Breaking the Spell

Why We Cling to Irrational Beliefs & Strategies to Reduce Bias

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Humans appear to behave in ways that are irrational and even contrary to our best interests. Why do we behave this way? Can anything be done to help us make better choices? This literature review looks at common patterns of behavior and biases, examines underlying causes, and proposes paths forward.

A functioning democracy depends on a well-informed populace, wrote Thomas Jefferson.[1] Accordingly, it is worthwhile to examine how people acquire information and form beliefs, particularly in the context of public policy. In this realm, we see countless examples of voters supporting candidates and policy positions that undermine their personal welfare. Take, for instance, the tenacity with which some people assert that vaccines cause autism despite unequivocal scientific proof to the contrary. Or the fact that lower-income, older voters living in rural, conservative parts of the nation—who stand to lose the most from the loss of the Affordable Care Act—support the efforts to repeal and replace it (Levey, 2017). Why would people risk their children's health or their own wellbeing?

In the first part of this review, we will examine common patterns of irrational behaviors and cognitive biases. Along the way, we will consider potential interventions that may help people become better informed and encourage self-interested decision making. Next, we will dive into underlying causes for this seemingly irrational behavior, including evolutionary theories. While behavioral science can shed an often-unwelcome light on the folly of our ways, it can also illuminate opportunities to influence positive behavioral change. Some of the same strategies that entrench people in unproductive patterns can also be leveraged to make people healthier and happier.

[1] Thomas Jefferson to Richard Price - Thomas Jefferson | Exhibitions - Library of Congress. (n.d.). [web page]. Retrieved April 16, 2018, from https://www.loc.gov/exhibits/jefferson/60.html

Chapter 1: Irrationality

People display a number of behaviors that do not seem to make rational sense, and yet they do so systematically. In this chapter we will explore the ways in which people are predictably irrational (Ariely, 2008).

Even in the face of undeniable evidence, people holding strong convictions are likely to resist changing their beliefs. In the 1950s, psychologist Leon Festinger studied a cult that believed in an imminent apocalypse. When their prophecies did not come true, the cult members' belief persisted, despite clear evidence that they had been mistaken. This led to Festinger's theory of **cognitive dissonance**, which describes a state of psychological discomfort when a person holds two contradictory beliefs (Festinger, 1957). To reduce or avoid the discomfort, people will employ **motivated reasoning**—essentially rationalization with an agenda. Motivated reasoning is apparent in a 1959 study by Aronson and Mills where participants had to exert varying levels of effort to gain access to a group discussion (which was actually a boring, pre-recorded conversation). The more difficulty the participant underwent, the more favorable their final evaluation of the discussion. The researchers showed that if people exert effort or endure pain for something, they will assign it a higher value. After all, it would not feel good for a hard-fought achievement to be worthless, and so a person will circularly reason that the outcome must justify the effort (Aronson, & Mills, 1959). This is a close cousin to the **IKEA effect**, which says that the more effort someone puts into something, the more they will like it and overvalue the final product (Norton, Mochon, & Ariely, 2012).

Why Facts Fail

From cognitive dissonance theory we see that if new information is consistent with a belief, people accept it. However, if it does not mesh well with his or her existing worldview, the person is likely to dismiss the information as inaccurate or biased. So strong is the need for consistency that people will perform mental gymnastics to distort evidence that challenges their viewpoints. This specific type of motivated reasoning has been dubbed **confirmation bias**, for which examples abound:

> "I wouldn't have seen it if I didn't believe it."
> —Marshall McLuhan

- Leading up to the 2003 US-led invasion of Iraq, the American government alleged there was no doubt Saddam Hussein had weapons of mass destruction (WMD). After the famous "Mission Accomplished Speech," surveys conducted May through September 2003 showed 73 percent of people who supported the war believed the US had found WMDs, despite no such evidence (Jacobson, 2010).
- A 2011 poll shared by Politico revealed that 51 percent of GOP primary voters believed President Obama was not born in the US, even though the state of Hawaii had already shared his official birth certificate (Barr, 2011).
- A 2014 study by political scientist Brendan Nyhan and his team tried a number of strategies to correct the myth that vaccines cause autism. The study had four test conditions—one correcting misinformation, another presenting facts about disease risks,

one using a dramatic narrative and another using visuals—as well as a control condition. None of the strategies budged attitudes (Nyhan, Reifler, Richey, & Freed, 2014; Ouellette, 2015).

People that display motivated reasoning are not ignorant nor lacking in education. The research shows the opposite—motivated reasoning increases with more education, perhaps giving people more tools to draw upon when rationalizing (Flynn, Nyhan, & Reifler, 2017). A Pew study demonstrated that higher scientific knowledge did not increase Republicans' acceptance of climate change, although it did for Democrats (as cited in Meyer, 2016). Similarly, despite scientific evidence that normal levels of the chemical compound BPA are not harmful to humans, Democrats voted to ban the substance (Haelle, 2014).

