Introduction

Nobody wakes up in the morning hoping for bad news about our planet. "Ah yes, I'll take my coffee black, with just a pinch of plastic pollution and some wildfires on the side. Maybe a hurricane or polar vortex, just to round out this hearty breakfast of environmental disasters." We jest, but to make a point—for the most part, humans are not setting out to destroy the environment. Yet, despite this, we consistently act in ways that are detrimental to the environment and ourselves. Even when we have the desire to fix things, we may not know how, or environmental problems may seem so big and intractable that we think only scientists, policymakers, and industry leaders can solve them.

But at their root, all environmental problems are caused by humans acting in specific ways—they are *behavioral problems,* which means the solutions must also revolve around behavior. The fact that environmental problems are behavior problems is good news, because we can all take part in changing behavior. We've written this book to show you how.

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For those who were teenagers in the 1980s and 90s in the United States, you may recall public service announcements that highlighted the negative health consequences of drug use, including infamously dramatized warnings that drugs would fry your brain like an egg in a frying pan, or health education programs at your school that featured cautionary tales about smoking and drug use. One such example is the Drug Abuse Resistance Education (D.A.R.E.) program, which worked to reduce teen drug use by boosting self-esteem and encouraging teens to resist peer pressure. This program was administered by 75% of U.S. schools.[2] Championed by parents and touted by Congress, D.A.R.E. was seen as the silver bullet solution. Until it became clear that it wasn't.

In reality, these campaigns—along with many other anti-drug and anti-smoking initiatives—failed. Many studies have shown that these programs were not only ineffective at reducing drug use among adolescents, but even led to *increased* drug use in some cases.[9] Why? The programs were designed without an in-depth understanding of the audience they were meant to influence.

As it turns out, these anti-drug initiatives piqued teens' curiosity about drugs and presented a great opportunity for rebellion. These initiatives also led kids to believe that smoking and doing drugs was more common than it actually was—and the "cool" and "normal" thing to do. Many kids already understood the health risks associated with smoking, so a lack of knowledge was not the problem. Kids dismissed and ignored the factual arguments presented by the program because these social and emotional factors were more motivating.[8] Ultimately, the designers of D.A.R.E. and similar programs failed to recognize that teens were driven by the influence of social norms and a need for autonomy—a costly mistake, to the tune of hundreds of millions of taxpayer dollars.

In the early 2000s, practitioners launched new anti-drug and anti-smoking campaigns that incorporated these lessons learned about teen behavior. Instead of showing and telling teens what *not* to do, the "Above the Influence" campaign helped teens explore other ways to express their identity and take control of their lives through the pursuit of alternative positive activities they enjoy.[5] Similarly, the "truth" campaign appealed directly to the rebellious side of youth, convincing kids to exercise autonomy by resisting the deceitful solicitations of big tobacco companies.[4] Because these campaigns were tailored to the major motivators of teens, they were more successful at decreasing smoking and drug use.

So why are many environmental initiatives unsuccessful at making positive shifts happen, and how can we improve them? Like the failed anti-drug campaigns, many environmental campaigns are built around the ***information deficit model***, which assumes that a lack of knowledge is the main reason people don't act on or support an issue.[12] This can lead to a focus on "educating people about the issue" and "raising awareness." But our behaviors are not just the product of receiving information and acting based on a "rational" assessment of costs and benefits. Behavior is far more complex; it is shaped by our beliefs, temperaments, upbringings, surrounding environments, the media we consume, and many other factors, including biases that often cause us to act "irrationally." The environmental movement has had many crucial successes—but we've also been held back by not always designing our initiatives with this complexity in mind. The next step in the evolution of the movement is for today's environmental changemakers to cultivate a deep understanding of what drives human behavior and to master the tools we have available to shift behavior for the betterment of the planet and for our own well-being.

Fortunately, thanks to a growing body of real-world experience and scientific insights, environmentalists are beginning to integrate innovative behavior change

techniques into their ever-expanding toolkit. Organizations and institutions worldwide are creating significant positive environmental impact through simple and targeted initiatives that employ behavior change tools. Energy suppliers, for example, have increased the number of customers in their renewable energy programs tenfold by using behavioral insights to modify enrollment forms.[3] Hotels and universities have reduced food waste by more than 25% just by removing trays from buffet lines.[1,10] Cities have seen an 85% increase in household recycling when they provide free recycling bins and collect both the trash and recycling on the same day of the week.[7] When Rutgers University made double-sided printing the default option, they saved more than 55 million sheets of paper in the first three years—a 44% reduction that saved the equivalent of 4,650 trees.[13]

Using insights from behavioral science to design environmental initiatives doesn't just deliver environmental wins—it often results in an economic return on investment as well. For example, the airline Virgin Atlantic employed different behavioral strategies on different pilots over eight months: feedback on their fuel use performance, providing pilots with personalized monthly fuel efficiency targets, and prosocial incentives (a donation to the pilot's charity of choice). By implementing relatively simple behavior change tools that cost less than $3,000, the airline dramatically reduced their emissions of greenhouse gases and pollutants, and saved over $5 million on fuel in just a matter of months.[6, 11, 14] For Virgin Atlantic, even low-cost interventions produced significant change with far-reaching benefits.

If Virgin Atlantic can make such an impact with just a few behavior change tools, imagine what we could accomplish on a global scale if all initiatives employed the many behavior-based solutions we provide in this book. These behavior change techniques can be used to improve the effectiveness of existing approaches like incentives or regulations, such as by adjusting policy to better account for the most powerful drivers of behavior. Or, they can take the place of these approaches, especially in cases when behaviors, such as those we do in the privacy of our homes, are hard to regulate.

However, given the complexity of behavior, it's easy to see why busy environmental practitioners haven't widely adopted a behavioral approach. For all of the aforementioned efforts to be successful, the program designers had to take the time to understand the factors that influence behavior. This type of understanding can be hard to come by, and implementing a behavior change campaign may not always be easy or straightforward. But it is possible—and this book is here to help. We

developed the *Making Shift Happen* process to make it easier for anyone to shift environmental behaviors in the right direction.

This book is for advocates working with organizations and budgets of all sizes; you don't need ample resources and sophisticated marketing to *make shift happen*. Whether you are a community leader, nonprofit manager, environmental advocate, policymaker, philanthropist, or a citizen wanting to spark change, you can use the tools in this book to work toward a more sustainable planet, even if it begins in your own backyard.

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Making Shift Happen synthesizes insights from hundreds of academic studies, lessons from our own work at the not-for-profit Root Solutions, and other real world initiatives. We've turned them into a process and a set of tools that will help you understand what drives your audience's behavior and how to use this knowledge to design better policies, campaigns, initiatives, and strategies to motivate actions that will protect and regenerate the environment. In Section 1, we provide a roadmap for how to go from an environmental challenge that you want to address all the way to implementing and scaling a behavior change initiative in the real world.

FOUNDATIONS: We discuss important considerations like ethics, scarcity, and equity that practitioners should always keep in mind when designing an initiative. We also explore some of the processes of the human brain that influence our behavior, such as cognitive biases and emotions.

INITIATE: You'll learn about processes and tools to help you identify, evaluate, and select the environmental challenges, audiences, and specific behaviors on which to focus your initiative.

UNCOVER: You'll learn about the major drivers of behavior, which can roughly be mapped into three categories: Means (can I do it?), Motivation (do I want to do it?), and Memory (can I remember to do it?). Then we show you how to conduct a Behavioral Drivers Analysis, an analytic tool for uncovering evidence-based drivers in your own audience.

DESIGN: You'll learn how to combine the results from your audience research with the intervention design guidance we provide in our Behavioral Building Blocks™. You'll then use these insights to choose and design the evidence-based behavior

change solutions that you will use to shift the behavior of your audience. You will also learn how to rapidly prototype your interventions to optimize their success.

