

And the truth comes limping after: Communicating quality evidence in an age of misinformation

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The science of story—helping navigate people to the truth

I know that this room is filled with people who believe in the power of evidence, all types of evidence, to bring about a better world.¹ Our common quest is ensuring evaluation, research, science, lived experience, and good evidence are used to help improve the big and small issues of the world. And like many of us who care deeply about great research being used to build a more creative, more just, more inclusive world, I've often felt frustrated at seeing quality evidence and research overlooked, ignored, or implemented in ineffectual ways. I know, as I am sure you do, that talking about what works is not really working. That facts often fail. Falsehood seems to fly, while the truth comes limping after.

In my story, my frustration led to curiosity about why evidence,

that thing I held so dear, was not heard. So, after years at the coalface of researching evidence-based medicine, social care, and public policy, I returned to my psychology roots and was introduced to new areas of research. In my curiosity I found something that gave me hope: emerging science on how we can navigate our way to higher ground and help give evidence and research the best possible chance to fly.

But let's start with why people simply don't hear, believe, and act on our facts when we talk.

Inside and outside explanations

There are two significant barriers to people responding as we would expect to good evidence. These are a) inside or cognitive issues, and b) outside or environmental issues.

Inside explanations

Daniel Kahneman (2013) coined the term “fast-thinking brain” to describe the many mental shortcuts researchers have found we use to manage the cognitive load of all the information we receive on an hourly and daily basis, and to assess the relevance and truth of it. These shortcuts can be roughly categorised into beliefs and feelings, making sense of the story, credibility and trust, and the thoughts of others.

Beliefs and feelings

Because it takes a lot of effort to assess new information, we run it through a filter of what we already believe. This is one of the most studied mental shortcuts we know about in information assimilation. The signal our brain sends to tell us whether information is compatible with our existing beliefs is emotion or feelings. Information comes to our brains from many sources. It is filtered through our existing beliefs and we have an emotional response to how it fits with those

beliefs. We backfill our assessment of information with logic, we are not led by it. In other words, truth and evidence plays a secondary role after our existing beliefs and associated feelings, in deciding how relevant or important information is to us.

Feelings are a useful filter to judge how new information fits with what we already know. Feelings such as happiness, satisfaction, anxiety, or anger (often accompanied by a physical reaction) guide us on how well new information fits with what we already know and believe. If information does not fit with what we already believe, it gets stuck. Our emotions (notably those that put us in a hyper-aroused state) signal we can ignore it.

Researchers have seen clear activity in parts of the brain associated with fight and flight when people are presented with information that conflicts with what they already believe. Challenge my beliefs and I don't want to hear your new information. I just want to freeze, fight, or flee.

Even without existing knowledge in an area, people still filter information through their beliefs and feelings. In 2009, Dan Kahan and colleagues other set out to prove that no scientific information or research is neutral: all information received is filtered through people's mental shortcuts, specifically their beliefs and emotions. Kahan and his colleagues presented neutral evidence on the risks and benefits of nanotechnology to groups of people who did not have any existing knowledge on the science. The vast majority made very immediate judgements. Information had a minor effect on how people assessed the risk. Affect or emotion was the largest predictor in the model of risk perceptions: beliefs and emotions first, logic later. These emotions protect what we already know. We are often led to believe that emotions are a problem, as when people discuss "rational thinking". In fact, emotions are a critical function—they protect the good information we have. As a shortcut, however, emotions and

feelings can limit responses to seeking further information when existing knowledge is incorrect. They can lead to bias, including continuing to seek information consistent only with what we already believe. And what we already believe, our mental models to explain the world, may not be comprehensive or accurate.

Making sense of the story

A mental model is an internal narrative with links that join together and help explain how the world works or why something happens (Lewandowsky, Ecker, Seifert, Schwarz, & Cook, 2012). Think of a causal chain of events: $A + B + C = D$. An example of such a model to explain why wealth inequality exists might be “If people work hard in life and seize opportunities when they arise, then they will be rewarded with financial success.” If new information seeks to replace a single link in that explanatory chain but not the other links, for example “Many parents on very low incomes work two jobs and long hours”, then this new information is more likely to be rejected. This is because it causes a lack of coherence in the whole narrative that helps us understand the world. Facts don’t replace long-embedded narratives.

