

Mind, language, and rational discourse

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Introduction

When Pope Francis banned the sale of cigarettes in the Vatican in 2017, his announcement stated: “The Holy See cannot be cooperating with a practice that is clearly harming the people.” The World Health Organisation tweeted their support—“WHO welcomes the Vatican’s decision to ban the sale of cigarettes as of next year”—with an infographic summarizing some deadly facts about tobacco, including “12% of deaths of all people aged over 30 are due to tobacco”, “global annual costs from tobacco use are US\$1.4 trillion in healthcare expenditure and lost productivity”, and “tobacco kills more than 7 million people every year”. This in turn attracted a response from Nigel Farage, a politician and businessperson with no qualifications in medicine or health science. To his many thousands of social media followers, he wrote: “The World Health Organisation is just another club of ‘clever people’ who want to bully and tell us what to do. Ignore.” If the scientific findings behind WHO’s infographic are sound, then Farage is potentially endangering the lives of his hundreds and thousands of followers by literally instructing them to disregard WHO’s expert advice. At least Farage practices what he preaches. During the Brexit campaign, journalist Michael Deacon noted that Farage had taken up smoking again, and asked him why. Farage’s response, delivered with cigarette in hand, was, “I think the doctors have got it wrong on smoking.”

Scientific evidence shows conclusively that tobacco smoking is extremely dangerous (see Bero, this issue). Why would a person promote smoking to citizens who would be voting for him, and for whom he is campaigning to serve and protect? Farage’s statements are irrational. They disregard reality, which is, as author Phillip K. Dick defined it, “that which, when you stop believing in it, doesn’t go away”. No matter what Farage says or believes about the effects of smoking, the toxic fumes will have their effects on his respiratory and circulatory systems, and beyond. You can dismiss expert testimony, you can persuade people to do dangerous things, but your words won’t make the dangers of reality disappear.

In recent times, scientists have had to publicly defend this point, for example, in the recent global March for Science. Many initiatives have been launched to draw attention to the post-truth problem. For example, the website <https://www.protruthpledge.org/> allows you to pledge your earnest efforts to share, honour and encourage truth. Among other things, you pledge to fact-check information to confirm that it is true before accepting or sharing it; to distinguish between your opinion and the facts; to re-evaluate if your information is challenged; to retract if you cannot verify. Most importantly, you agree to be accountable to the pledge, encouraging others to hold you to the pledge in case you transgress it at any point.

Cognitive biases

These commitments are not only crucial to rational discourse, they are central to sound science. But at the same time, our cognition is biased in ways that make it hard for us to understand and process things methodically or dispassionately (see Hector, this issue). Decades of research have uncovered numerous cognitive biases that help explain why the Pro-Truth Pledge is so challenging to uphold.

An example is the Checkershadow illusion, shown in Figure 1:

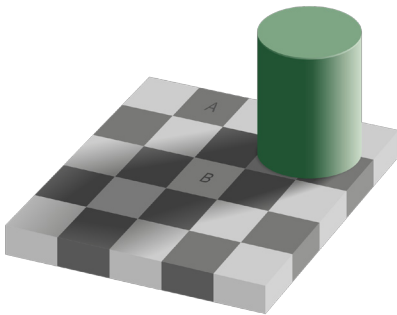


Figure 1.

People are surprised to learn that the squares A and B are identical in colour and shade. This is demonstrated in Figure 2, where a bar of the same shade joins the two squares, revealing the exact match in surface quality:

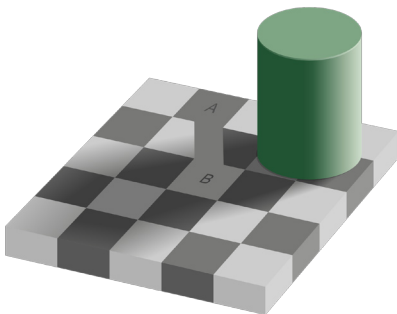


Figure 2.

In this illusion, our perceptual systems encounter exactly the same local input, but our cognitive systems add inferences and interpretations of what we're seeing, based on assumptions about where light is coming from, and what we believe about the colour of the object itself. Even in our lowest-level perceptual experience of reality, our firm beliefs about what we see do not necessarily correspond to what is demonstrably there.