IMPLEMENT: We introduce piloting, including how to use pilots as experiments to test the effectiveness of your initiative or variations of your initiative. We also discuss rolling out your full-fledged initiative into the real world, refining your initiative, and considerations for scaling your initiative to even broader audiences.

METHODS: This chapter serves as a resource to you throughout the *Making Shift Happen* process. It provides an introduction to designing and conducting research that helps you uncover meaningful insights to inform your behavior change initiative, including how-to information about methods like interviews, surveys, and experiments. We also discuss how these methods can be utilized at different phases in the process.

Section 2 is focused on how to design behavior change interventions, like the feedback Virgin Atlantic delivered to their pilots or signs in hotel bathrooms that say how much water you'll save by reusing your towels. In this book, we refer to these interventions, or behavior-based solutions, as ***shifters***, which are the tools that *make shift happen*. There are innumerable shifters that a practitioner can employ that have been shown to be effective at changing environmental behaviors. We've categorized the most important or impactful of these into our 10 BEHAVIORAL Building Blocks™, with each letter of the word "BEHAVIORAL" corresponding to a chapter that explores a collection of related behavior change principles: B(elonging), E(asy), H(abits), A(ttachment), V(ivid), I(dentity), O(ptimism) R(ewards), A(ssociations), and L(ongevity).

BELONGING: The need to belong is a powerful driver of our behavior. You'll learn how to use social norms to reinforce and spread environmental behaviors.

EASY: Even the smallest inconveniences can stop behavior change in its tracks. You'll learn how to make environmental actions easy to reduce the intention-action gap.

HABITS: Facilitating habits requires great effort by practitioners, but can reap long-lasting benefits for the environment. Learn how to design initiatives that break bad habits and build positive ones.

ATTACHMENT: You'll learn methods to catalyze your audience's motivation to take action by aligning your initiative with what they care most about.

VIVID: In this age of information overload, competition for people's attention is steep. You'll learn how to design initiatives that are vivid so that your audience notices, pays attention to, and remembers your messages long enough to take the desired action.

IDENTITY: Tapping into our desire to behave in alignment with our identities is a powerful driver of behavior change and for galvanizing environmental champions. You'll learn various methods for doing this, including how to design commitment campaigns.

OPTIMISM: Optimism is crucial for maintaining motivation in the face of daunting environmental challenges. You'll learn how to activate hope and inspire action by strengthening your audience's sense of efficacy.

REWARDS: We are motivated to engage in behaviors when we feel that the benefits outweigh the costs. Learn how to choose incentives wisely to attract people to positive environmental behaviors and deter them from negative ones.

ASSOCIATIONS: Framing information in a way that activates meaningful mental associations is essential for encouraging a shift in mindsets toward environmental engagement. You'll learn about frames that have already been tested, how to avoid detrimental frames, and how to test your own metaphors and frames.

LONGEVITY: You'll learn about the role that exposure to nature, other-focused emotions, and mindfulness play in fostering a change in our underlying relationship to the environment and its inhabitants and achieving permanent, society-wide environmental stewardship.

The concepts presented in each Building Block are rich with information and nuance: each Behavioral Building Block could be its own book, with chapters dedicated to exploring each shifter. But our goal is for *Making Shift Happen* to be a usable guide that highlights the most important elements in each Building Block. If you find yourself particularly intrigued by a chapter, we assure you that there's more to learn on those topics, and we encourage you to dig into the references that we've cited in the back of the book.

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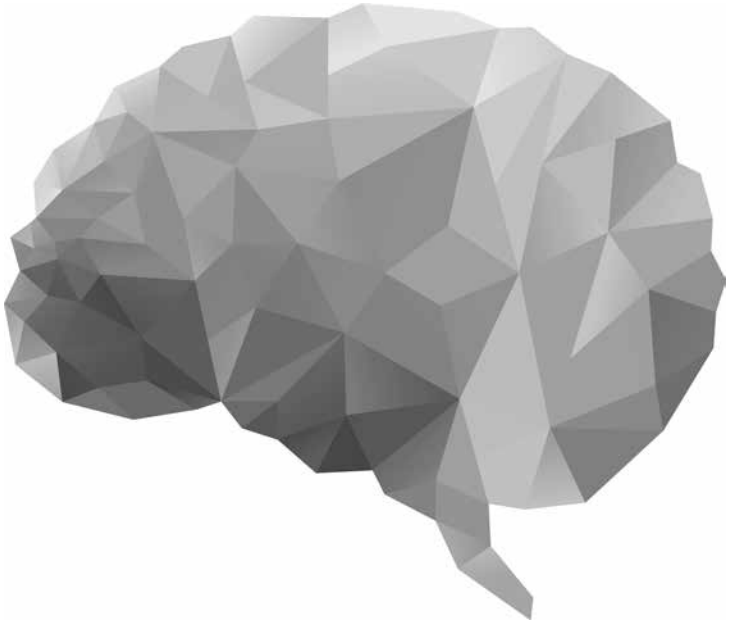
Throughout this book, you will see graphic icons like these below that denote major principles, shifters, and case studies to help you navigate the material. Here's what to look for and what to expect:

List of Icons

	In Section 1, you will see these icons signaling a new **step or key consideration** in the *Making Shift Happen* process.
	**Principle** icons denote core concepts in the BEHAVIORAL Building Block chapters.
	**Shifter** icons point the way to proven interventions to shift behavior. These icons are found in the BEHAVIORAL Building Block chapters.
	The helpful **Attention** icons signal something to remember or watch out for.
	**Your Turn** icons accompany checklists and opportunities to put guidance into practice.
	Practitioners must answer many questions throughout this process. **Ask Yourself** icons let you know when to pause to answer a question to help you brainstorm or evaluate.
	You might see any of these **Activity** icons to signal, you guessed it, an activity!
	**The telescope** icon tells you when it's time to zoom in on a topic in greater detail.

Section 1



The *Making Shift Happen* Process

Process Chapter 1

Foundations

To orient your journey through the *Making Shift Happen* process, we begin with a chapter designed to lay the foundational groundwork on which we build throughout this book. This chapter will introduce you to some of the basic principles that underlie how people think and operate, as well as to the fundamental concepts that underlie our entire *Making Shift Happen* process. Understanding these foundational principles will help to enhance your understanding of our Building Blocks, enabling you to use them strategically as you design a strong, cohesive behavior change initiative.

We begin with an overview of some important cognitive processes to understand how they influence our behaviors. Next, we explore the origins of the *Making Shift Happen* process, which draws from various academic and scientific fields of study as well as problem-solving approaches from a range of professional sectors. Finally, we provide some important ethical guidelines to follow and caveats to keep in mind as you design your behavior change initiative so as to avoid unintended consequences, protect and empower your audience, and maximize your positive impact on the environment.

A Look Ahead: FOUNDATIONS

Foundations of Behavior

Two cognitive systems
Cognitive biases
Emotions
We think and live our lives in narratives

The *Making Shift Happen* Process

Psychological and behavioral sciences
Behavioral economics and choice architecture
Social marketing
Systems thinking
Design thinking

Guiding Principles of the *Making Shift Happen* Process

Take an intersectional approach to environmentalism
Consider culture and context
Follow ethical guidelines
Think carefully about *when* and *whom* you ask: navigating scarcity and worry
Think carefully about *what* you ask: the implications of spillover
Think carefully about *how* you ask: evoking emotions with care
Test, test, test

Foundations of Behavior

There are many factors that shape human behavior, including beliefs, values, social norms, our perception of ourselves, as well as our built and natural environments. Some of the most significant behavioral influences are the hardest to see, such as cognitive biases. So before we go any further, let's begin with an exploration of why people do the things they do.

Two cognitive systems[13]

Psychologists often describe two different cognitive systems that underlie the way we think and how we navigate the world: automatic and reflective.

The ***automatic system*** is fast, effortless, associative, involuntary, and subconscious. It is often called "fast thinking" or "System 1 thinking" to reflect its earlier evolutionary origin and instinctual nature.