When Facts Backfire

Evidence not only shows that receiving information contrary to your viewpoint is unlikely to sway you; it is likely to make you dig your heels in deeper and further entrench your beliefs. This **backfire effect** was coined by political scientists Brendan Nyhan and Jason Reifler. The researchers provided participants with mock news articles including either a misleading claim from a politician or the misleading claim combined with its correction. Their results indicated that not only did corrections typically *not* reduce misperceptions in the most ideological groups; in several instances, they worsened misperceptions. For example, participants were given a statement indicating Iraq possessed WMDs, and one group was also given corrected information (the Duelfer Report documenting the lack of WMD stockpiles). All groups were then asked to state whether they believed Iraq had WMDs. While the correction worked to moderate the beliefs of liberal participants, conservatives who received the corrected information were *more* likely to believe there had been WMDs than those who received only the initial article. The same effects were shown for liberals presented with claims that President Bush had banned stem cell research (while he had limited its federal funding, Bush imposed no bans on private research). After receiving information dispelling the myth, liberals were more likely to agree with statements that the president had banned stem cell research (Nyhan & Reifler, 2010).
Psychologist Tom Gilovich asserts that people ask themselves fundamentally different questions when evaluating information that contradicts their prior beliefs. When the information agrees with what they already believe, the question is “Can I believe this?” When the evidence is not favorable, the question changes to, “*Must* I believe this?” (Gilovich as cited in Beck, 2017, para. 12).

A 2016 study on climate change attitudes showed uneven revisions to beliefs depending on prior positions. The subject pool was comprised of three groups: people unsure that climate change is impacted by humans, a group of moderate believers, and a set of strong believers. This experiment did not include climate change deniers. The groups were randomly presented with information that climate change is not as bad as scientists had expected (“unexpected good news”) or worse than scientists had previously thought (“unexpected bad news”)
The researchers showed that the unsure group revised beliefs when receiving unexpected good news, but not the bad news. The strong believers revised their beliefs when the news was worse than previous estimates but showed a much smaller change to the unexpected good

news. There was no statistically significant asymmetry in the belief change of moderates. These results are consistent with confirmation bias theories and also show that good news generally has a larger effect on belief change than bad news (Sunstein, Bobadilla-Suarez, Lazarro, & Sharot, 2016).

Figure 1: Climate change experiment - two test conditions:

Unexpected Good News	Unexpected Bad News
Assume that in the last few weeks, some prominent scientists have reassessed the science, concluded that the situation is far better than had previously thought, and stated that unless further regulatory steps are taken, 'By 2100, the average U.S. temperature is projected to increase by about 1°F to 5°F, depending on emissions scenario and climate model.'	*Assume that in the last few weeks, some prominent scientists have reviewed the science and concluded that the situation is far worse than they had previously thought. They stated that unless further regulatory steps are taken, 'By 2100, the average U.S. temperature is projected to increase by about 7°F to 11°F, depending on emissions scenario and climate model.*

(Sunstein, Bobadilla-Suarez, Lazarro, & Sharot, 2016, p. 6)

Interventions

- Swap facts for imagery. Use metaphors, examples, real-world analogies, and concrete comparisons that elicit emotional responses. While people can counter-argue statements, it is difficult to articulate arguments against stories and imagery (Cialdini as cited in Garcia, 2017). In addition, brain scans have demonstrated that more graphic warning labels on cigarette packaging elicit stronger emotional reactions and are more memorable than controls. A study by Wang, Lowen, Romer, Giorno, & Langleben presented subjects with images of cigarette warning labels while under an fMRI scanner. The high "emotion reactions" (ER) images--such as decaying teeth—had been designed to evoke negative emotions compared to the low ER labels that contained neutral images or control conditions of scrambled images. The high ER images produced greater activation in emotional processing and memory-related areas of the brain, and subjects displayed better recall of the more graphic warning labels later in the experiment (2015).
- Tip the anxiety scale. One study showed that even motivated reasoning has a tipping point. Participants were exposed to negative information about their preferred political candidate. As expected, participants displayed signs of the backfire effect. However, the researchers were able to show that the participants' anxiety levels increased with the addition of more information about their candidate until reaching a critical point where they changed their minds (Redlawsk, Civettini, & Emmerson, 2010).
- Go to the other extreme. Presenting people with even more extreme arguments that supported their beliefs tempered their positions, according to an Israeli study. People were shown 30-second commercials advocating that continued conflict with Palestinians was essential to maintaining an Israeli identity. After the intervention, participants displayed more conciliatory attitudes regarding the Israeli-Palestinian conflict. These moderate attitudes were still present when assessed one year after the intervention. There was evidence that these results even influenced participants' actual voting patterns in the 2013 Israeli elections (Hameiri, Porat, Bar-Tal, Bieler, & Halperin, 2014).

The Desire for Consistency

Social psychology says that individuals will try to maintain a consistent, positive self-image. Psychologist Robert Cialdini theorizes that consistency is an evolutionarily adaptive trait—that societies perceive inconsistency as a sign of weakness or deceit, whereas consistency signals mental stability and honesty. Once we have made a choice, we encounter both interpersonal and cognitive pressures to live up to that commitment. This desire to appear consistent leads us to rationalize words and actions that tell a cohesive story. A perk of remaining consistent to prior commitments is cognitive simplicity. Rather than solve a puzzle repeatedly, people need only remain consistent with a prior decision (Cialdini, 1984/2007). Cialdini points to evidence that even when Congress has generally low approval ratings, people do not apply the same criticism to their own congressional representatives. He reasons that when we vote for someone, we then feel somewhat responsible for their performance and do not want to share in the blame (Cialdini, 2016; Mendes, 2013).