At higher levels of cognitive processing, there is the *availability heuristic*, a cognitive principle that minimizes processing effort, but that leads us to confidently make wrong decisions. In a study of this heuristic, Tversky and Kahneman (1973) asked people to estimate the proportion of words in the dictionary that have the letter R as their first letter versus those that have R as their third letter. People tend to guess that more words in English will begin with R. But, with systematic testing of the question, we find that the ratio is actually about 2:1 in the other direction. Roughly, for every word in the dictionary that starts with R there are two words that have R as their third letter. A belief that more words start with R is false, but it makes sense from the point of view of the locally-rational agent who is trying to answer the question that was posed in Tversky and Kahneman's study. The error is a side-effect of the availability heuristic. Words that start with R are simply more available to us—a fact that has to do with how our vocabulary is mentally organized—and they come more readily to mind, so we are led to imagine that there must be more of them. By using the availability heuristic in this way, people minimize their effort in coming to a conclusion about what they believe, but through this, they can arrive at a false belief, which in turn may lead to poor decision-making.

The example of words beginning with R illustrates the trade-off between effort and accuracy that is the essence of biased cognition. The upside is that we have methods by which to quickly come to a conclusion and lock off our processing of a problem at hand, thus freeing ourselves to move on to the next pressing matter. The downside is that we may be wrongly confident about conclusions that turn out not to be supported by empirical data.

Another example is the *confirmation bias*. More than half a century ago, pioneering cognitive psychologist Peter Wason (1960) presented subjects with triplets of numerals, such as 2-4-6. He told subjects that each triplet was generated by a specific rule, and that their task was to discover the rule. Subjects were allowed to devise their own novel triplets and ask the experimenter whether their made-up triplets fitted the rule or not. Then, based on the evidence they received, they would state what they thought the rule was. Wason found that people would often approach this task by starting with a hypothesized rule, generating novel triplets using that rule, and asking for confirmation as to whether the new triplets fitted the experimenter's rule. For example, if Person A hypothesizes that the string 2-4-6 is generated by the rule "increase by 2 at each step", they might offer strings that are generated by that rule—for example, 4-6-8—and ask for confirmation as to whether these strings fit the rule. Or if Person B hypothesizes that the string 2-4-6 is generated by the rule "increase by the first numeral's value at each step", they might ask whether 4-8-12 fits the rule. After they are both told "yes", they each become more confident that their hypothesis is correct (although of course they cannot both be correct). What Wason found

was that people in his experiment literally seek only confirmation, and when they get it they take this to be sufficient to support their hypothesis.

This apparently natural approach is antithetical to the scientific method. As Popper (1959) defined it, what we must seek is not confirmation but *falsification* of our hypotheses. "My proposal is based upon an *asymmetry* between verifiability and falsifiability; an asymmetry which results from the logical form of universal statements. For these are never derivable from singular statements, but can be contradicted by singular statements" (Popper 1959:19).

In Wason's experiment, the rule for 2-4-6 was 'each numeral is greater than the previous'. Both 4-6-8 and 4-8-12 fit this rule and so simply asking for confirmation does not provide evidence to test between the two competing hypotheses mentioned above. As Popper advised, to seek falsification, we would have to check triplets that are *not* generated by the rule. Were Person A to check only strings that were generated by her own hypothesized rule—such as 4-6-8, 8-10-12, 23-25-27—a confirmation would not be ruling out other possible rules, such as Wason's actual rule in the experiment. If she were to check strings that she did *not* expect to fit, she would quickly learn that her hypothesis needs revision. The confirmation bias, which leads us to take mere confirmation to be evidence that we are correct, is one of the most powerful contaminants of our thinking.

In July 2017, author J. K. Rowling tweeted a 23-second film clip of Donald Trump hosting visitors at the White House. The clip shows Trump shaking hands with members of a group standing in line. At the bottom of the frame we see the raised arm of a little boy

who is in a wheelchair. It looks like he wants Trump to shake his hand. In the clip, Trump keeps his gaze up, greeting people who are standing in line behind the boy. He walks past the boy, strides off, and leaves the room. To her 14 million social media followers, J.K. Rowling wrote: “Trump imitated a disabled reporter. We all saw that in the election cycle. Now he pretends not see a child in a wheelchair, as though frightened he might catch his condition.” The post received more than 12,000 retweets and more than 50,000 likes. But the next day a longer clip from the same video was circulated, showing what had happened in the moments immediately prior to the scene circulated by Rowling. In the longer clip, we see Trump directly addressing and chatting with the little boy, not only shaking his hand but kneeling down to talk to him face-to-face. Rowling’s error (for which she later apologized) was the result of confirmation bias in action. She started with a firm belief that Trump is a bad person, she saw something that seemed to confirm this, and she came to a conclusion that matched her belief, then locking off further consideration of the situation. We all regularly fall prey to this bias.