Our automatic system allows us to evaluate situations instantly and without conscious thought, like when we need to swerve to avoid something in the road, when we get a gut feeling about someone's mood during a conversation, or when we're scanning a page and certain things jump out at us as "important." The automatic system evolved for survival so that we could respond instantly to potential threats: when we hear a rustle in the grass, it's better to assume there is a lion than to deliberate and find out the hard way. Automatic thinking also comes into play when we are overwhelmed with information, afraid, overstimulated, or are having a hard time paying attention—which for most of us is pretty often.

The ***reflective system*** is slow, self-aware, voluntary, and conscious. It is often called "slow thinking" or "System 2 thinking." The reflective system is critical for

complex problem-solving as well as the continuous self-assessment and monitoring of our own behavior. It's the discipline that keeps us focused on our work when we're tempted to procrastinate and the self-restraint that maintains our composure when we're upset. Reflective thinking is important for tasks that require more concentration such as researching which retirement plan to choose or reading the news, and it's impeded when attention is disrupted or depleted.

Automatic and reflective thinking are not mutually exclusive; they interact with each other to guide our behaviors. Automatic thinking runs, well, automatically, and it continuously feeds reflective thinking its impressions and feelings. Reflective thinking generally accepts those suggestions from automatic thinking, but kicks into gear when it detects we are about to make an error or to solve problems that cannot be processed by automatic thinking. This dynamic is quite efficient, but the general reliance on automatic thinking can also lead to systematic errors in judgment and decision-making, such as cognitive biases.

Cognitive biases

We often use ***heuristics*** (e.g., mental shortcuts) to facilitate rapid judgment and decision-making, especially when we're navigating with our automatic system.[13] These shortcuts usually save us time and energy, but they can also cause a host of systematic errors in our decision-making, known as ***cognitive biases***. As we process information and interpret our surroundings, many different cognitive biases can emerge, each with varying effects on our behavior.

We may not take action to address societal challenges because we believe desirable outcomes are more likely than undesirable outcomes (***optimism bias***). We interpret information differently depending on how emotionally motivated we are to reach a certain conclusion (***motivated reasoning***), and we have the tendency to defend our choices even if the option we've chosen has changed profoundly (***choice blindness***). We make different decisions depending on our current positive or negative emotional state (***affect heuristic***). The more often we hear about something, the more likely we are to believe it, and the stronger our preference for it will be (***mere exposure effect***). We specifically seek evidence that verifies our beliefs while passing up evidence that contradicts them (***confirmation bias***), and we avoid exposing ourselves to information that may cause psychological discomfort even if we know that avoidance could make the situation worse (***ostrich effect***).

Decades of research has revealed hundreds of these biases. Table 1.1.1 is a mini glossary of twenty or so biases that you are likely to encounter in this book; they

should give you insight into the ways in which biases influence behavior. We have also included biases in the ***shifters*** (evidence-based behavior change solutions) we introduce in The BEHAVIORAL Building Blocks™ (Section 2); many shifters seek to overcome, reduce, or harness these biases in a constructive manner to help our audiences take actions to protect the environment.

Everybody has cognitive biases—there are no exceptions—but we can consciously engage in processes to identify and overcome some of them within ourselves. Other biases can be leveraged to bring about desired behaviors. For many biases, however, we can do neither, but it's still useful to know when they function as a barrier to behavior change.

Emotions

Distinguished from practical reasoning, ***emotions*** are information processing systems that help us react quickly to situations or events with little to no reflective thought.[11] Emotions are fundamental to our System 1, or automatic thinking. They signal what is important and help us make choices between options that are difficult to compare. They shape our motivation to act, mobilize us for action, and coordinate systems including attention, memory, and decision-making.[11,5]

Some experiences are stored in our memory, "marked" with an associated emotion.[4] Without emotions, these experiences would be only a set of facts; emotions give them meaning. We might "mark" eating sweet foods with the emotion of pleasure and rotten foods with the emotion of disgust. We might also "mark" an activity as dangerous: say you love swimming in the ocean, but after being stung by a jellyfish, you now associate the ocean with the pain from that experience. The next time you swim in the ocean, your emotions prompt you to be more cautious—a clear behavioral shift. Emotions also help prepare the body to take immediate action if necessary; sometimes, taking time for reflective thought can cost us our life. When we experience something that may require a rapid response, our emotions activate the physiological changes (e.g., elevated heart rate and adrenaline) that help our bodies take the appropriate action ("A snake! Run!").

Because emotions shape our behavior at a fundamental level, as practitioners we must understand the role that emotions play in behavior change so that we can evoke appropriate emotions and harness them to instigate behavioral shifts that benefit the environment.

Table 1.1.1: Select Cognitive Biases Pertinent to Environmental Behavior Change

Bias	Definition
Anchoring	When making decisions, we often rely too heavily on the first piece of information presented to us (the "anchor"). We then make subsequent decisions by adjusting from that anchor's value, which results in decisions that are biased toward the anchor. See ASSOCIATIONS (Building Block Chapter 9) for more information. Term coined by Sherif, Taub, and Hovland.[a]
Availability Bias	We overestimate the significance of information that appears to be especially immediate, vivid, and/or mentally "available." We tend to think that an event is more likely to occur when we can readily recall examples of a similar event happening in the past. The availability heuristic also makes it easier for us to remember facts and events that are new, different, or strike us on a personal level, while more commonplace events may be forgotten. See VIVID (Building Block Chapter 5) for more information. Term coined by Gilovich, Griffin, and Kahneman.[b]
Bandwagon Effect	The bandwagon effect is driven by the desire to conform: the rate of uptake of beliefs, ideas, trends, and behaviors increases as others adopt them. In other words, we tend to increase our support of something as it gains popularity.
Choice Overload / Information Overload	We experience choice overload when we are presented with too many options. Information overload occurs when we are faced with too much information, and we can't process it all. Being overloaded by too many choices or too much information can lead to frustration, confusion, poor decision-making, or avoiding decisions altogether. See EASY (Building Block Chapter 2) for more information. Choice overload was popularized by Alvin Toffler in *Future Shock* as was the related term related term "overchoice."[c] Information overload was coined by Bertram Gross in *The Managing of Organizations*.[d]
Cognitive Dissonance	We experience mental stress or discomfort when we're presented with new information that contradicts our beliefs, or when we find ourselves acting in a way that contradicts our beliefs. In response, we are motivated to reduce this stress. Unfortunately, we often resolve our cognitive dissonance by adjusting our thinking so it aligns with our actions, as opposed to changing our actions to align with our thinking. See IDENTITY (Building Block Chapter 6) for more information. Term coined by Festinger.[e]

Table 1.1.1: *Cont.*

Bias	Definition
Confirmation Bias / Backfire Effect	Confirmation bias refers to our tendency to notice, favor, and seek out verification for information that confirms our preconceptions. We tend to interpret ambiguous information as evidence for our position and to ignore information that contradicts our beliefs. This is sometimes called "myside bias" because we primarily do this for beliefs or values that we feel strongly about. The backfire effect refers to a related tendency: when in the face of contradictory evidence, our established beliefs tend to actually get stronger. We are prone to argue when our beliefs are challenged, and the process of creating these arguments solidifies our beliefs. See ATTACHMENT and LONGEVITY (Building Block Chapters 4 and 10) for more information. Confirmation bias coined by Wason.[f] Backfire effect coined by Nyhan and Reifler.[g]
Effort Justification / IKEA Effect	We tend to place higher value on things that we have created or labored over, such as a piece of furniture that we assemble ourselves. The more time or effort we put into something, the more we value it. The original paper that named this effect was looking specifically at IKEA products, but it also manifests with intangible concepts like ideas and beliefs. See IDENTITY (Building Block Chapter 6) for more information. IKEA effect coined by Norton, Mochon, & Ariely.[i] It stems from Festinger's theory of cognitive dissonance.[e]
Empathy Gap	We struggle to detach ourselves from our current physical, mental, or emotional states. If we are well-fed, we can struggle to imagine being hungry. If we are calm, we can have a hard time empathizing with someone who is angry. If we are rested, we have trouble remembering how it feels to be tired. Because of this, it can be difficult for us to connect with issues that do not directly impact our lives or to empathize with people who are in different states from our own. Term coined by Loewenstein.[j]
Fresh Start Effect	We are more likely to tackle our goals immediately following noteworthy temporal landmarks (a new year/month, holiday, special event). These events provide an opportunity to decouple a previous lifestyle from the life that lies ahead, initiating a psychological reset or new period of clarity. See HABITS (Building Block Chapter 3) for more information. Term coined by Dai, Milkman, and Riis.[k]