Research also shows that the act of writing down commitments further strengthens a person's resolve to remain consistent. A study by psychologists Morton Deutsch and Harold Gerard asked students to estimate the length of lines. One cohort estimated in their minds, another privately wrote down their guesses, and the third group wrote down their judgment on paper, signed their name to it, and turned it into the experimenter (i.e., a public commitment). All students were then given evidence that their initial estimates were wrong and provided the opportunity to revise their guesses. The individuals in the "public commitment" group were least likely to change their original estimates. Those who had not written down their estimates at all were most likely to change. Interestingly, those who had privately written down estimates still showed relatively low rates of revision, indicating that the desire to appear consistent to oneself is a powerful motivator (Deutsch & Gerard, 1955).

Interventions

- Give the ego an out. Provide people with justification for their past errors. (e.g., "Well, of course you were in a position to make that decision back in November because you didn't yet know about X.") This reasoning provides people with cover to publicly break a commitment (Cialdini as cited in Garcia, 2017, p. 10). To help sidestep confirmation bias in ourselves, researchers recommend seeking gratification through learning as opposed to satiating the need to be right. Education researcher Hunter Gehlbach recommends reframing failed theories as learning opportunities to make them easier to digest. To cultivate the learning mindset in others, Gehlbach and team surveyed people on climate science beliefs. A simple intervention—first reminding participants about how much we have learned from science over the years—reduced the gap between liberals' and conservatives' climate science beliefs (Gehlbach, 2018).
- Model good behavior. If leadership more often broke with party lines, it could pave the way for a new social norm of balanced, independent thinking. However, current evidence indicates trends in the opposite direction. An analysis of congressional voting records by political scientist Keith Poole showed that members maintain an ideologically

consistent position over time (2007). In addition, despite evidence that both Clinton and Trump were disliked by members of their own parties, CNN exit polls of the 2016 presidential election show that most people voted in accordance with party lines (as cited in Beck, 2017).

- Leverage consistency. In his book *Influence*, Cialdini describes tactics employed by the Chinese military to alter the hearts and minds of American POWs. The Chinese military would solicit very mild anti-American or pro-Communist statements from the American prisoners (e.g., "The United States is not perfect"). Soldiers might later be asked to list a few imperfections, and eventually they might write an essay on the topic. Through each successive step, the soldiers slightly reframed their public commitment and self-perception. The fact that some of these commitments were in their own words and even in their own handwriting made them that much more powerful (Cialdini, 1984/2007, p. 71).

Fake News

Sometimes beliefs result from incorrect information. People are more likely to pass on information that evokes an emotional response, regardless of the accuracy of the statement (Berger, 2011). The spreading of rumors is a staple of human culture. In addition, misinformation is easily spread via works of fiction, governments and politicians, vested interests, and the media. Rather than analyze new information rationally, people evaluate its merit by asking: Is the information compatible with my other beliefs? Is the information internally coherent? Is the source credible? Do others believe it? (Lewandowsky, Ecker, Seifert, Schwarz, & Cook, 2012) We rely on cognitive shortcuts to save us time and effort, and although useful, these shortcuts can lead to suboptimal decisions (Kahneman, 2011).

- **Compatibility.** In addition to mental discomfort evoked through cognitive dissonance, information that is incompatible with prior knowledge requires more cognitive effort to process. **Fluency**—the ease of cognitive processing—impacts whether information "feels right" and our likelihood of acceptance (Winkielman, Huber, Kavanagh, & Schwarz, 2012; Schwarz, Sanna, Skurnik, & Yoon, 2007; Song & Schwarz, 2008).

- **Coherence**. Ease of mental processing gives stories that are internally coherent an advantage in believability (Topolinski, 2012). Research on mental models suggests that the meaning of one piece of information is closely tied to other relevant pieces and is therefore rarely evaluated in isolation. Attempts at discrediting misinformation that is part of a mental model often fail, since people prefer an incorrect model over an incomplete one. A common paradigm is often used to illustrate this point: a warehouse fire was initially thought to have been caused by negligent storage of gas cylinders and oil paints. Participants are later provided with a retraction (e.g., "the closet was actually empty"). Despite the correction, when asked about the cause of the fire, participants cite the gas and paint. Participants recall the retraction of information, but without an alternative explanation for the fire, they revert to old information that provides a better fit to the posed question (Wilkes & Leatherbarrow, 1988).

- **Credibility and other people.** When people lack the ability to fully comprehend or process information effectively, they will often resort to an assessment of the communicator's credibility (Lewandowsky, Ecker, Seifert, Schwarz, & Cook, 2012).

Interventions

- Encourage skepticism. Train people to take a scientific approach to evaluating new information. Encourage critical thinking and questioning of motivations and accuracy of sources. Political scientist Jennifer Jerit ran an experiment priming people to focus on the accuracy of information presented over other factors. This successfully led to reduced motivated reasoning in the lab (as cited in Beck, 2017).
- Fill in the mental gaps and keep it simple. When retracting misinformation, avoid leaving gaps in people's' mental models. Provide an alternative explanation that tells a coherent story. Also, simple explanations are cognitively more attractive. Avoid overcomplicating rebuttals and stick to fewer arguments (Lewandowsky, Ecker, Seifert, Schwarz, & Cook, 2012).
- Reiterate the truth without reinforcing the myth. Repeating misinformation increases its familiarity and reinforces it. When offering corrections, repeat the correct facts instead (Lewandowsky, Ecker, Seifert, Schwarz, & Cook, 2012).