Credibility and trust

Another shortcut we use to assess information is a communicator’s or institution’s credibility, and our trust in them. These shortcuts are not entirely understood. There are complicated relationships between message, messenger, receiver, and the channel through which a message is delivered.

What we can say is that, generally speaking, we rely on two types of social information to determine how credible a messenger is:

1. common interests and shared values and beliefs (communicator and listener desire the same outcome), and
2. perceived expertise (not actual expertise).

We are, however, unreliable creatures. We can misremember

sources of information and think the information comes from a credible source; we can ignore sources of funding; and we can forget the mental tag we put on information telling us it was untrue because of a dubious source. What people will find credible and trustworthy is hard to predict because of this.

The thoughts of others

Attending to what others think (or what we think they think) is an important mental shortcut. As information is repeated across sources, we come to believe it because a repetitive voice can sound like a chorus.

Pluralistic ignorance occurs when loudly and often-repeated ideas or information, believed only by the minority, lead others who do not believe this information to think that most people do and so shift their beliefs. For example, only 4% of people actively decline childhood vaccinations in New Zealand, but the proportion of media stories about vaccination refusal far exceeds that.

The counter concept is “false consensus”, where minority-held opinions are believed by those who hold them to be more widely embedded than they are. Anne Pedersen and colleagues (2008) did research in Australia on attitudes towards asylum seekers and indigenous Australians, where there is a strong negative narrative, often coming from people elected to power. Anne found that those with the most negative and fringe beliefs vastly overestimated how widely held those beliefs were. They believed 71% of the community shared such beliefs, while only 1.9% did. This effect is also seen in the vaccination space.

A bias towards concrete and away from the abstract and systemic

What the research on mental shortcuts also highlights is that our fast-thinking brains lead us to grasp the concrete and simple, the already explained, and the often-repeated information. We shy away

from the abstract, the complex, and the new. We see individual behaviours and responses to systems issues, but we tend not to see the systems themselves in our default fast ways of thinking (though we are, of course, able to see them if we slow our brains down). Yet the fast-thinking system presents an immense challenge for research and understanding on complex or hard-to-see issues like inequality, climate change, or institutional racism.

The additional challenge is that, when our default to think fast is combined with outside barriers to good information, researchers and communicators will struggle to navigate people to the evidence just by conveying facts.

Outside explanations

Information has been democratised, available through a digital device whenever we need it. The volume of published research alone is enormous, and all this makes it to the internet, along with every other piece of information people wish to create and publish.

Then there is the manipulation of that information for power and profit. This is not a new phenomenon, but it is uniquely challenging in the digital age. We are frequently exposed, and drawn, to unproductive ways of explaining the world. Our brains respond to the shocking, the new, and the emotional. The rapid, deep, and fast spread of misinformation and disinformation on digital media means we can be exposed to incorrect information from multiple sources and in multiple ways in a matter of minutes. That single repetitive voice becomes enormously amplified. In the age of social media, good information is at a distinct disadvantage, especially when combined with brains that need to take mental shortcuts.

Reinforcing shallow understandings

For the public, including policy makers and politicians, these inside

problems and outside problems can reinforce dominant cultural narratives that are overly simple or simply wrong about the areas we do research in. They are based on thin understandings of the issues.

When New Zealand researcher Peter Skilling (2016) sat down with people to discuss causes of inequality, he observed that the narratives were mainly based on natural and immutable laws of market demand. People are paid less because the market defines their skills as less in demand. When someone attempted to add a conflicting or new piece of information to the narrative to explain inequality, usually with a focus on structural explanations—for example discrimination in society against certain groups, or unfair advantage given by tax policy to others—it was swiftly rejected. We are very efficient at plugging gaps that new information may create in our mental models, to keep a narrative consistent. Many narratives are shared across a culture and some become particularly powerful to explain why things occur in the world. We are strongly wedded to these explanations to make sense of things. (There are more complex narratives around, because people are complex. But these are quieter or “recessive” stories (L’Hôte, Fond, & Volmert, 2018).)

As researchers and communicators, we also play our role. We, too, rely on mental shortcuts and our fast-thinking brains. One such shortcut is our adherence to a belief in facts as a mechanism to help people think more productively about an issue. This is called the information-deficit model. In this model we assume that if we just talk loudly or often enough about our good information, people will hear us and act.