Table 1.1.1: *Cont.*

Bias	Definition
Hyperbolic Discounting / Present Bias	We tend to value the present more highly than the future, and therefore make choices that increase our happiness in the short term at the expense of future gain. This phenomenon is also known as present bias; in a tradeoff situation, we tend to overvalue immediate rewards, without realizing that delayed rewards can benefit us more significantly in the long term. The related concept of hyperbolic discounting refers to our tendency to discount risks of negative future consequences more than risks in the present. Hyperbolic discounting coined by Ainslie and Haendel.[l] Present bias coined Phelps and Pollak.[m]
Identifiable Victim Effect	We are more inclined to help a specific individual (an identifiable "victim") than a large, nebulous group facing the same problems. We are also more likely to want to punish an individual than a group. See ATTACHMENT (Building Block Chapter 4) for more information. Term coined by Schelling.[n]
Loss Aversion	We hate to lose more than we like to gain. When making decisions, we are therefore more motivated to avoid a loss than we are to achieve an equivalent gain. See ASSOCIATIONS and REWARDS (Building Block Chapters 9 and 8) for more information. Term coined by Kahneman and Tversky.[o]
Mere Exposure Effect	When we are frequently exposed to something, we tend to view it more favorably. See VIVID (Building Block Chapter 5) for more information. Term coined by Fechner[p] but first quantitatively investigated by Zajonc.[q]
Moral Licensing	Moral licensing is a bias that allows us to behave immorally without challenging our moral standing. After we do something considered "good," we feel justified in subsequent "bad" or "immoral" behavior. See LONGEVITY (Building Block Chapter 10) for more information. Term coined by Monin and Miller.[r]
Negativity Bias	We tend to pay more attention, react more quickly, and be more strongly impacted by negative things (e.g., alarming events and unpleasant emotions) than neutral or positive things. See OPTIMISM (Building Block Chapter 7) for more information. Term coined by Rozin and Roysman.[s]

Table 1.1.1: *Cont.*

Bias	Definition
Omission Bias / Decision Regret	We tend to judge harmful action more harshly than harmful inaction. For example, people judged a hypothetical tennis player more harshly when he recommended food that he knew his rival was allergic to, as opposed to when he said nothing and allowed his rival to eat that same food. Similarly, we tend to feel more regret if we experience a bad outcome because of an action we've taken than we do when we experience that same outcome as a result of our own inaction. Omission bias coined by Spranca, Minsk, and Baron.[t] Decision regret was simultaneously developed by Loomes and Sugden, and Bell, and Fishburn.[h]
Risk Aversion	When making decisions in uncertain conditions, we are often less willing to choose an option with a very high payoff if it also has a very high level of risk; we favor options with lower uncertainty, but a lower payoff. Individuals have different thresholds for the amount of risk they are willing to take. Term coined by Sterns on Bernoulli, expanded by von Neumann and Morgenstern.[u]
Scope Insensitivity	Our valuation of a problem, or our willingness to pay to mitigate a problem, doesn't always scale in proportion to the size of that problem. For example, we tend to be willing to pay a similar amount to save 2,000 birds as we would to save 200,000 birds, despite the large increase in number. See ATTACHMENT (Building Block Chapter 4) for more information. Term coined by Desvousges, Johnson, Dunford, Boyle, Hudson, and Wilson.[v]
Single Action Bias	In high-pressure and/or high-risk scenarios, we seek to respond in the form of a simple, single action. Even though it might not be very effective, the single action can reduce our feelings of stress, worry, and vulnerability, so we might not pursue further actions. Term coined by Elke U. Weber.[w]
Status Quo Bias	When faced with difficult choices, we prefer to choose the status quo, or the option that requires no action at all (the default), even if this choice isn't the best one. We tend to prefer our present situation to any other, as the path of least resistance. See EASY (Building Block Chapter 2) for more information. Term coined by Kahneman, Knetsch, and Thaler.[x]

Emotions shape our perceptions of the world and subsequent motivation to act

Emotions shape our attitudes, beliefs, and perceptions of the world around us.[11] For example, if two people are standing on a ledge looking down at the ground below, the person who has a fear of heights will perceive the ground to be farther away than the person who is not afraid. Similarly, we will perceive a hill to be steeper when we are tired or weighed down by a heavy backpack, which can make us feel discouraged.[26] These perceptions and beliefs in turn influence our motivation to act[11] (our psychological willingness to put effort into achieving desired goals such as making it up the hill).[7] This is why one of the most essential things we can do as behavior change practitioners is to remove barriers; it's much easier to take away the backpack (which makes the hill seem less steep and instills confidence) than it is to motivate people to climb a hill that looks insurmountable with their backpack on. We discuss other key motivating factors and how to remove barriers in UNCOVER: Process Chapter 3 and DESIGN: Process Chapter 4.

Emotions help us achieve our instinctual and conscious goals[7]

We all need to do certain basic things to keep ourselves alive; we need to stay fed, clothed, and sheltered. We are often unaware of these instinctual goals, but our emotions help us respond appropriately. For example, the emotion of disgust that arises when we smell rotten food keeps us from mindlessly taking a bite and subsequently getting sick.[11]

Emotions are also involved in the pursuit of goals we may be more aware of, such as the goal of living a life with a certain purpose (e.g., continuous learning), or socio-personal goals (e.g., succeeding at work or being accepted by our peers). Emotions help us prioritize some goals over others, including smaller decisions like whether to go to a surf camp or a language immersion program during holiday, as well as bigger decisions like whether we want a career working with children or working with the elderly. Emotions also help us monitor our progress towards the goals we choose to pursue, such as feeling good when we put money aside for our upcoming holiday and feeling uneasy when we splurge on an expensive a night out.[18]

Emotions help us make decisions between choices that are difficult to compare[25]

How do you logically decide what color is your favorite or which sports to follow? How do you compare apples and oranges? In a world that can sometimes

overwhelm us with information, emotions can signal what's most important. As the research of neuroscientist Antonio Damasio demonstrated, contrary to the notion that good decisions come from formal logic devoid of emotion, emotions are actually required for even routine decisions.[4]

Emotions shape our perception and motivation to act, and they play a critical role in decision-making and achieving our goals. Therefore, as practitioners, we must be cognizant of how our initiatives can intentionally or unintentionally trigger emotions, and we must endeavor to evoke appropriate emotions to instigate behavioral shifts that benefit the environment.

We think and live our lives in narratives

Nothing exists for us without narratives. These narratives can be experienced as the mental chatter that accompanies us wherever we go and helps us navigate our surroundings, or they can come in other forms, like the life story we tell about ourselves to others. Without narrative, there is no culture, law, religion, politics, social norms, ideologies, and even our own identities. (How do you "show someone" or physically point to an ideology?) It is through narratives, or stories, that we build our understanding of these things or even think about these things.

For durable change, it's critical for environmentalists to understand that because humans "think in narratives," we are powerfully swayed by them. Environmentalists tend to try to frame their issues as "objectively" as possible (e.g., in terms of how many degrees hotter the planet will become), without appealing to deeply held narratives and engaging with this default way that humans communicate. Instead, we must utilize narratives in our messaging and endeavor to deconstruct environmentally harmful narratives.

