12. Intuition

A full silver moon has risen high in the sky. Through the swaying trees it casts shifting light on the narrow road ahead. Walking alone in this early summer night, you pocket your flashlight and let your eyes adjust to the soft and romantic darkness, dreaming as you wander about the person you wish you had at your side. Suddenly, a chill sweeps over you. Hairs prickle on your neck. With incandescent certainty, you know that you are not alone. There, exactly there – in the bushes! You leap back, stumbling, heart pounding. Just in time! Hurtling past your ear is a...

On a dark night in a spooky movie, a mysterious sixth sense saves our protagonist. How did he know that danger lurked in those shadows? His own experience is that he *just knew*, accountably. This mysterious "sixth sense" is known as intuition. Intuition, appropriately enough, comes from a root meaning "knowledge from within".

How do we possess this knowledge from within? Accounts vary. Some have claimed that some knowledge is instinctive or innate: we are born with it. They might call all instinctive capacities of our human species "intuitive" in that we gain knowledge of sorts without understanding quite how we do. This interpretation of intuition is relevant to our abilities to use our bodies, including our brains. It is specifically relevant to our inborn capacity to use language, a capacity that develops in response to the particular language communities within which we grow up. Some have argued that we also have an inborn moral sense of right and wrong – or at least an instinct for forms of cooperation that can be interpreted as moral.

A contemporary explanation for the intuition that danger is lurking in the bushes is much less spooky and exciting than the dramatic sixth sense, and much less limited than an interpretation of intuition as instinctive knowledge. However, it is no less mysterious in its own way, for it lies within the way our brains process our sense impressions and make swift connections – so swift that we don't even know that we are noticing and thinking. With rapid cognition, we make judgments and act before we are consciously aware. Just in time!

You have already met intuition as a way of knowing interpreted in this way, at least briefly. You will recall that when we considered *reason* in an earlier chapter (page 110), we brought in Daniel Kahneman's "psycho-drama between two fictitious characters": System 1, the swift storyteller, "interprets the past, interprets the present, and prepares for the future, all of this happening within a fraction of a second and without your *intending* to do anything".[1] This is intuition! It gives us a fast grasp of the world – quick identification of patterns, swift association of patterns with meaning. Meanwhile System 2, with its more deliberative and analytical thinking, remains lazily disengaged. We have to make an effort to employ reason as a way of knowing, while intuition has already leapt into action!

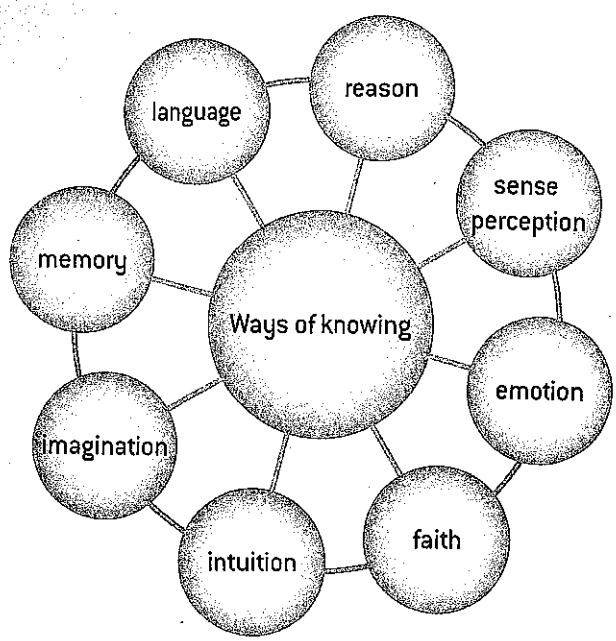
Does intuition really exist?

Some people argue that intuition does not really exist. They suggest that our other ways of knowing simply act more quickly and unconsciously than we have thought, and that "intuition" is an unnecessary additional category. What arguments might you make in support of their view?

On the other hand, what are the benefits of naming rapid cognition "intution"? What arguments might you make for having a category and a name?

Recognizing the influence of language and naming on how we think about intuition, we are pushed to further knowledge questions: How do our conceptual categories affect the development of our thinking? *or* How does naming affect theories in research? *or*, broadest of all, How does language affect knowledge?

[1] Kahneman, D. "The Machinery of the Mind", audio podcast Big Ideas. 30 March 2012. http://itunes.apple.com/ca/podcast/daniel-kahneman-on-machinery/id129166905?i=112461861



In the explanation of social psychologists Jonathan Haidt and Craig Joseph, "Intuitions are the judgments, solutions, and ideas that pop into consciousness without our being aware of the mental processes that led to them. When you suddenly know the answer to a problem you've been mulling, or when you know that you like someone but can't tell why, your knowledge is intuitive."[2]

What's the story?