> "Everything should be made as simple as possible, but not simpler."
> —Albert Einstein

We do as others do

The phenomenon in which people assume the actions of others reflect correct behavior is called **social proof**. Particularly in ambiguous situations, we will look to see how those around us behave and copy their actions (Cialdini, 1984/2007). The effect is amplified by how similar we feel the person is to us. One study staged a lost wallet that pedestrians found on the ground, in an envelope addressed to the owner. It was made to look as though someone had previously found the package and in the process of taking it to the post office, had inadvertently dropped it. The package contained a letter from the first finder to the owner, either in standard English ("similar" to the pedestrians' demographics), or in broken English with the finder identifying themselves as a visitor ("dissimilar" scenario). Pedestrians were more likely to take the lead of the first finder and return the wallet in the "similar" scenarios (Hornstein, Fisch, & Holmes,1968).

People tend to favor communication and media from sources that reinforce their pre-existing beliefs, a phenomenon called **selective exposure** (Hart et al., 2009). A 1967 study tasked participants with listening to a staticky tape recording. Holding down a button could momentarily eliminate the static. In one condition, the recording discussed the connection between smoking and lung cancer, and evidence showed that the participants who were smokers made fewer attempts to clarify the messages. In another condition, the recording criticized beliefs of the Christian faith; similarly, the more religious participants pressed the clarifying button fewer times (Brock & Balloun, 1967).

The concept of selective exposure suggests that filtering our sources of social proof may lead us to draw erroneous conclusions. Repeated exposure to information can lead people to mistakenly believe there is more of societal consensus than exists—**false consensus effect**—or its converse, **pluralistic ignorance**, where the true prevalence of a belief is underestimated (Weaver, Garcia, Schwarz, & Miller, 2007). In a recent large-scale analysis of 920 news outlets and 376 million Facebook users, Schmidt and team concluded that selective exposure steers online news consumption (Schmidt et al., 2017).

Gender Differences

Are there gender differences in the occurrence or degree of cognitive biases? The jury is still out.

In a study by psychologists Yoram Bar-Tal and Maria Jarymowicz, women were less likely to employ what the authors call "cognitive structuring," using abstract mental representations that are simplified generalizations of prior experiences, such as prototypes, scripts, attitudes and stereotype (Neuberg & Newson as cited in Bar-Tal & Jarymowicz, 2010). Cognitive structuring increases processing speed compared to piecemeal processing by helping filter out irrelevant or inconsistent material. Through a series of experiments, the authors observed that males were more likely to display confirmation bias, be influenced by subliminal cues and interpret situations in light of an underlying emotional state. This led the authors to conclude that women use cognitive structuring to a lesser degree then men and therefore are less susceptible to particular cognitive biases.

A literature review by economists Rachel Croson and Uri Gneezy presents that women are more risk avoidant than men, have more malleable social preferences and are more averse to competition. The authors point out conflicting results and potential confounding variables in some of the studies, indicating that further research is required in this domain (Croson & Gneezy, 2013).

Interventions

- Leverage similarity and familiarity. When trying to overcome bias, select messengers that share similarities to your target audience. In a 1971 experiment, antiwar demonstrators were not only more likely to sign a petition if the requester was dressed like them, but to do so without reading it (Suedfelt et al. as cited in Cialdini, 1984/2007). Research has also demonstrated that voters often choose candidates based on how familiar their names sound. In an Ohio election, a little-known candidate swept the race shortly after changing his last name to Brown, a common name in Ohio politics (Cialdini, 1984/2007).

- Use social norms to your advantage. In President Obama's standard campaign contribution disclosures, the campaign went beyond solely reporting dollar amounts. They also listed the large number of donors, which served as a signal that the candidate had strong popular support (Cialdini cited in Garcia, 2017).

We have seen that people demonstrate irrational behaviors, and often to the detriment of their own best interest. How could humans have survived and thrived over time if we were irrational? In the next chapter we will consider the contexts in which our cognitive biases developed and show how they are actually quite logical when viewed in the right light.

Chapter 2: What's really going on here?

Our current strategies for encoding new information may have developed as evolutionary adaptations, which don't always serve us in our modern social structures. On the surface, large swathes of the American populace may appear to vote against their best interests. However, researchers argue that we are actually making more primal choices based on group allegiance rather than the facts before us.

We form groups over anything

In the 1970s, social psychologist Henri Tajfel formulated **social identity theory**, which asserts that people largely define themselves by asserting loyalty to the groups to which they belong. His research showed that humans quickly sort themselves into groups and begin showing preferential treatment toward their ingroup and discriminatory behavior to outgroup members (Tajfel, 1970).

In one study, Tajfel asked participants to look at a page with 40 dots for half a second and estimate how many they saw. Independent of their answers, the experimenter then randomly told the subjects that they were either overestimators or underestimators. Next, participants were asked if they would be part of another experiment since they were already there. Explaining that they wanted to see how people made different choices, the subject was asked to divide money between groups—one labeled "overestimators" and the other "underestimators." Even though there was nothing binding the subject to the group—they had been doing this experiment alone and had only just received their own label moments ago—subjects tended to split money in favor of the group with their same label.