When we say that narratives are pervasive, we mean it—even for us, the practitioners. That's why it's important to deconstruct our own narratives before looking at the narratives that drive others. Becoming more aware of our own beliefs, assumptions, and biases will make us more conscientious and effective environmental practitioners. We can learn to detach ourselves from our mental chatter through mindfulness practices (discussed in LONGEVITY: Building Block Chapter 10), but it's impossible to separate our narratives entirely from our decisions and behaviors.

Fast and slow thinking, cognitive biases, emotions, narratives—it's a lot to take in. But don't worry: while it helps to be aware of these concepts, you don't have to become an expert on any or all of them. We've distilled insights from these themes into our *Making Shift Happen* process and its BEHAVIORAL Building Blocks™ to help you design and implement your own behavior change shifters.

The *Making Shift Happen* Process

In addition to our emotions and cognitive processes, many other aspects of our lives influence our behavior, such as cultural and political systems, the built environment surrounding us, and our ideas about how the world works. To shift human behavior for the long-term benefit of the environment, we must take these factors into account. This is why the *Making Shift Happen* process draws on research from many academic fields of study and practical experience from a wide range of sectors. Our process is also informed by systems thinking to help account for system-level factors that will either facilitate or inhibit change. Additionally, the steps of the *Making Shift Happen* process itself originate from design thinking, which aims to ensure that your behavior change initiative is designed with the needs of your specific audience in mind from the start. Following this process will help make your initiatives more efficient, cost-effective, and successful at shifting environmental behaviors. Here we provide a brief overview of the disciplines integrated into our process, and acknowledge the importance of their contributions to our work as behavior change practitioners.

Psychological and behavioral sciences

The *Making Shift Happen* process draws on neuroscience and other behavioral sciences to help us understand the inner workings of the human mind and our subsequent behavioral patterns. Cross-disciplinary areas of study like conservation psychology are especially relevant to environmental behavior change efforts.

Neuroscience and cognitive neuroscience

Neuroscience studies the structure and processes of the human brain and the nervous system. Cognitive neuroscience is a subfield that studies how the chemical and physical processes in the brain affect human cognition. Cognitive neuroscience can therefore help us understand the brain's role in connecting our cognitive processes with our behaviors.

Cognitive psychology

Cognitive psychology is the scientific study of mental processes that shape our behaviors, including (but not limited to) perception, attention, memory, and problem-solving.

Social psychology

Social psychology studies how our behaviors, beliefs, and intentions shape (and are shaped by) other individuals or groups.

Environmental and conservation psychology

Environmental psychology looks at the relationship between humans and their physical surroundings to understand how we affect our environment and how our environment influences our behavior. Similarly, conservation psychology studies the reciprocal relationship between humans and nature, but with the specific goal of increasing protections for the natural world.

Sociology

Sociology examines the causes and consequences of human behavior in social and cultural contexts. It studies social relationships within and between groups, organizations, cultures, communities, and societies, often seeking to explore issues related to race, gender, age, or socioeconomic class, among many other aspects of these groups.

Behavioral economics and choice architecture

We also use insights from behavioral economics to provide deeper insights into our decision-making processes. Choice architecture and nudging are particularly useful concepts in our work as behavior change practitioners.

Behavioral economics

Under classic economic theory, humans are expected to make "rational" decisions by carefully considering all the information available to them and acting in their own best interests. However, in the 1970s, psychologists Amos Tversky and Daniel Kahneman pioneered research that began to paint a very different picture of human decision-making processes. They revealed that our decisions are influenced by things like how information is presented to us and the mental shortcuts that we use to process information. It became clear that insights from psychology could inform economic analyses for a more realistic understanding of human behavior—and thus the intellectual hybrid of ***behavioral economics*** was formed.

It has since become a robust, interdisciplinary field of study grounded in the concept of ***bounded rationality,*** which asserts that humans face limitations that prevent us from acting in fully "rational" ways. These limitations can be external (such as a lack of time) or cognitive (such as lacking the mental capacity to process large amounts of information and make logical calculations). Ultimately, we know that our decisions are not made in a vacuum, so we need to consider all of the potential influences when trying to change behavior.

Choice architecture and nudging

Choice architecture refers to the idea that our decisions are influenced by the context or environment in which the decision is made, including the way information is presented and described.[35] For example, consumer habits are influenced by the order of food in a buffet line or the physical layout of a store. A store is a choice environment, and so is a website or even a paper sign-up form. Their design can influence behavior in various ways; for example, we tend toward the most convenient options provided, so we are more likely to fill our plate with food presented early in a buffet line, and select the first option listed on a sign-up form. Therefore, the designer of these environments, the choice architect, has the power to encourage specific behaviors.

One of the fundamental tools used in choice architecture is ***nudging***.[33] Cass R. Sunstein, a legal scholar and prominent researcher in the field of behavioral economics, defines nudges in the following way:

> Nudges are interventions that steer people in particular directions but that also allow them to go their own way. A reminder is a nudge; so is a warning. A GPS nudges; a default rule nudges. To qualify as a nudge, an intervention must not impose significant material incentives (including disincentives).

Some nudges are designed to educate people, while some are designed to make specific choices easier, more accessible, or even automatic. Perhaps the most important requirement of all nudges is that the audience fully maintains their freedom of choice (we discuss this further in the section on ethical considerations). Ideally, we can even help our audiences act as their own choice architects,[27] providing people with the tools to shape their own personal environments through self-nudges (like hanging reusable bags on their door knob as a reminder to bring

them to the grocery store). When used thoughtfully and appropriately, nudges are one of the most effective tools for influencing behavior.

Social marketing

Originally used in public health initiatives, ***social marketing*** uses traditional marketing principles not to sell commercial products or services, but to promote specific human behaviors, ideas, or attitudes for the benefit of the greater social good. According to social marketer Dr. Bill Smith, emeritus editor of *Social Marketing Quarterly,* the aim of social marketing is to "offer people something they already value in exchange for a behavior which we believe will benefit not only them as individuals, but society as a whole."[31]

Systems thinking

Every year, we produce 300 million tonnes of plastic waste, (which is nearly equivalent to the combined weight of the entire human population) and yet barely 10% of all plastic ever created has been recycled.[24] Is this entirely the fault of the average consumer? Absolutely not. It's the result of systems and policies that have made it cheaper for oil companies to produce virgin plastic than to recycle plastic products into new ones.[32]

However, it's also true that the larger systems cannot be changed without individual and collective action. Every sixty seconds, one million plastic water bottles are purchased around the world. So decreasing consumer demand for plastic is one way to influence companies to adjust their practices. Changes in individual behavior also accumulate into changes in social norms and expectations, which can influence policymakers to pass new legislation to appease their constituents. By reducing our personal use of plastic as well as pushing for policy changes, we apply pressure from both the bottom and the top of the system.

Individual behavior and systemic factors are inextricably linked. Although much of this book is focused on behavior change at the individual level, it's important for us to consider how individuals and groups are influenced by the natural and social systems and structures surrounding them. ***Systems thinking*** can help us understand factors interdependent with behavior, such as social norms, social networks, the natural and built environment, institutions, policies, and power structures.[1] We can use a systems thinking lens to help us identify the root causes of the problem we are trying to address—a critical first step in the design of effective programs and behavior change campaigns.

To identify, simplify, and visualize relationships among the different elements of complex socioecological systems, we can use the visual metaphor of an iceberg.[19] Starting from the deepest level, ***mental models*** form the basic principles that shape the ***system structures***. These structures, which include both formal and informal factors (e.g., explicit policies and implicit social norms), shape individual and collective ***patterns of behavior***, both directly and indirectly, as well as consciously and unconsciously. These behavioral patterns then result in the outcomes, or ***events***, that we observe in the system. Within this general causal sequence, complex interconnections exist between and across levels of the system. Deeper elements of the system such as mental models provide more leverage for change because they are fundamental to the function of the system overall.

Integrating systems thinking with insights from behavioral science provides perhaps the most powerful combination of tools for practitioners; systems thinking allows practitioners to identify the points in the system that will yield the most change, and a behavioral approach can be used to enact the changes themselves.[15] Behavior change strategies can and should be applied throughout all levels of the system—to shift mental models, write policies, or change consumer behavior, among many other possibilities.