Our intuitions give us swift interpretation of the world around us, before we are aware of thinking. They give us interpretations, sometimes with entire narratives, before our slower, more rational thinking kicks in. In looking at this photo, did you find yourself immediately connecting the information in it into an explanation or a story?

Interactive ways of knowing

Intuition certainly compels us to recognize a new the interdependence of ways of knowing that we have noted time and time again in our journey through them. Our eighth and final way of knowing, it does not stand alone.

If we accept the interpretation of cognitive psychology that intuition is rapid cognition, the speedy working of the brain without our being consciously aware, then we have to ask *what* the brain is processing so quickly. Certainly, it grabs our sense perceptions and creates connections of sequence and cause as it tells stories. It gives instant emotional associations and draws on our memories. Altogether, as intuition simplifies complexity to give us quick versions of the world, it works with the other ways of knowing and the knowledge and beliefs we already possess.

It is no accident that we have placed intuition last in our sequence of ways of knowing: recognizing the role of intuition forces us to look more closely at the ideas of building knowledge and offering justifications that we introduced in chapter 4. Accepting the idea of "dual processing" by the brain – rapid intuition and the slower conscious thought of reason – raises questions about how we actually do come to the knowledge claims we make, even when we think we might reach them otherwise. Further, exploring intuition as a way of knowing pushes us to consider self-knowledge more centrally, and to realize that the IB ideals of the open and critical mind may be more challenging to achieve than at first they seem.

Given its impact on our interpretations and actions, intuition has understandably attracted research, discussion, and controversy in recent decades as the cognitive sciences have illuminated for us many aspects of our thinking. In the chapter

[2] Haidt, J. and Joseph, C. 2004. *Intuitive ethics: how innately prepared intutions generate culturally variable virtues*. Daeddalus Fall. P 56.

ahead, we will touch on some of the major threads of discussion of this fascinating and illusive way of knowing: its role in unconscious processing, its function within decision-making, its gut level sense of beauty or goodness, its employment in shortcuts of thinking, and its role in cognitive biases that affect how we use all of our ways of knowing. Finally, we follow its implications for ourselves as we attempt to use our ways of knowing most effectively to construct our knowledge.

Unconscious skills

We can be quite grateful at moments to our intuitions, and the degree to which we can observe, think, or perform actions without actually having to pay conscious attention. As we become adept at skills, for instance, we no longer need to reach conclusions consciously or make ourselves move in the right way. Drivers, for example, do not have to pay conscious attention to turning the wheel ("Hands, grip and turn to the left!"), or typists to fingertips on the keyboard ("Pointer finger, press the "u" key!") The familiar actions seem "just to happen" in the right circumstances.

It could be argued that these automatic skills are stored in our procedural memory, and it is not intuition but memory that is allowing us to ride the bicycle or file our papers without attention. If intuition is considered to be pre-conscious processing, though, then we can regard it as drawing on procedural how-to memory in retrieval and activation of skills. Our ways of knowing work together. Indeed, even language, which seems so deliberate, is affected by its interplay with intuition as we often produce strings of words without planning in advance what to say. The words "just come".

For Reflection

What skills do you possess that you can do without conscious thought? Do your hands, for instance, seem to do something all by themselves while your mind is far away? Would you consider yourself to be enacting this how-to knowledge through intuition, through memory, or through both?

> "The key to successful decision-making, we believe, is knowing when to trust your intuition and when to be wary of it and do the hard work of thinking things through."[3]
>
> *Christopher Chabris and Daniel Simons*

Making decisions

Often, too, we have to "go with the gut" – making judgments and decisions based on intuition. It would be ideal as we build our knowledge to have plenty of time to evaluate all justifications offered by our ways of knowing – time to consider current evidence, seek more by inquiring further, consult all perspectives, and make a fully considered judgment. Yet in many cases of decision-making, we use our intuition, swift in its conclusions and rough in its judgments.

Some of our intuitive decisions are matters of preferences and taste. Which option is better? Rational weighing of pros and cons can take us to lists of advantages and disadvantages – but rationality is not good at quantifying emotional reactions such as liking or disliking in order to put them on the list along with other factors such as cost or distance. (You may recall the case of Phineas Cage page 164.) In the end, we might choose to push aside our purely rational weighing of pros and cons to buy a pair of shoes that we *like*, or choose to attend the university that feels more *appealing*. We might realize that we'd *already made* the choice – intuitively, with access to emotional factors that we'd rationally neglected.