A final bias I want to consider here is an *identity bias*. This is where a decision or judgment about a person, and particularly about a statement that the person makes, is affected by one’s beliefs about the social identity of that person. The heuristic involved here assumes that a person’s identity, as evidenced for example by a visible sign such as their clothing or other aspect of their appearance, allows us to predict a range of things about them, including their knowledge, background, beliefs, and aspirations. Suppose that you observe a young man at a Sydney beach with a tattoo of the

Southern Cross—the constellation that appears on the Australian flag—covering his entire back. From this you might infer that he identifies as a patriotic Australian, but you might also expect certain other things to be true. For example, you might expect him to lean towards conservative stances on issues that are not necessarily or logically connected to pride in the nation: for example, being against same-sex marriage, in favour of coal mining, anti gun-control, or sceptical of climate change. You might also form clear assumptions about his level of education and likely place of upbringing. These expectations and assumptions might be wrong. There is no necessary or logical connection between a flamboyant stance of patriotism and any of those other views or qualities. And yet many people are confident in using a person’s social identity as a reliable indicator of a set of fundamentally unrelated things.

The identity bias underlies the crisis of identity politics in public discourse today. We not only make assumptions about a person’s beliefs based on their professed or assumed social identity, but even stronger, one’s social identity can be used as a criterion for citing greater, or lesser, rights to introduce a given proposition into an otherwise rational argument. If unchecked, an identity bias leads to an inability to distinguish between an argument and the person making it. When we equate an argument and a person, to attack a point is to attack the person making it, and thus it can be grounds for disallowing or disregarding arguments, and ultimately shutting down logical discussions before their logical conclusions. This is a threat to rational discourse, and may be a threat to free speech.

The effects of identity bias have been increasingly visible in university life in North America. In 2017, Master's student Lindsay Shepherd was teaching a class at Wilfrid Laurier University in Toronto to undergraduate students in relation to issues of free speech, language use, and human rights.¹ The Canadian Parliament's Bill C-16 added gender expression and identity to grounds for discrimination under the Canadian Human Rights Act, requiring people to use non-gendered pronouns (for example 'they' to refer to singular persons) as a way of avoiding possible offence to those who do not identify with either male or female gender assignment. Shepherd played her students some segments from a public debate on TV Ontario between two academics, psychologist Jordan Peterson and historian Nicholas Matte. She was later called to a meeting by her supervisor and a representative of the university's diversity office, among others, who said that a complaint had been made by one or more students. She was told that she should not have played the recording of the debate, as it risked traumatising her students, by exposing them to hateful ideas, based on the view that Peterson was a hateful person. On the recording of the meeting that Lindsay Shepherd gave to the media, her supervisor can be heard saying that playing a clip of Jordan Peterson arguing against C-16 was the same as uncritically playing a video of Adolf Hitler giving a speech. Here, an assessment of Peterson as a person was given as grounds for silencing the arguments that he was offering.

Lindsay Shepherd identifies as politically liberal in as many ways as you can think of. But by airing arguments against the C-16

bill—not endorsing them but asking her students to evaluate them together with the pro C-16 arguments—she has been accused of siding with political conservatives, condoning violence, and hurting students. This is the identity bias in action. It can confuse, derail, and stifle ideas and debate.

Overcoming cognitive biases

As individuals, we are all subject to the kinds of cognitive biases reviewed above, among many more. Why do we have these biases given their apparently maladaptive nature? Could biased forms of thinking have had advantages in our evolutionary context? Why do they seem damaging in today's context? What's fascinating about human cognition is that we are able to focus on our own biases, and, in some cases, override or outsmart them. A recent initiative set up at Harvard called Outsmarting Human Minds is promoting this idea, following insights of pioneers like Herbert Simon, Amos Tversky, Daniel Kahneman, and Gerd Gigerenzer. The idea is that with effort we can detect these problematic biases in our own cognition and we can overcome them, we can outsmart them, and we can do better. These biases not only result in us coming to wrongful conclusions in everyday life, but they present a personal challenge for every scientist. When we apply the scientific method, we are designedly working to avoid falling prey to our own natural biases, such as the confirmation bias, among many others. To do science well, we must work against ourselves to minimize bias.