Initiatives are particularly effective when they target multiple levels of the system at the same time. For example, let's look at how a multi-pronged effort led to a considerable decline in smoking behavior in the United States. Starting in the 1970s, state and local governments began implementing bans on smoking in public spaces. At the same time, there was an increase in lawsuits against tobacco companies and public health campaigns aimed at reducing the social acceptability of smoking. These efforts simultaneously created shifts in the system at a behavioral level (e.g., reduced smoking in public places), structural level (e.g., indoor smoking bans and high profile lawsuits), and mental model level (e.g., smoking beliefs and attitudes), causing tobacco consumption to be reduced by more than 50% by the end of the century.[8] This behavioral shift reinforced new anti-smoking norms and legitimized the stricter policies, which are still in place today.

When implementing behavioral strategies from this book, we encourage you to take note of any contextual factors that either enable or constrain your desired behavior. In many cases, strengthening enabling factors while weakening constraints can create new conditions that make the desired behavior more likely to occur. Systems thinking will help you identify which contextual factors to target through your initiative. For more detail on tools you can use to incorporate systems thinking into the design of your initiatives, see INITIATE: Process Chapter 2.

Events

Events are observable outcomes of the system that are produced directly by patterns of behavior and indirectly by all of the other components of the system. Events can be thought of as symptoms of a problem, not the cause, so changing them requires shifts at deeper levels of the system.

Patterns of Behavior

Individual and collective patterns of behavior are shaped by system structures and mental models. Most of the shifters in this book are designed to influence this level of the system, and can be applied to behavioral patterns occurring among individuals, households, communities, businesses, and governments.

System Structures

System structures are shaped by mental models, and include formal rules, policies, institutions, and legal systems, as well as informal factors like societal norms. It's important to determine whether behaviors are undermined or supported by system structures; sometimes you may need to redirect your strategy to include changes to the system structures themselves.

Mental Models

Mental models consist of the ideologies, assumptions, and beliefs that shape the foundations of the structures in a system. Although change at this level of a system may take the longest, it can be the most impactful; a shift in mental models can lead to sustained changes in many behaviors at once. More information about shifting mental models can be found in ASSOCIATIONS and LONGEVITY: Building Block Chapters 9 and 10.

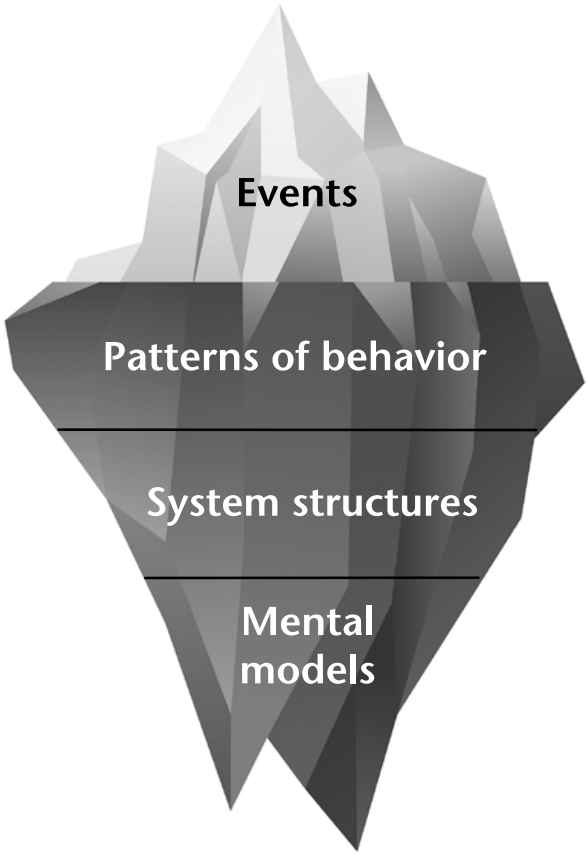


Figure 1.1.1:
The Iceberg Metaphor for Systems Thinking
Credit: Goodman, M. *The Iceberg Model.* (2002). Hopkinton, MA: Innovation Associates Organizational Learning. Copyright 2002 by M. Goodman.

Design thinking

> *Humans aren't as good as we should be in our capacity to empathize with feelings and thoughts of others, be they humans or other animals on earth. So maybe part of our formal education should be training in empathy. Imagine how different the world would be if, in fact, that were "reading, writing, arithmetic, empathy."*
>
> — Neil deGrasse Tyson, astrophysicist, author, science communicator

Because environmental problems are caused by and can only be solved by humans, our process draws on ***Human Centered Design*** (HCD). HCD uses the perspectives of our intended audience to inform the design of solutions, services, and products that are tailored to their needs. In our case, in lieu of a product or service, we are designing initiatives with the specific goal of encouraging environmental behavior change. As you will see throughout the book, we have incorporated HCD principles into our process. Below are a few of the most important aspects of the HCD process.

Start with empathy

We must begin our work with ***empathy***. Empathy refers to our capacity to understand and internalize the experiences of others. Working empathetically means trying to relinquish our own biases, actively listening to our audience and, rather than assuming we know what's best for our audience members, recognizing them as the true experts of their own lived experiences.[14] See LONGEVITY: Building Block Chapter 10 for more on how to build empathy.

Always research, don't guess

It is critical to engage in open-minded, empathetic research at every phase in the design process to learn as much from our audience as possible and discover new insights and ideas as we go. Empathetic research involves interviewing, observing, and conducting surveys with our audience to help us understand their relationship to the issue we are trying to address. These activities can reveal our audience's emotions, beliefs, values, needs, and interactions with their surroundings and help us to identify the barriers and motivators of their behaviors, which inform the design of our initiatives. See UNCOVER: Process Chapter 3 and METHODS: Process Chapter 6 for more information about how to conduct research.

Prototype and iterate

Once we have done sufficient research, we use ***prototyping*** to test out our initiative's design with our audience. Prototyping helps us save substantial resources in the long run by allowing us to make numerous adjustments to our shifters based on our audience's responses before we implement them on a large scale, preventing us from going too far down the wrong path. This form of iterative feedback provides a valuable guide that may lead us to reevaluate our targeted behavior, or backtrack to a previous step in our design process where we may need to change direction. We discuss prototyping and how to navigate this iterative process in greater detail in DESIGN: Process Chapter 4.

• • •

It may be tempting to skip the audience research and go straight to solutions, for fear that this design thinking process could be time-consuming or costly. But remember what happened with D.A.R.E. and teen anti-smoking campaigns? We risk wasting time and resources by rolling out initiatives that don't work. Additionally, there is a risk that our efforts could backfire or even do harm to our audience if we don't thoroughly understand the people and context with which we are working.

Using the *Making Shift Happen* process does not have to be extremely time-consuming or expensive. Even on a shoestring budget, you can incorporate these practices, which can go a long way in maximizing the budget that you do have. You also don't have to use every step and tool in each of the phases we recommend, but we encourage you to use the framework we've laid out as a guide that will help you to design the most effective and efficient initiatives possible.

Table 1.1.2: Words to Describe the *Making Shift Happen* Process

What it is	What it is not
Conscientious	A silver bullet
Creative	Assumption-based
Investigative; Diagnostic	Definitive
Empathetic	Imposing; Authoritative
Equitable	Judgmental
Evidence-based	Linear
Evolving	Manipulative
Inquisitive; Exploratory	Narrow in scope
Iterative; Flexible; Adaptive	One size fits all; Cookie cutter
Problem Solving	Prescribed
Strategic	Rigid
Systems-oriented	
Tailored; Customized	

Guiding Principles of the *Making Shift Happen* Process

In addition to being rooted in many disciplines, the *Making Shift Happen* process is guided by a number of fundamental principles, driven by our belief in an inclusive form of environmentalism that strives for equitable protections of all beings and natural resources on this planet. In this section we call attention to important ethical considerations, including issues of scarcity, our finite pools of worry, behavioral spillover, and some caveats about activating specific emotions. Refer to these guiding principles as you design your behavior change initiatives; they will help to prevent unintended consequences and increase your positive environmental impact.