This **minimal group paradigm** experiment has been replicated in numerous ways with the same results, including groupings by preference in artwork and even when explicitly told group assignment was random (Tajfel, 1970; Tajfel, Billig, Bundy, & Flament, 1971). Moreover, subjects tended to allocate money in a way that would maximize their group's advantage over the other, even when it meant their group would receive less money overall. For example, rather than choose to give five dollars to all participants, people would select the option that gave their group four dollars and the other group three dollars (Mason as cited in McRaney, 2018). As journalist David McRaney stated in his podcast about *Tribal Psychology,* "There is simply no salient, shared quality around which opposing groups will not form. And once they do form, people in those groups immediately begin exhibiting tribal favoritism, tribal signaling, tribal bias" (2018, 10:06).

Party over Policy

Political party affiliation is a way in which Americans express numerous social identities and stances on societal conflicts (Taub, 2017). From Tajfel's research, it follows that political disagreements may have less to do with policy issues and are more about tribal affiliation. Social psychologist Geoffrey Cohen put this to the test by asking subjects to read fabricated welfare policy descriptions and rate their agreement with it. One version of the policy provided

generous welfare support and one was more very limited and stringent. Some of the descriptions also included a statement about whether Republicans or Democrats supported the policy, in a way that clashed with ideology and policy content. In other words, descriptions indicated Republics supported the generous policy and Democrats supported the stringent one. When information about political party was absent, conservative and liberal participants reported attitudes consistent with their previously stated ideologies, indicating they were making their decisions based on the objective content of the policy. However, whenever party preference was made explicit, participants took up the position of their party regardless of the policy. Notably, the individuals were never aware that the party's position influenced their thinking and instead provided other justification for their stance. Cohen believes that knowing whether members of your party support or oppose a policy causes someone to interact with the information differently. Since many social policies can be evaluated in light of different values, people will appeal the values that justify the attitude they want to have, which is typically the one that reflects most favorably on their group (Cohen, 2003).

Business professor Michael Norton and behavioral economist Dan Ariely showed that when stripped of partisan information, Americans' description of an ideal society is remarkably similar regardless of political affiliation. The study presented participants with three pie chart combinations displaying wealth distribution across societies. Participants then chose where they would prefer to live. Ninety-two percent of respondents selected the same distribution (which was Sweden's rather than that of the US). In the next phase participants were asked to create their own ideal distributions. In this task, no appreciable differences were shown between Democrats and Republicans. Despite the many disagreements in the political sphere about taxation and welfare, the results showed that there is more consensus than discord around shared values such as wealth inequality (Norton & Ariely, 2011; Ariely, 2012; Ariely, 2013).

Interventions

- Focus on common goals rather than ideology. Do not fan the tribalism flames; instead, use rhetoric that unites people behind shared values to reduce polarization. A study by social psychologist Muzafer Sherif at a boys' camp successfully manipulated groups first into rivalries and later into allies. Simply separating the boys into two residences sparked ingroup-versus-outgroup sentiment and observable hostility. Researchers learned that cross-group animosity could be stoked simply by holding competitive activities. To later reduce hostility, the researchers staged scenarios where competition would hurt each group. In one scenario the camp truck was on its way to retrieve essential supplies and became stuck. The boys had to cooperate to return the vehicle to its important mission. In another instance, researchers interrupted the camp's water supply, and the boys had to organize themselves to implement a fix. Researchers watched as cross-group friendships formed and intermixing at meals took place after these cooperative activities (as cited in Cialdini, 1984/2007).
- Nurture a revised identity. In a study on energy conservation, researcher Michael Pallak and his team went door to door and provided homeowners with energy conservation tips. Residents were then asked to conserve with the added incentive that

those agreeing to save energy would have their names published in the newspaper. As expected, those residents reduced their energy use. But then the researchers notified residents that their names could not be published in the newspaper after all, and researchers monitored resident use over the subsequent months. They found that these families conserved even more energy. One possible explanation for the behavior change is that these residents altered their self-perception to view themselves as conservation-minded people. This identity persisted even after extrinsic rewards were removed (Pallak, Cook & Sullivan, 1976; Cialdini,1984/2007).

Evolutionary Roots

So why does party preference matter more than the facts? Professor of law and psychology Dan Kahan believes there is an evolutionary explanation: for survival, having social support was more important than knowing less-than-imperative facts. Kahan asserts that there is a relatively low danger to an individual if they hold a factually incorrect belief or have a policy opinion out of line with their own best interest. But given that these issues signal group membership, they act as an indicator of loyalty. A misstep in your peer group can cause people to question whether you are trustworthy or have the right values to be part of the tribe, which could have dire consequences for an individual's survival. Even in modern times, going against one's community can result in material and emotional harm (as cited in McRaney, 2018).

To demonstrate that people almost always side with their group over the facts, Kahan and his team conducted several experiments pitting political polarization against scientific consensus. One study asked participants to analyze data to determine the effectiveness of skin cream. The data had been doctored to appear effective for half the participants and ineffective for the other half. Whether or not the subject could determine the effectiveness of the cream correlated with their math abilities. However, math abilities plummeted when the data was relabeled and subjects were told the research was looking at the effectiveness of gun control. If the data showed gun control was ineffective, Democrats who had been good at math performed poorly. If the results suggested gun control was effective, Republicans now became bad at math. Similar to the Cohen experiment on welfare policy, participants were not conscious that party affiliation was impacting their analysis (Kahan, Dawson, Peters, & Slovic, 2013).

