Hardin's deterministic model of human nature melds perfectly with the interests of authoritarianism and economic elites. Thus, when speaking of the atmospheric commons, Hardin says, "The air and waters surrounding us cannot readily be fenced, and so the tragedy of the commons as a cesspool must be prevented by different means, by coercive laws or taxing devices that make it cheaper for the polluter to treat his pollutants than to discharge them untreated."

If climate change is a tragedy of the commons, it follows that appeals to responsibility and conscience are a waste of time and that, in Hardin's words, only "mutual coercion mutually agreed on" will work to curtail our insatiable personal interests.

But there are many other ways to see it. The political scientist Elinor Ostrom won a Nobel Prize in Economics for her research into the innumerable ways that people collectively manage resources. In a direct challenge to Hardin, she argued that people will sustain and even improve

shared resources providing there is free communication, a shared vision, a high level of trust, and a mobilization of participating communities from the bottom up.

And if this is, as Stephen Gardiner puts it, an issue of collective moral pollution in which we benefit ourselves at the expense of future generations, then we need to build that bottom up vision by agreeing to a set of principles based on our shared values. The problem is that we do everything we can to avoid thinking about climate change in any form, including, as we shall see, its implications for our own children.

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What Did You Do in the Great Climate War, Daddy?

Why We Don't Really Care What Our Children Think

IN 1915 ARTHUR GUNN, A London printer, was debating whether to join the army. He said to his wife, "If I don't join the forces, whatever will I say to Paul if he turns round to me and says: 'What did you do in the Great War, Daddy?'" Gunn suddenly realized he had a marvelous slogan for a recruiting poster and passed a sketch onto a propaganda artist he had worked with, Savile Lumley. Lumley did a fine job, choosing to make the interrogator a little girl. Sitting on her father's lap, a history book on her knee, she asks him this probing question as he stares wistfully into the middle distance.

The moral dilemma that inspired this iconic poster is one of the recurring ethical themes in climate change communication. Caring for the welfare of our children is one of our strongest evolutionary drives and one of the few concerns that consistently overcomes self-interest. On the face of it, giving those children a voice in our decisions, especially imagining how they might confront us in the future, should be a powerful spur to action.

The veteran environmentalist Jørgen Randers, one of the authors of the famous 1972 *Limits to Growth* report, tells us that our "first priority should be to prepare the foundations for an unassailable answer to the

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The Power of One

How Climate Change Became Your Fault

WHAT MAKES CLIMATE CHANGE STAND out from *all* other global problems is that our individual contributions can be measured down to the last gram. We cannot identify our contribution to any other wicked problem, such as poverty, terrorism, or drug abuse—let alone quantify it. But with climate change, we can say with confidence whether our contribution is going up or down, how it compares with that of other people, and what changes would be needed to reduce it. Even though we do not make our cars, we still choose where to drive them. Even though we do not grow beef or asparagus, we still have the choice where and when to buy them, or whether to buy them at all.

The emissions that cause climate change result from decisions taken at *multiple* stages negotiated through the market. Ignoring wellhead production is a foolish error, but it is no less foolish to ignore the role of consumer decisions. People often feel powerless in the face of climate change, when, in fact, there is no other issue over which they have more personal control or involvement. Two-thirds of people in the United States and the United Kingdom and even more in Australia agree that individuals can and should actively reduce their personal contribution to climate change.

What is more, changing these personal behaviors may be the key to changing attitudes. According to "self-perception theory," behaviors are an important cue for self-image. So, if someone can be persuaded to

adopt environmental behaviors, she may over time come to identify herself as someone with an environmental worldview. Green is as green does. And green does as green is.

On this basis, in the early 2000s, environmental organizations began to focus increasingly on the personal responsibility of consumers for climate change. It was a natural step for them, combining their long-held interests in consumer advocacy, personal responsibility, and ethical lifestyles.