Take an intersectional approach to environmentalism

> *[Intersectional environmentalism] is an inclusive version of environmentalism that advocates for both the protection of people and the planet. It identifies the ways in which injustices happening to marginalized communities and the earth are interconnected.*
>
> —Leah Thomas, environmental activist

Environmental challenges disproportionately affect marginalized communities and Black, Indigenous, and People of Color (BIPOC): this has been a neglected aspect of environmental activism. Disasters like Hurricane Katrina in the United States, bushfires ravaging Aboriginal communities in Australia, and the threat of pipeline installations on First Nation lands in Canada are blatant reminders of this. But we must look beyond these events that make headlines; marginalized communities endure hardships every day through experiences like the degradation of coastal lands and fisheries, increasingly bad air pollution in urban cities, and the placement of toxic waste dumps.

We will use the terms "environmentalism" and "environmental issues" throughout this book, which are sometimes understood to pertain strictly to natural ecosystems. However, we mean more by them: we believe in an inclusive environmentalism that prioritizes the protection of not only our planet, but all of humanity too—including people of all races, genders, ages, and cultures.

Consider culture and context

Culture has a significant influence on human behavior, so we need to understand the cultural context in which we are designing behavior change initiatives. For example, the concepts of ***individualism*** and ***collectivism*** are often used to broadly categorize cultural differences. Western countries such as the United States and the United Kingdom have individualistic cultures that tend to value independence and individual accomplishments. In contrast, many Latin American and Asian countries tend to have collectivist cultures that value interdependence and group accomplishments. These differences have important implications for social interactions and decision-making processes, among many other behavioral patterns.[37] That said, we must note that culture cannot be summed up just by these broad terms. Culture is deeply complex and constantly evolving; even within countries, culture can vary by region, town, and even household. Nonetheless, as long as we remain cognizant of these nuances, we can still identify useful cultural patterns to guide us in the design process.

Beyond culture, there are additional influential aspects of society—including race, wealth, education, and political environments—that shape our behaviors. This is particularly important to note because racial diversity is often lacking among academics, within environmental groups, and in study participants in the social sciences.[21] We must keep this in mind as we design our environmental initiatives, and be sure to test our ideas with our specific audience, as we discuss in more detail at the end of this chapter.

Follow ethical guidelines

When we design programs and initiatives that aim to influence people's behavior—even for the intended benefit of both our audience and the planet—we must be careful to consider some fundamental ethical questions about our work.

There is a continuum of opinions about the ethics of behavior change. For example, some behavioral scientists claim that techniques like nudging can be manipulative in nature, infringing on the autonomy and welfare of the audience.[10] On the other end of the spectrum, there are behavioral scientists who argue that since we are already constantly being influenced by choice architecture (often through marketing that persuades us to buy things that we don't really need), "nudging for good" should in fact be a moral imperative, as long as it's implemented judiciously.[33] For example, pollution is partly caused by unhelpful choice architecture in the form of regulatory defaults designed by those that benefit. This

is the case when homeowners are automatically opted into energy programs that don't draw on sustainable sources of energy. Instead, shouldn't we try to change the defaults so that homeowners are opted into more sustainable energy programs?

These divergent opinions—and the many in between—are too complex and nuanced for us to fully explore here (for those interested in reading more on this topic, we recommend the work of Richard Thaler, Cass Sunstein, Leonhard Lades, Liam Delaney, and Pelle Guldborg Hansen). We recommend assessing and employing choice architecture on a case-by-case basis using an empathetic approach that is informed by design thinking and certain ethical considerations. We highlight some of the most important ethical issues for you to consider as you design your behavior change initiatives below. These guidelines should help to ensure that your initiatives come from a place of integrity and serve the best interests of your audience. In general, behavior change efforts should be:

Well-intentioned

Goals should be well-intentioned and not tied to ulterior or self-serving motives.[16] Maintaining honesty and integrity is imperative throughout behavior change initiatives.[34] But even with the best intentions to protect the environment and subsequently improve people's livelihoods, we still need to keep a number of other ethical considerations in mind.

Participatory

It is our responsibility as practitioners to design initiatives that are consistent with the values, interests, and preferences of the community in which we aim to work. But we should be careful to recognize that people in different contexts may have varying ideas of well-being, so we shouldn't jump to conclusions about how we can improve the well-being of others who have a different life experience than our own.[28] We should also be sure to engage with a diverse range of stakeholders and audience segments so that all voices are heard, especially if there are power imbalances among participant groups. A participatory approach provides the most authentic and direct way to learn about the needs, values, and motivations of our audiences and to ensure that they accept and approve of our efforts. Inviting the audience's participation from an early stage also cultivates meaningful relationships instead of transactional ones, which can increase people's long-term investment in the cause, leading to more sustainable and empowering outcomes for the community.[2]

Equitable

Our initiatives should aim to avoid regressive, redistributive effects that take something from a group of people with lesser means and give it to another.[16] We should always be cognizant of how certain behavior changes may have different ramifications for various groups of people due to race, class, gender, and socioeconomic status, among other factors.

Respectful

We must make it a priority to protect the rights of our audience by respecting people's autonomy, dignity, and privacy.[16,34] It is of the utmost importance for us to preserve our audience's freedom of choice. This helps to ensure that our behavior change efforts are not coercive and in no way undermine people's personal agency.

• • •

As you consider these ethical issues, keep in mind that every context you work in will be unique, so you will need to adjust your initiatives accordingly to ensure that they are ethical as well as effective. We will expand on these broad guidelines and discuss a few specific issues in more detail below, which have notable ethical implications.

Think carefully about *when* and *whom* you ask: navigating scarcity and worry

We encourage you to be aware and respectful of the financial and cognitive capacity your audience has to engage with your behavior change initiatives. It's especially critical to understand if your audience's actions are constrained by their socioeconomic status or experiences contributing to their pools of worry.

Scarcity[20]

> *Scarcity is not just a physical constraint. It is also a mindset. When scarcity captures our attention, it changes how we think—whether it is at the level of milliseconds, hours, or days and weeks. By staying top of mind, it affects what we notice, how we weigh our choices, how we deliberate, and ultimately what we decide and how we behave. When we function under scarcity, we represent, manage, and deal with problems differently.*
>
> —Sendhil Mullainathan and Eldar Shafir,
> authors of *Scarcity: Why Having Too Little Means So Much*

Scarcity is most simply defined as not having enough of something. The basic economic principle of scarcity refers to a limited supply of material goods and services,

but there is also the psychology of scarcity, in which cognitive functioning is compromised due to a lack of material or cognitive resources. When our basic needs are unmet (e.g., food, safety, social connection), our mental bandwidth is taxed. This can manifest as ***tunneling***, in which we fixate on the resource that we lack, reducing our capacity to focus on other things. In a scarcity mindset, it's more difficult to retain information, reason, make decisions, and adopt new behaviors.

People who live on a tight budget frequently have to make decisions about how to best allocate their limited financial resources to obtain essential things like food and shelter in the short term, rather than invest in things like insulating their home, even though it would save money in the long term. Keep in mind that the scarcity mindset is not limited to the poor; people also struggle with decisions when they are overwhelmed, do not have enough time, or are disconnected from social interaction. A single working parent, for example, might not have much bandwidth for developing new practices in their life that will reduce their carbon footprint. We should therefore be sensitive to the daily pressures that influence the priorities of people dealing with scarcity, whatever form it may take.

Throughout this book, we discuss strategies for reducing barriers to behavior change, but when the mental bandwidth of an audience is diminished due to a lack of material or cognitive resources, simplifying an action or making it more accessible can only do so much. We should therefore design environmental initiatives accordingly: for example, by including elements that reduce our audience's scarcity, and by reducing financial and cognitive burdens associated with the initiative.