Yet research shows knowledge is rarely a good predictor of people believing or acting on good information. There is a relatively weak relationship between knowledge and attitudes to evidence. It is not that people don’t know: they just don’t believe it. However, if we operate under the information-deficit model, then the way we talk

and communicate doesn't change the way people think about an issue or motivate them to act. We can even inadvertently reinforce the problematic narratives.

The truth limps because we don't know how to create the best environment for it to fly.

Helping navigate people towards the research

The good news is that there are evidence-led strategies and solutions to overcome the barriers I have described. These strategies draw on many bodies of research, but for ease of understanding I refer to values science and cognitive science.

Using values science

Earlier I discussed research showing that people filter information through existing beliefs, and that they use emotion to judge how existing beliefs and new information align. Challenges to our beliefs create negative emotions that cause us to reject information. Yet why do we want to protect our beliefs? What function does protecting them serve? Protecting our beliefs is a way to continue to adhere to what is most important to us in life—staying true to our values.

Values are often referred to very loosely in everyday conversations, but they do have a formal definition. Values are “(a) concepts, (b) about desirable end states or behaviors, (c) that transcend specific situations, (d) guide selection or evaluation of behavior and events, and (e) are ordered by relative importance” (Schwartz, 1987, p.551).

Values are universal concepts about what matters most to us. Beliefs are assumptions we hold to be true and that uphold our values.

If I highly value taking care of the environment, I am more likely to believe it when scientists tell me that human activity, based on a reliance on fossil fuels, has led to a changed climate. And I am more likely to act to support policies that seek to limit or remove commercial reliance on fossil fuels, despite this requiring a large-scale change

to our way of living. If, on the other hand, I highly prioritise individual success and achievement, then I may be more likely to believe people who tell me that such science is incorrect, and that changing our way of life and limiting commercial activities that rely on fossil fuels will only bring about extreme economic hardship.

There are various bodies of values science. I draw on that of Shalom Schwartz (2012). Schwartz studied the values of 65,000 people across more than 50 countries and mapped the relationship between the group of universal values he uncovered in this research. The more closely one value sits to another on the map, the more likely it is that a person will prioritise both values. The further away the values sit on the map, the less likely it is that any one person will prioritise them both.

The values map roughly into 10 domains, and can be considered in four axes: values that are about keeping things the same (conservatism); values that are about changing things (openness to change); values that are about self-enhancement; and values that are about self-transcendence. We can break them down further into two basic groups called “intrinsic” and “extrinsic” values.

Intrinsic values are those things we pursue for their inherent reward: activities that feel internally rewarding, such as being helpful. Extrinsic values are centered on external rewards or approvals: for example, achievement. Another way to frame intrinsic and extrinsic values is as prosocial and pro-individual values. To be clear, we all hold all these values—specific values are neither good nor bad—but different people prioritise different values to different degrees. And the way we prioritise values can vary from time to time, depending on the context.

New Zealanders’ values were measured on a regular basis until quite recently using a representative sample and the World Values

Survey² The Portrait Values survey, a measure of dispositional values developed by Schwartz and others, is well validated and used extensively. Its construction suggests that it limits the social desirability issues that can come with such self-report measures. The good news is that in New Zealand (and, in fact, in most countries) most people say that helpful and prosocial values are very important to them. However, most of us don't believe that. In a study in the United Kingdom (Common Cause Foundation, 2016), people were asked how important expressing helpful or prosocial values was to them. Most people, as in New Zealand, prioritised prosocial values. When asked what other people most valued, most thought that others prioritised pro-individual values.

We have a sort of pluralistic ignorance about values going on in society. Individualistic values are talked about loudly but are not actually what most people prioritise. Yet, because we hear about them so often, we each think everyone else does prioritise them.

There are some other aspects of values that matter. There is an “opposing” effect—a sort of seesaw—in which when we prioritise one set of values, those that are opposite cannot be prioritised. For example, while we are prioritising power values, it is very hard to also prioritise ideas of equality and broadmindedness. There is something called the “bleedover” effect. When we prioritise one type of value, the values next to it also tend to get prioritised. For example, thinking about achievement also makes us prioritise power, and prioritising universalism helps us prioritise benevolence (Maio, Pakizeh, Cheung, & Rees, 2009).