We Think in Groups

Considering an evolutionary context is useful when examining how we share and interpret information. Anthropologist Pascal Boyer suggests that just as the natural environment for a dolphin is the sea, humans' natural environment is shared information (as cited in Beck, 2017). Cooperating allowed people to forage, hunt, choose mates and build tools, a notion that aligns with anthropologist Yuval Noah Harari's theory that the survival of mankind was contingent upon large-scale cooperation and information sharing (2015). Just as it takes a tribe to raise a child, it also takes a tribe to invent modern tools and cure diseases. Mankind progressed not because of its capacity for rational thought, but from an unparalleled ability to think together in large groups (Hariri, 2017). By dividing cognitive labor, humans have been able to accomplish great feats. However, this also means that no single individual can fully comprehend the complexity in our

everyday objects and systems. Nonetheless, people systematically overestimate their skills and knowledge, a phenomenon dubbed the **Dunning-Kruger effect** (Kruger & Dunning, 1999). Similarly, cognitive scientists Sloman and Fernbach argue that humans are caught in a **knowledge illusion**, a false confidence in our own competence. People fail to realize the limits of their own knowledge, yet nonetheless hold fierce debates about genetically modified crops, climate change, and political decisions for places they cannot locate on a map (Sloman & Ferbach, 2017; Hariri, 2017).

> "The power of judging correctly and of distinguishing the true from false (which is properly what is called good sense or reason) is naturally equal in all men."
> –Rene Descartes

As ancient tribes grew in size, people gossiped to convey valuable information about who could and could not be trusted (Hariri, 2015). Cognitive scientists Mercier and Sperber suggest that our attachment to prior beliefs is to protect against social manipulation (2011). In their **argumentative theory of reason**, they explain that reasoning did not evolve for solitary reflection but rather for social interaction. Specifically, reason helps us argue, justifying our actions to other people and evaluating the justifications provided by others. Communication was essential for human survival, and listeners needed the ability to discriminate trustworthy information from potentially dangerous or deceptive material (Mercier & Sperber, 2017). The researchers argue that when reason is applied beyond a social context, we see the system malfunction in the form of irrational tendencies and biases. The researchers analogize, "underwater, you wouldn't expect a pen—which wasn't designed to work there—or human lungs—which didn't evolve to work there either—to function properly. Similarly, take reason out of the interactive context in which it evolved, and nothing guarantees that it will yield adaptive results" (Mercier & Sperber, 2017, p.10).

To make their case, the researchers point to numerous studies where environmental factors influenced participant decisions without their conscious awareness. In one experiment, a team of social psychologists had participants make moral judgments while experimenters induced feelings of disgust. Experimenters used varied levels of "fart spray" to create an unpleasant test room and found that subjects' severity of moral judgements correlated with the intensity of unpleasant odor in the room (Schnall, Haidt, Clore, & Jordan, 2008). Another study looked at the rates at which Israeli judges granted parole. Plotting the decisions by time of day, researchers noted that the judges were more lenient after breaks and meals. While the judges believe their parole decisions are based solely on the merits of the case, the data demonstrate that irrelevant, external circumstances influence their decision making (Danziger, Levav, & Avnaim-Pesso, 2011). In both studies, subjects showed no awareness of environmental factors, and when prompted for explanations by experimenters, participants conjured up justifications for their decisions.

Intervention

- Ask for causal explanations. In 2002, cognitive scientists Leonid Rozenblit and Frank Keil devised a test to demonstrate how much people know, relative to how much they think they know:
    1. On a scale from 1 to 7, how well do you understand how zippers work?
    2. How does a zipper work? Describe in as much detail as you can all the steps involved in a zipper's operation.
    3. Now, on the same 1 to 7 scale, rate your knowledge of how a zipper works again. (Cited in Sloman & Fernbach, 2017, p. 21)

  Not having worked in a zipper factory, many people ended up lowering their ratings in step three upon realizing the limits of their understanding. The researchers coined the term **Illusion of Explanatory Depth (IoED)** to describe people's tendency to think they understand the world better than they actually do. Sloman and Fernbach applied the IoED to the political sphere. They found that soliciting explanations about the operations and effects of political policy reduced not only the subject's sense of their understanding, but also reduced the extremity of their position (2017).

- Bring in experts. Rather than assume they fully understand complex policies, people may be better served by deferring to actual experts. In addition, the concept of social proof tells us that a panel of experts can be more persuasive than any individual voice (Sloman & Fernbach, 2017; Cialdini as cited in Garcia, 2017).

- Hold small group discussions. Hunter gatherer tribes effectively made group decisions based on public deliberation (Mercier & Sperber, 2017). Further, work by Robert Luskin and James Fishkin demonstrates that bringing people together in small groups for policy discussions can be incredibly effective. Luskin and Fishkin conducted "deliberative democracy" experiments in several cities, including in Omagh, Northern Ireland. Omagh had a history of Catholic and Protestant feuding—there was plenty of reason for distrust of the other group. The researchers asked a mixed sample of the population to discuss education policy. Participants didn't fight or polarize, even when the discussion involved mixed religious schools. After the discussions, participants had changed their minds on several points, and they were much more knowledgeable about the policies. They also rated their discussion partners as more trustworthy and reasonable than expected. To increase the scale of this approach, Fishkin and American constitutional scholar Bruce Ackerman have proposed a Deliberation Day, a national holiday for citizens to debate upcoming elections (Mercier & Sperber, 2017).