Depending on the context and type of initiative, it may simply be inappropriate to choose people facing scarcity as an audience for your behavior change initiative. That said, some conservation initiatives inherently provide additional resources or financial benefits for communities: reforming fishery management, for example, often improves both conservation and positive economic outcomes for fishers. It's also possible to integrate empowering environmental initiatives within programs specifically designed to alleviate poverty.

The topic of scarcity is complex yet important. Within the scope of this book and the *Making Shift Happen* process, we want to emphasize that it deserves the attention of all environmental practitioners, no matter where you plan to work.

Finite pool of worry

Even when we aren't experiencing scarcity, we all have mental and emotional limits to the number of things we can concern ourselves with. This limited capacity to

care is sometimes referred to as our ***finite pool of worry***.[17,29] When our concern about one thing increases, our concern for other things may decrease because we can only confront so many challenges at once.

The specific concerns that are in our pool of worry at any given time depend on many factors. Concerns about recessions and job security, for example, tend to override many other worries.[23] In fact, the performance of the United States' economy turns out to be a very good predictor of the public's level of concern for the environment. Researchers found that the degree to which Americans worry about these two issues has an inverse relationship: when concern about the economy increases (such as during economic recessions), concern for the environment decreases.[12] This has significant implications for climate science communications and public engagement with environmental issues.

Other salient events such as terrorist attacks, mass shootings, or the COVID-19 pandemic also consume much of our capacity to worry, especially if we are concerned about where our next paycheck will come from or the health of our loved ones.

•••

We should be sensitive to the timing and context in which we engage with our audiences and be careful not to contribute anything more to their pool of worry. In some cases, there may be a need to remove scarcity or reduce the number of things occupying the pool of worry before working on behavior change, so we should always work to identify those situations before proceeding.

Think carefully about *what* you ask: the implications of spillover

If someone starts recycling for environmental reasons, are they more or less likely to start carpooling to work? ***Behavioral spillover*** refers to when the adoption of one behavior influences the likelihood of engaging in another behavior.[22] Over the last 20 years, there have been considerable developments in the research on spillover, but our understanding of the phenomenon is still emerging.[6]

In the realm of environmental behavior change initiatives, both positive and negative behavioral spillover can occur: an initiative targeting one behavior may increase or decrease the likelihood of additional environmental behaviors.[36,39] For example, in a study involving an initiative to promote composting, households that started composting also started engaging in other household measures to reduce energy and save water (positive spillover).[30] Conversely, another study found that

an initiative designed to reduce household water consumption was successful in doing so, but also led to an increase in household electricity consumption (negative behavioral spillover).[38]

Several phenomena that can cause negative spillover include:

Single action bias	A person or organization might adopt one mitigation strategy or environmental behavior and then—due to a sense of relief at having addressed the problem in some way—stop there, failing to adopt additional measures.[40]
Moral licensing	This related rationalization process can occur if a person considers one environmentally responsible behavior sufficient to justify wasteful or excessive consumption in another aspect of their lives. In other words, our previous good deed makes us feel like we "have done our part" and are now "off the hook."[38]
Rebound effect	Finally, negative spillover can be driven by a ***rebound effect,*** whereby an increase in technological efficiency causes a decrease in operational cost, contributes to an increase in consumption. For example, we might buy a more fuel-efficient vehicle, but because we are saving money on gas, we end up driving more.[9]

The behavioral mechanisms responsible for the kind of spillover we want to see—positive spillover—are currently not as well understood.[22] However, research to date generally suggests that positive spillover stems from a desire for consistency. Decisions made based on identity (e.g., as someone who acts in environmentally responsible ways as a rule, or sees themselves as an "environmentalist"), may be more likely to result in positive spillover than decisions based on social pressure or incentives.[39]

But not everyone sees themselves as "environmentalists." And even among those who do, negative spillover can occur. With every behavioral ask we make, we run the risk of potential negative spillover. And the stakes are high: negative spillover might prevent your next ask, or even another practitioner's ask, from being adopted. This unfortunate reality means that we must put extra care into deciding which behaviors we ask our audiences to adopt. We must also work in tandem with our fellow practitioners to determine which actions are likely to be the most impactful. In INITIATE: Process Chapter 2, we'll dive into considerations like these for identifying and selecting which behaviors to focus on in your initiatives.

Think carefully about *how* you ask: evoking emotions with care

To convey the urgency of environmental issues, communicators often use messaging that triggers negative emotions like fear to motivate action against the threats we face. We understand the temptation of this strategy because we feel the urgency, too! Despite the importance of conveying the reality of environmental threats, however, we recommend erring on the side of caution with respect to evoking negative emotional responses.

As we discuss in detail in OPTIMISM: Building Block Chapter 7, negative emotions can backfire in various ways, especially if they are not paired with messages that promote feelings of efficacy. They may inspire short-term behaviors, but there is little evidence that these behaviors are sustained over the long term—clearly a critical component to environmental issues like climate change. So we should be wary of eliciting negative emotions through our appeals; they may produce the immediate behavior changes we were hoping for, but at the expense of continued engagement with the broader environmental movement. Generally, we prefer eliciting positive emotions when we can, as a more productive and positive way to influence change that can help to uplift each other as we work together to solve challenging problems.

When we aim to change behavior on a large scale, it's inevitable that we will engage with people's emotions. This is one of the reasons why it's so important to test our initiatives, which we discuss further below. Testing helps to ensure that we engage with people's emotions in a respectful way and that we don't inadvertently activate counterproductive emotional responses that could harm our audiences. This is also critical for the sake of protecting the environmental behavior change movement at large.

Test, test, test

Given the range of contextual nuances that affect our work, results from one or a few studies will not necessarily be found again if the same research is conducted in a different setting. This refers to the concept of ***external validity***—the degree to which a study's findings can be generalized.[3]

When reviewing results from a study, we should take note of the context in which the research was conducted and ask ourselves if the participants are similar to our audience. If not, are the findings likely applicable to people from different cultural or socioeconomic backgrounds, geographical locations, or political systems? Asking

ourselves these questions can help identify what we don't know about our audience. Testing our ideas and initiatives helps to fill in those gaps, and allows us to tailor our initiatives to better suit our audience's needs. Testing can be as simple as creating basic prototypes or pilot programs, which you will learn more about in DESIGN: Process Chapter 4 and IMPLEMENT: Process Chapter 5. This due diligence is critical, especially before rolling out an initiative that will touch large audiences.

As with all other aspects of our design process, we must be respectful of our audience when testing our initiatives. Use the type of empathetic research promoted by design thinking and the ethical principles described earlier in this chapter to guide your testing processes. We encourage you to keep an open mind and use your deep listening skills, which will help prevent any unintended and unforeseen consequences. Ultimately, it's imperative to test your strategies with your specific audience, in the appropriate context in which you aim to work. We encourage you to keep this in mind as you learn about various behavior change techniques throughout this book.

• • •

We are all trying to make positive changes through our initiatives. However, even the best-intentioned initiatives can overlook things that can end up negatively impacting our audience and our efforts. Our guiding principles are meant to provide a compass you can use to keep your work tracking in a positive direction. Remember to take an intersectional approach to environmentalism that is inclusive and takes both culture and context into consideration. Always take note if some type of scarcity is affecting your audience, and try to remain cognizant of people's finite pools of worry. Be aware of potential behavioral spillover, and be careful when evoking emotions in order to call attention to an environmental issue. At any point in your design process, you can always refer back to our ethical guidelines, which should help ensure your initiative is carried out with integrity.

Conclusion

The issues and considerations presented in this chapter are foundational to any behavior change initiative. This work is far from simple, and we make no guarantees that it will always be easy. But we promise that it's very much worth doing, and we are here to walk you through it. Using our process will not only save you time, effort, and resources in the long run, but it will also help you create a more respectful, equitable, and effective behavior change initiative in whichever context or community you plan to work.