To bring it home, they distilled personal actions into lists of household hints: some of them significant (reducing commuting, installing insulation and efficient heating), some of them marginal (not idling the car and turning appliances off standby), and some of them virtually irrelevant (not using plastic bags and unplugging cell phone chargers). The inclusion of such minor changes was supported by a large and verbose academic literature that, in its own jargon, argued that these "easy" steps could "spill over" into larger behaviors and that "hooking people with a small request" provides a "foot in the door," whereby they can be ushered onto the "virtuous escalator."

Books proliferated telling people to Measure their Carbon Footprint, get Low-Carbon, become Eco-Friendly, Save the Earth for a Fiver, Tread Lightly on the Earth, Kick the Fossil Fuel Habit, go on a Climate Diet. Or go on a Carbon Detox—the title of my own contribution to this short-lived and rapidly remaindered eco-tastic subgenre.

Maybe we all went too far and, in our eagerness to find homey messages that would engage people, we fell into the wicked trap of limiting climate change through the solutions we proposed. *An Inconvenient Truth* posited climate change as an existential threat yet petered out into a string of small options—changing lightbulbs, inflating tires, and driving a bit less. The Live Earth concerts in 2007 sought to fuel a global movement yet ended up promoting handy household tips. Six months after the concerts, I received a perky e-mail from the Live Earth team telling me how I could "re-use the heart-shaped candy boxes left over from Valentine's Day as picture frames, earring holders, or backpacks for dolls."

It was not long before governments started picking up on the theme. In the United States, lists of simple actions to prevent climate change were promoted by the Environmental Protection Agency, the Federal Highway Administration, state programs such as Cool California, and school curricula. The *New York Times* reported that kids, fired up on

school eco-programs, had become "the little conscience sitting in the back seat," lecturing their parents about their behaviors and chanting, "Every day is Earth Day."

The unlikely leaders in this field were the thoroughly ungreen governments of Canada, Ireland, and Australia. In the early 2000s all three were intoxicated by an economic boom built on new roads, airports, and fossil fuel development. They duly ripped up their international commitments under the Kyoto Protocol or, in the case of Australia, refused to ratify it at all. And yet, strangely, all three countries then launched high-profile national campaigns to empower their citizens to take *personal* action against the global threat of climate change.

In Ireland, the Power of One campaign promoted the "breathtakingly simple idea" that each individual can "make a difference." In Australia, a twenty-million-dollar Climate Clever campaign targeted every household in the country. The Canadian government poured forty-five million dollars into national television ads for its One-Tonne Challenge, in which the comedian Rick Mercer harangued ordinary citizens to reduce their carbon dioxide emissions, shouting, "C'mon! We're Canadian! We're up for a challenge!"

On the face of it, these small steps appeared to be a means to avoid the political partisanship that bedevils climate change. Political action is messy and participatory. This seemed much more benign—speaking to values of national unity while enabling consumers to make well-informed decisions. We will fight it in the malls, we will fight it in the catalogs.

But that does not mean that when the governments focused on personal responsibility, they were not being political: They were being *extremely* political and framing climate change within a wider neo-liberal ideology that promotes private property rights and free markets. As the left-wing sociologist Ulrich Beck said, "We are all now moral entrepreneurs laden with personal responsibility but with no access to the actual decisions."

Worse still, these campaigns did not actually work. People were not up for the challenge at all and were certainly keeping well away from that virtuous escalator. Independent evaluations, now buried deep in the archives, found that the Power of One campaign was "only capturing those who were already converted" and the One-Tonne Challenge had achieved no change at all in overall energy use. In Australia, people became even less climate clever and a third fewer people considered

climate change to be their most important issue after the campaign than they had before.

No one paid much attention to these brutal evaluations because these campaigns had never really been concerned with reducing emissions. In reality, they were a narrative gambit: to define climate change as a problem that lay at the very furthest end of the tailpipe in the purchasing decisions of the individual. Behind their uplifting slogans, and their appeal to national unity, what they were really saying was "climate change is *your* fault."

And here lies the problem. As soon as one creates responsibility, one creates blame. Blame creates resentment, and talk of responsibility in the home makes that resentment very personal indeed. What none of us fully appreciated at the time was how readily these anodyne messages would be mobilized to fuel people's sectarian prejudices.