Moral Reasoning

From the research of Sloman and Fernbach, we see that if issues can be causally evaluated, people are more likely to recognize limitations of their knowledge and temper the extremity of their position. On the other hand, the research also shows that if a discussion triggers a deeply held moral belief—what the researchers call "sacred values"—no such moderation occurs (2017). To explain what happens when we reason about morals, social psychologist Jonathan

Haidt put forth a **social intuitionist model** of moral reasoning in his paper *The Emotional Dog and Its Rational Tail*. Haidt contends that reason serves to create post-hoc justification for intentions and emotions that secretly run the show. Under this model, it makes sense that fact-based arguments often fail to change people's minds. Haidt explains that using reason to change opinion "is like thinking that forcing a dog's tail to wag by moving it with your hand will make the dog happy" (2001, 823). If intuition and emotion are king, does rational thought have any chance of changing people's minds?

Fortunately, further research by Haidt and fellow social psychologist Jesse Graham provides hope for a path forward. After analyzing various cultures and even different species, the researchers formulated **moral foundations theory,** which suggests that there are five psychological foundations of morality: harm/care, fairness/reciprocity, ingroup/loyalty, authority/respect, and purity/sanctity (see table). Each of the five systems has its own evolutionary history and is akin to a kind of taste bud, producing different reactions of liking and disliking to perceived patterns in the social world. One of Haidt and Graham's central assertions is that liberals are most sensitive to the foundations of harm/care and fairness/reciprocity to assess virtue, whereas conservatives give relatively equal weight to all five (Haidt & Graham, 2007). The researchers expound that liberals are tuned in to individual protections, more tolerant of diversity and also more novelty seeking. Conservatives, on the other hand, show greater sensitivity to threats to social order, stability, and familiarity (Haidt & Graham, 2009).

To put moral foundations theory to the test, professor of organizational behavior Matthew Feinberg and sociologist Robb Willer conducted a series of experiments on **moral reframing—**constructing persuasive arguments for an issue in terms of the moral values of the intended audience. In one study, the researchers presented participants with an article in favor of universal health care framed either in terms of fairness (i.e., "health coverage is a basic human right") or in terms of purity (i.e., "uninsured

Figure 2: Summary of Moral Foundations

Moral	Description
Harm/ care	*related to our long evolution as mammals with attachment systems and an ability to feel (and dislike) the pain of others. It underlies virtues of kindness, gentleness, and nurturance.*
Fairness/ reciprocity	*related to the evolutionary process of reciprocal altruism. It generates ideas of justice, rights, and autonomy.*
Ingroup/ loyalty	*related to our long history as tribal creatures able to form shifting coalitions. It underlies virtues of patriotism and self-sacrifice for the group. It is active anytime people feel that it's "one for all, and all for one."*
Authority/ respect	*shaped by our long primate history of hierarchical social interactions. It underlies virtues of leadership and followership, including deference to legitimate authority and respect for traditions.*
Purity/ sanctity	*shaped by the psychology of disgust and contamination. It underlies religious notions of striving to live in an elevated, less carnal, more noble way. It underlies the widespread idea that the body is a temple which can be desecrated by immoral activities and contaminants (an idea not unique to religious traditions).*

(Haidt & Graham, 2009; Dobolyi, 2016)

people means more unclean, infected, and diseased Americans"). After reading the article, participants responded to questions measuring their support for universal healthcare. For liberals, no significant difference was observed between the two test conditions; but conservative participants were significantly more moved by the purity argument. In addition to universal healthcare, the researchers tested topics of same-sex marriage, military spending and adoption of English as the national language. Overall, they found that political arguments that had been reframed to appeal to the moral values of those holding the opposing position were more persuasive (Feinberg & Miller, 2015).

Intervention

- Stay within your audience's worldview. In accordance with principles of consistency discussed in the previous chapter, showing people that your message is consistent with their prior beliefs will make the message more palatable.
- Avoid sacred value framing. If an issue lends itself to objective, causal analysis, do not let the conversation unnecessarily veer toward the framing of right-versus-wrong. The sacred value frame can be appealing in politics—it is cognitively simpler than a complicated causal analysis and can also evoke emotion. However, the sacred value frame is likely to make people more obstinate and closed off to rational discourse (Sloman & Fernbach, 2017).
- Use moral reframing. When topics *do* pertain to moral values, messages are more persuasive when framed in terms of the moral values of the audience you are trying to convince (Feinberg and Willer, 2015).

Many of our seemingly irrational behaviors appear quite rational when evaluated in an evolutionary context. Being part of a tribe was essential for survival, and reason adapted to be able to communicate our intentions and evaluate the motives of others.

A Note on Ethics

In their book, *Nudge – Improving Decisions about Health, Wealth and Happiness*, Thaler and Sunstein suggest that behaviors and decisions that result from cognitive biases can be "nudged" toward better choices by applying insights about human behavior and even leveraging the same biases for good. They discuss ways to influence **choice architecture**—the physical, social, and psychological contexts in which our decisions are made—to promote preferred behaviors. The authors also coined the term, **libertarian paternalism**, an approach to public policy of applying nudges to improve people's lives while preserving freedom of choice (Thaler & Sunstein, 2018; Hanson, 2016). As an example, in 2015 Oregon adopted a system of automatic voter registration unless individuals actively opted out. This type of choice architecture promotes participation in the political process (Sunstein, 2015a).