Why does any of this matter? It matters because evidence suggests that the evidence we see and believe is contingent upon the values we prioritise. Remember the study on beliefs about nanotechnology

2 See <http://www.worldvaluessurvey.org/wvs.jsp>

(Kahan et al., 2009)? Here is the really interesting bit. After finding how powerful emotions were in predicting risk assessment of nanotechnology, the researchers wanted to find out what was at the heart of these feelings. What brought about the negative and positive feelings after exposure to neutral information? They found it was people's values.

Those who prioritised hierarchical structures and individual values interpreted the neutral information on nanotechnology as showing greater benefits than risks. Those who prioritised communitarian and egalitarian values interpreted the same information as showing greater risks than benefits. Values opened a 63% gap in beliefs about risk and benefit after exposure to neutral information. This is a classic example of biased assimilation or polarisation, where groups move to more extreme beliefs after exposure to what is quite benign scientific information.

Jing Shi and colleagues (2015) looked at values and climate change. They found that people who prioritised communitarian and egalitarian values were more likely to believe climate change is man-made and to accept restrictions on commerce to mitigate risks. Recently, researchers looked at what predicted unfavourable attitudes to vaccinations (Hornsey, Harris, & Fielding, 2018). Again, hierarchical and individualistic values predicted these attitudes more strongly than knowledge, education, or politics.

Values have been found to be more powerful in predicting people's attitudes to evidence than politics, personality, income, age, gender, or education.

Priming helpful values

There is good news about what has been called the “cultural cognitive” model (Kahan et al., 2009)—where values act as a filter to evidence. While we all tend to prioritise certain values, we all hold a wide range

of values that are surfaced by contextual factors. Importantly those values we hold that are most relevant to evidence about collective wellbeing particularly, can be surfaced or engaged to help us to think more productively about evidence we may have been unwilling to consider previously.

Priming values is when we use story language, metaphors, or imagery to bring particular values to front of mind for people. I frame the values I want people to think about and reflect upon. A growing body of research, which I cover in my book *A Matter of Fact* (Berentson-Shaw, 2018), shows that priming people with pro-social values shifts people's intentions and behaviours. For example, people become more willing to support pro-environmental policies and donate to environmental causes when primed with universal values. These studies also show that when you prime people on an issue such as climate change, they show a similar positive response to other issues such as poverty alleviation—this is an example of the bleedover effect I discussed earlier. For people who highly prioritise extrinsic values, the same effect is found. However, it is harder to help them prioritise other values.

The research shows that a group of particular prosocial values, those that are concerned with people and planet, help people see the evidence on collective issues. Priming certain other values, those that are about power, money, or even fear, will prevent people from seeing that research and acting on it.

Talking about or framing extrinsic values—money, cost, achievement, or power—as the “why” we should do something does not move people to act on what are prosocial collective concerns. Ultimately, if we use cost as the “why” to do something, there is always the potential that someone will respond with “In that case, let's do the thing that costs even less” (and that may be very harmful). Of course, cost-effectiveness matters. But this is only in terms of

the “how” we should act (“How will we act on this issue in the most effective way?”), not the “why” we should act.

Engaging fear simply means that people look for the simplest response to the problem. Scared about immigrants taking your job? Just build a wall to keep them out.

Values alone don’t navigate people to more productive explanations, but they open the door to the evidence as people connect with how an issue matters to them. To move people further towards more productive explanations, we also need to engage with their fast-thinking brain processes.

Using the cognitive science

There are some simple techniques we can use to work with, not against, people’s fast-thinking brains and their need to grasp the concrete and simple. These techniques include the following strategies.

- Focus on the positive, concrete vision for how the world will look different with the evidence implemented.
- Repeat your story frequently—focus on telling the best, most accurate alternative story you can.
- Avoid retelling someone else’s incorrect story in order to prove it wrong. This, I know from experience, is extremely challenging to do. But while correcting or negating incorrect facts feels important, it is only critical to those who know how wrong it is. Telling the correct story in a compelling way is more important for persuading people to consider your evidence. Because of the power of repetition to bed down ideas, myth-busting, where the incorrect idea is first repeated and then dispelled, has been shown in some cases to evoke a backfire effect, where the false information becomes even more strongly embedded. This mostly likely happens because the repetition makes the false idea mentally even smoother to a person who believes it. At the same time,

the challenge to existing beliefs and feelings that the replacement information evokes makes people less willing to consider it.