Reasons for action

Language plays a key role in all of this. When we try to support our arguments with evidence, we seldom if ever supply the evidence in pure form. We take that evidence and put

¹ <http://www.macleans.ca/lindsay-shepherd-wilfrid-laurier/>

it into words, and into utterances, or at the least we point to some sign of the evidence and frame it in verbal form, such as when a bar chart is used in a scientific paper. And when we use words, we introduce a host of collateral effects.

To understand these collateral effects, think about what it means to make a simple assertion using language. Consider a sentence like “This material expands when it comes into contact with hydrogen.” When I say this in English I make certain sounds. With these sounds, I’m coding a proposition. I’m making a statement about the world which you could attempt to falsify. But I am inevitably doing more than this. When a person makes an assertion, it is never heard as a completely independent, standalone, disembodied statement. People will always look for motivations. People will always perceive a statement as a *reason*. This phenomenon is like a Checkershadow illusion in the realm of reasoning. We are presented with something but we are wired not to take it at face value. We cannot help but project structure onto what is given, compensating so as to match our expectations. One of our key assumptions about people is that they must have reasons for the things they do and say, and we cannot help but try to infer those reasons. So, if I say to you, “This material expands when it comes into contact with hydrogen,” I might be giving you a reason not to use the material (e.g., because we know that hydrogen will be present but we need the structure to remain fixed in shape and size) or I might be suggesting that we *should* use it (e.g., if we are building a hydrogen sensor). But we are never “just saying” something. A statement always gives a possible reason for action, and this imports much else into the discourse.

When, as Prime Minister of Australia, Tony Abbott stated that “Coal is good for Humanity,”² it was in the context of opening the multi-billion-dollar Caval Ridge mine in Central Queensland in 2014. The statement was given as a vindication or justification of the government’s support of the mine, to give reason to think it was a good thing. Abbott’s present-tense statement was false, given what we now know about the link between fossil fuels and climate change, and the effects that this is having, and will have, on humanity.³ To be sure, as Gittins (this issue) suggests, a charitable reading of Abbott’s statement is possible (though tangential, given Abbott’s reference to “the future of the coal industry”), if taken out of its context to refer to a beneficial role that coal may have played in the history of human technological progress. But on that reading, the statement could not stand as a reason to believe that investing in coal production is a good idea today. Statements get their full meanings only in context, and a crucial part of that context is the role any statement plays in giving reasons for action.

Consider the statements made by the George W. Bush administration in 2003 that Saddam Hussein’s government in Iraq possessed weapons of mass destruction (see Colin Powell’s Feb 5, 2003, address to the UN Security Council). What was important for the Bush administration was that the statement be made, not because it was true (it was not), but because it would stand as a reason for US forces to invade Iraq. It has since been acknowledged that there were

² <http://www.abc.net.au/news/2014-10-13/coal-is-good-for-humanity-pm-tony-abbott-says/5810244>

³ <https://www.theguardian.com/commentisfree/2017/nov/17/were-in-a-post-truth-world-with-eroding-trust-and-accountability-it-cant-end-well>

no weapons of mass destruction. In trying to interpret this in hindsight, people do not conclude that there was, therefore, simply no reason for the military action. People will either assume that those who made the assertion were mistaken, or that they were lying, and if they were lying, then there must have been another reason for the US military actions in 2003. Alternative reasons that have been suggested include revenge or duty to respond to what happened on 9/11, or a desire to possess and control Iraq's oil. Other reasons can be imagined.

Another example is that of Veronique Pozner, mother of six-year-old Noah Pozner, who was slaughtered along with 19 other first grade children, and 7 adults, at the Sandy Hook shooting in December 2012 in Newtown, Connecticut. Noah's mother gave public testimony in relation to her son's death, and has since campaigned for gun control in the US. Conspiracy theorists claim that the Sandy Hook incident is a hoax, and have mounted a campaign to expose the parents of slain children as actors. In June 2017, Lucy Richards was convicted by a Florida court for harassing and threatening Noah Pozner's parents. Hoaxers such as Richards have alleged that Veronique Pozner is not who she says she is, that she is a Swiss government agent, that there was no massacre at Sandy Hook, and that her son never existed. The key idea behind this theory is that it proposes an alternative reason why Pozner has made anti-gun statements: it dismisses her stated reason — that her son was murdered, along with other first-graders — and suggests that she independently wanted to promote gun control, for political reasons. In a photo of her posted online, conspiracy theorists refer to Veronique Pozner as a "long-time gun grabber".