Understandably, the use of nudges raises suspicion around its ethical use. As professor of philosophy Sarah Conly puts it, "Rather than regarding people as generally capable of making good choices, we outmaneuver them by appealing to their irrationality, just in more fruitful ways" (as cited in Sunstein, 2015b, p. 445). However, Sunstein raises several rebuttals in his paper on *The Ethics of Nudging*. He points out that choice architecture is inevitable, regardless of whether it has been intentionally designed. He suggests we ask ourselves whether each nudge promotes or undermines the 1) welfare, 2) autonomy, and 3) dignity of the individual. In addition to safeguarding with transparency and accountability, he contends that paternalistic nudges must improve people's lives, *as judged by themselves* (p. 417). Along the same lines, Nir Eyal, author of *Hooked: How to Build Habit-Forming Products*, recommends applying the "regret test" for nudges by asking oneself: "If people know everything the product designer knows, would they still execute the intended behavior? Are they likely to regret doing this?" (Eyal, 2018).

Sunstein cautions against discussing the ethics of nudges in the abstract and recommends a more closer examination of specific nudges in different contexts (Sunstein, 2015b). Dan Ariely equates considering ethics to a diet: you have to think about it constantly; a one-time decision will not suffice (as cited in Kreisler, 2008).

Conclusion

We began this paper with a reference to Thomas Jefferson and have reason to bring him back into the discussion now. As a founding father, Jefferson was known for eloquently penning, “We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.” But this very same man owned nearly two hundred slaves—human beings whom he mistreated and whose rights he denied. “Talk about cognitive dissonance,” write Mercier and Sperber (2017, p. 303). In Jefferson’s notes on the State of Virginia, Jefferson provided numerous reasons to oppose emancipation, including that one race would inevitably exterminate the other and harmony could not exist because of physical and spiritual defects that the slaves possessed. Mercier and Sperber suggest that Jefferson didn’t become a slave owner because he was racist; rather he inherited the slaves and developed rationalizations to perpetuate this behavior.

Although it took significant time, the abolitionist movement gives proof that people can affect change despite entrenched beliefs and biases. The abolitionists improved their communication using vivid imagery of the slaves’ horrors. The voices Frederick Douglass, Harriet Tubman and Henry “Box” Brown--who had ‘felt the lash’ and ‘worn the shoe’—effectively dispelled misrepresentations that slaves were generally content or well-treated (Finkenbine as cited in Weeks, 2015, para. 3). New religious movements, such as the Quakers, interpreted religious texts in a way that made slavery appear very un-Christian, stirring up cognitive dissonance in the population. To maintain their social identities as Christians, many people had to revise their attitudes toward slavery. Through a concerted effort to educate their citizenry, the abolitionists were able to first ban the slave trade and later outlaw the practice altogether (Mercier & Sperber, 2017).

Our modern political landscape differs, but not so our biological one. Irrational behavior and biases will continue to influence our behavior, but also offer tools for intervention and better outcomes.

The Toolbox: Summary of Interventions

Using Facts

Swap facts for imagery	Tip the anxiety scale	Go to the other extreme
It is harder to refute stories and images than to refute facts. Imagery is more effective at appealing to emotion and can be more memorable.	Reiterating the truth enough may push people to a point where it is more difficult not to accept the facts.	Making an extreme argument may force people to see the absurdity of a position.

Updating Beliefs

Give the ego an out	Model good behavior	Leverage consistency
People will be less defensive if you present their past error as a result of circumstance and not as a personal shortcoming.	Develop a social norm where it is looked on favorably to continuously evaluate new information and update beliefs accordingly.	A person may take baby steps toward a new belief and will try to be internally consistent in each succession.

Fighting Fake News

Encourage skepticism	Fill in the mental gaps & keep it simple	Reiterate truth without reinforcing myth
Teach the scientific approach to evaluating new information. Before assessing controversial information, prime people to look for faulty reasoning.	When correcting misinformation, ensure the updated explanation provides a complete and coherent story.	Repeating false information can make it more memorable, even while refuting the content. Focus on making the correct information most salient.

Social Influence

Leverage similarity & familiarity	Use social norms
Choose a messenger that is similar to your audience. The associated feelings of familiarity may inspire more trust.	Drawing attention to how others support your position can help persuade people that you have the best approach.

Maintaining Identity

Focus on common goals	Nurture a revised identity
Opposing groups can effectively unite when they have a unified purpose or are pitted against a common enemy.	People are motivated to continue behaviors in order to maintain the positive associations that come with it.

Dispelling the Knowledge Illusion

Ask for causal explanations	Bring in experts	Hold small group discussions
People temper extreme attitudes when they realize they do not fully understand the causal implications of a position.	Deferring to experts that people trust is cognitively easier.	While reasoning can fail at the national level, rational discussion can be highly effective in small groups to open up people's minds.

Mind the Frame

Stay within their worldview	Avoid sacred value framing	Use moral reframing
Show people that your message is consistent with their prior beliefs and will not turn their world upside-down.	If a topic can be discussed via causal analysis, do not let someone hijack emotions by inappropriately appealing to morality.	Messages are more persuasive when framed in terms of the moral values of the person you are trying to convince.

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