- Look for a diverse group of people who are likely to share some values with your audience to tell the story of the evidence. Diversity has a positive effect on helping people see evidence, through increasing the likelihood of shared values.

The more complex techniques to help navigate people to more productive ways of thinking involve creating entire new storyworlds for people.

Building new storyworlds

To help lift people's gaze from the concrete, simple, or inaccurate models or narratives that dominate our shared thinking and focus them on the quieter, more recessive, more complex models they already have, we also need to tell entirely new stories about the causes and solutions to our problems. Instead of trying to shoehorn accurate facts or details into an inaccurate story or mental model, we need to replace the entire mental model. The idea of "explanatory chains" is useful here. Frameworks Institute in the US (Frameworks Institute, n.d.) tells us that effective explanatory chains have the following elements:

3. include an initial factor that explains the original cause of the problem
4. start a few steps back from the problem that the communicator wishes to highlight, so that someone new to the topic has access to the appropriate background information
5. include mediating factors: what is set in motion by the initial factor? Think "domino effect". There may be many mediating factors that occur as a result of the initial factor. Together, these links should give people a satisfying sense that they grasp how the problem works.

6. consider the final consequence: what are the effects? The final consequence is the effect or problem to be explained.

An effective explanatory chain sets a communicator up to discuss solutions with people in a way that helps surface a productive understanding of the causes and impacts of the issue.

Two other effective techniques to navigate people to more productive thinking include the use of concrete language and, where necessary, metaphors. The Frameworks Institute in the US wanted to help people understand that addiction is a health and wellbeing issue (Lindland & Kendall-Taylor, 2012). First, they sought to understand what the dominant narratives were that the public used to explain addiction (the simple mental models). Frameworks researchers then sought to find new narratives that navigated people towards more productive explanations. They tested and identified coherent stories about why people come to misuse drugs, using chains of explanation, concrete language, and metaphors. One metaphor they found to be particularly effective was that of “toxic stress”.

So how can we understand the two bodies of research I have presented? By putting values and cognitive science together, we get what we call the science of story.

The values science shows us that, while we all hold many values, some values are more helpful than others to create a context where structural and systems issues and solutions can be seen. We can frame helpful values to create better conditions for people to consider the good evidence we present.

The cognitive science tells us a few things about how to help people see and understand new information: beliefs and emotional responses act like a traffic-light system to information assimilation; repetition of correct information is critical; how we think other people think is critical; and explanatory chains or narratives are important to changing beliefs.

We can also understand from these two bodies of research that the loud, repetitive framing of extrinsic values in society is significant. If we frame our evidence in cost-effectiveness, value for money, or fear, we keep telling a story about things people don't tend to prioritise. But this messes with people's perceptions about what others prioritise. And, as a consequence, people are less likely to act on our big collective issues. Conversely, the research shows us that if we tell the prosocial values stories frequently, if we can make them sound like a chorus, we build a positive movement for change and the conditions for people to act.

Stories give data soul, values, and emotions. Stories make it easier for people to consider the information. We cannot make logic and fact more powerful by just talking more loudly, when stories, values, beliefs, and emotions are the ocean we swim in. It is time to use science to tell a more effective story about our good information.

To finish up, here are my top five points for action:

1. Listen first to understand: stop talking for a bit. Make sure you have good evidence that matters to people. Be aware that talking and communicating are two very different things. Communication involves making social and emotional connections, giving people a voice, and showing you are willing to respond to that voice. Science and research are not neutral, they have their own history and past to face up to, in terms of what they have been used for and for whose benefit. In no way are we there yet in having an inclusive and participatory system of evidence production and application—but that is a whole different subject.
2. Listen for the dominant stories being told about your issue. Where are they not aligned with your good evidence? Can you find better stories?
3. Avoid repeating untrue and unhelpful stories if you can't point out the motivation behind them.

4. Research and test a new story to tell that engages helpful values and navigates people towards more productive explanations. Work as sectors and groups to ensure you have a common story and voice.
5. Tell your story over and over again.
And finally, ngā mihi. I have hope. I hope you do too.

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