We will always look for reasons behind people's words and actions, and if the claimed reasons are in doubt, unclear, or not to our liking, we will imagine new reasons (typically in line with our existing biases). This infects much of our thinking, and it drives conspiracy theories.

Choice of words

In sum, whenever someone makes a statement, it will be interpreted as a reason for action. I want to go further, and suggest that our incorrigible tendency to seek and propose reasons is not just a property of human cognition, but it is centrally entwined with our capacity for language. Without language, we would be unable to thematize reasons, which is to say we would be unable to introduce reasons into a collective focus of attention, in order to justify or question people's (including our own) actions and decisions. This is one important sense in which facts have to go through language to get to us.

A final sense in which facts have to go through language to get to us has to do with the words that we choose when we describe a state of affairs. Because we can choose our words, this means that natural facts—while in themselves independent of human language—are necessarily framed in a particular way in discourse, and therefore not in the many other ways they might have been framed on that occasion.

The philosopher Gottlob Frege famously pointed out that a single entity can be described in different ways (Frege 1892). His example was "the morning star" versus "the evening star". Both descriptions pick out the planet Venus, but they do so by means of different "modes of presentation". This is the principle behind all framing differences, from "dog" versus "mutt" to "terrorist" versus "freedom fighter".

When 25-year-old Freddie Gray died from spinal injuries incurred while in police custody in April 2015 in Baltimore, the resulting civil unrest was linguistically framed in different ways, depending on the political leaning of the news outlet. A study of the language used by different websites to describe the same events compared frequency of word use: specifically, the choice of words between “riot” and “protest”.⁴ Conservative outlet Fox News used the word “riot” more often than liberal outlet CNN. This might be expected, given the political leanings of the two outlets and their likely different stance toward the legitimacy (or not) of those taking action on the streets.

But choice of words is more than a matter of connotation or style. When words frame a proposition, they drive yet another bias that demonstrably affects our thinking. Dean (2017:18) gives the following example. “Suppose a deadly epidemic has broken out and the disease is expected to kill 600 people. Which drug is better: Drug A, which will save 200 people for sure, but only 200 people; or Drug B, which has a 1/3 probability of curing everyone and a 2/3 probability of saving no one? Given this choice, most people will choose Drug A, the drug that will certainly save 200 people. Yet if Drug A is described as dooming 400 people for sure, most people choose Drug B.” Different descriptions of a scene can be equally true, but can point people’s reasoning processes in different directions.

Memory is especially susceptible. Elizabeth Loftus and John Palmer (1974) played a film clip of two cars colliding to two different groups of people and later tested them on their memory of the scene. For one group,

the test question was “How fast were the cars going when they *bumped into* each other?” For the other group it was “How fast were the cars going when they *smashed into* each other?” The people who were asked about the cars’ speed using the phrase “smashed into” estimated a higher speed than those who were asked using the phrase “bumped into”, even though both groups saw the exact same scene. This shows that linguistic framing is not a nicety. It literally affects what people believe about a scene, even when they have witnessed the scene directly.

Conclusion

The points I have made here about reality, cognitive biases, language, and rational discourse have implications for how we should understand critical thinking around truth. Any question about truth starts with a statement being made by someone, to someone, in a context. We need to ask what motivates the person. What is their reason for making the statement? What words are they using, and what words could they have used but chose not to? What biases may they be subject to, and what biases are we, as interpreters of their words, subject to? Our cognitive biases, combined with the limited tools of language, put a veil over reality. But reality is there whether we like it or not. Behind any relativism of perspectives or alternative framings there is a brute reality that provides sound reasons for action. The challenge is to know that brute reality when we see it, and to keep it in view, without falling prey to the many biases that conspire to obscure the truth.

I want to conclude on an optimistic note. In a recent panel discussion about the post-truth crisis, an audience member asked: “If online information is to be regulated, who will be the gatekeeper?” The answer is that

⁴ <https://linguisticpulse.com/2015/04/29/covering-baltimore-protest-or-riot/>

it cannot be regulated in any top-down way. Not even the best fact-checking, nor the most well-intentioned filtering, could stem the tide of falsehood and spin. But as individuals, we can be the ultimate gatekeepers. There is an economy of information, and our brains and minds are conduits and filters for its circulation. To take control of that economy, we need to develop a culture of discerning, rational thought, by promoting and valuing cognitive literacy. If we are aware of our biases, and are willing and able to recognize and pre-empt them, both in others and in ourselves, then together we can put a stop to this age of irrational discourse.

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