Conservatives in particular loathed being told what to do by governments and liberal environmentalists. In one revealing experiment by a team at the University of Pennsylvania, many conservatives refused to buy a low-energy lightbulb once the packaging carried a sticker reading "protect the environment." At my Texas Tea Party meeting, Craig recalled how he challenged an environmentalist by saying, "You're on this computer and you're using electricity made from the coal that you claim you hate, dug out of the ground by the man who you are telling he isn't allowed to eat meat." He received the loudest cheer of the night.

There is a deep irony in this. Research by the psychologist Jonathan Haidt into moral foundations of different worldviews found that it is conservatives who have the greatest moral emphasis on personal responsibility and that it is liberal environmentalists, with their highly individualized values, who are actually the group least suited to working together for a shared goal.

It was not just conservatives—left-wing trade unionists were just as repelled. Running focus groups with activists from one of Britain's largest trade unions, I found that few things irritated them more than the phrase "lifestyle change," which for them was poisoned by an association with middle-class environmentalism and government buck-passing. There was something very wrong here: Surely, I thought, trade unionists, of all people, would respond to a call for collective action against a common threat?

Somehow, this was all the wrong way around. Those campaigns

urging people to take personal responsibility and work together to "save the planet" were saying the wrong things to the right audience and the right things to the wrong audience. So much for the hope that small personal lifestyle changes might shift people's attitudes and bring people together; if anything, they seem to reinforce people's prejudices and drive them apart.

This is because our willingness to make a personal sacrifice is entirely bound up with our sense of social identity. If we feel an affinity with the group, then we will willingly make a contribution to prove our loyalty. In times of conflict, we may even sacrifice our life. But this strengthened sense of in-group identity, and our socially wired sense of fairness, makes us deeply resentful of moral rules laid down by outsiders that they themselves do not appear to follow.

Nor do small changes in lifestyle necessarily lead onto the virtuous escalator to larger commitments. Further research has found that even those people who accepted the threat of climate change were all too ready to adopt a single simple action as a token of their concern and then go no further. Columbia University psychologist Elke Weber has identified numerous examples from farming, health, and politics in which people respond to a problem with what she calls "single action bias." She argues that this may be another bias derived from our evolutionary past when threats were simpler and a single short-term action could safely relieve us from danger and the anxiety of worry.

People then use that single act as a personal justification—what psychologists call moral license—to offset further damaging behavior, just as people order a supersize Diet Coke as an antidote to their double bacon cheeseburger. So, research has found repeatedly, people who buy energy-efficient lights and appliances tend to use them more. People who insulate their houses then turn up the thermostat.

They transfer the moral license to other areas too. When residents in a Boston apartment building were sent notes (with pretty leaf graphics) asking them to save water to "help preserve the environment," they used 7 percent less water. And they then used 6 percent more electricity.

Researchers at the University of Toronto found that this moral licensing effect was so powerful that people who had just bought environmentally friendly products in an experiment became markedly more willing to take up an opportunity to cheat the university and even steal money.

Within the issue of climate change, people use moral licensing as part

of a deliberate process to write narratives that diminish their own responsibility. In interviews, people exaggerate their own small actions and portray them in heroic terms. One participant in a British focus group boasted that he recycled everything he could and that not one piece of paper went into his garbage. This, he added, "makes me feel less guilty about flying as much as I do."

So, once again, climate change has become wickedly defined by its solutions. For people who accept that climate change just might be a major threat, providing solutions based on small lifestyle changes makes it seem far less dangerous and carbon comes to seem like another form of litter that they really shouldn't drop.

For people who doubt that climate change exists, demands to change their lifestyle confirm their suspicion that the real threat comes from the environmental liberals who want to control their lives.

What is missing, and what is urgently required, is a coherent policy framework that provides a contract for shared participation—whether through voluntary measures or, as many campaigners now demand, some form of tax, ration, or dividend—within which personal actions are recognized and rewarded alongside equally important contributions from government, business, and fossil fuel companies. Not the power of one, but the power of all.