In other forms of establishing preferences, too, we might reach conclusions without quite knowing how. How do we balance the colours and shapes of a painting so that it's "right"? When do we know when to put down the brush and say, "This is finished"? Could intuition be our way of knowing? When treating emotion, we considered its important role in decision-making. If we accept intuition as a companion way of knowing, then we could well see it as making the leap to judgment by reaching conclusions that integrate emotion.

Similarly, we could see intuition as processing our sense perceptions quickly in some aspects of creativity. In the sciences, for instance, how do we

[3] Chabris, C. and Simons, D. 2010. *The Invisible Gorilla: And Other Ways Our Intuitions Deceive Us*. Crown, New York. P 235.

Voices

Photo by Boomer Jerritt.

"Intuition takes us beyond the limits."

David Pinel, IB graduate 1987

David Pinel has an MSc in Rural Planning and Development and has worked as a community and strategic planning consultant. He is a college instructor in outdoor education and a guide trainer, and runs his own adventure company, West Coast Expeditions.

Whether in adventure activities or in strategic planning discussions, listening to something deep down inside – a gut feeling – allows us to perform on a line of optimal tension that is safe, exciting, appropriate, and responsive to many rapidly changing variables. Intuition takes us beyond the confines and paradoxical risk of acting only on what we can rationally explain. When is that tingling "spider sense" actually all of the "knowing" that you need?

Despite a forecast for a calm afternoon, we're now paddling into winds that have rapidly picked up to above 30 km/h and seem to be increasing. The waves are building in height from the wind and against the outflowing current from dropping tides. Glancing over my shoulder I notice that the other kayakers with me have replaced smiles and banter with more focused looks in the face of more challenging conditions that will require more effort. Everyone is instinctively paddling a little closer together and in a steady rhythm – this is good.

Ahead lies a choice: with our campsite and best landing option only 2 km ahead, should we take a short cut into steepening waves through a shallow swell-filled gap (with some rocks) between two islets? This is the most direct route. Or should we add another 20 minutes by going wide around the islets, avoiding a reef-strewn point by choosing deeper water, and then paddling back along the windward side of a rocky shoreline with rebounding waves from beam seas?

Each set of waves brings changing conditions to both options. And each minute brings potentially worsening conditions from the wind and falling tide level. We will lose momentum if we stop to observe further and discuss the options, and waiting will close the window of opportunity for the shorter option through the swell-filled gap, while making the more exposed longer route more challenging.

There is no dress rehearsal – we need to decide then "go for it" and act with organized commitment and no hesitation. Am I ready? Is the group ready? What instructions should I give?

We're taught and encouraged to prudently "gather all of the information" before "evaluating the data and options" then deciding and acting. In the discipline of professional planning, this is described as a "rational comprehensive" approach. For some, "professional" means methodical and therefore accountable.

But is it? Unfortunately, during the time it takes to find supposedly comprehensive information, the conditions and variables tend to change and the information that was originally gathered becomes insufficient or dated. At some point, responsible

and responsive planning benefits from our intuition flagging that we have enough information (or skill, or experience) to make and act on a decision – that more information won't necessarily lead to a better result. The "professional" advantage can come from consciously recognizing and acting on your somewhat less explainable intuition that comes from experience and enhances trained responses.

Ironically, though we use it all of the time, intuition is rarely taught or encouraged as a sufficient justification for actions, or as a reliable way of knowing what's best. Though intuition doesn't guarantee the best or optimal outcome, neither do the other tools for knowing and acting. Learning to find, listen to, and respect intuition adds a powerful tool to your kit.

I slowed my forward momentum long enough for everyone to hear the instruction to follow my exact path single file through the gap, leaving a boat length between each kayak and turning where I turn. "Any questions? All good?" A quick round of nods and an "OK" signal from my co-leader at the rear indicated everyone was ready to go.

Within a few strokes, each kayak jockeyed into a line much like cars merging smoothly onto a busy highway – no discussion or negotiations. We were through the gap within 90 seconds and could now see the sheltered calm of our destination ahead. Several spontaneous hoots rapidly widened all smiles and energized the pace and chatter for the final stretch.

catch the first impressions of an emerging pattern in our sense perceptions of the world, and let imagination carry us to a hypothesis for a possible cause? Could it be intuition? Yes, we really should give the other ways of knowing their share of the credit, but intuition just might be the fastest and the first to tap into our awareness of pattern.

Socially, too, it seems that we often make judgments at an intuitive level, strongly affected by our first impressions. Says one social psychologist, "Many psychologists now believe that most social cognition occurs rapidly, automatically, and effortlessly – in a word, intuitively – as our minds appraise the people we encounter on such features as attractiveness, threat, gender, and status."[4] Some psychologists suggest an evolutionary basis to such intuition, harking back to encountering strangers and having to decide in a flash whether they were friends or enemies. Those with accurate intuitions were likely to survive longer!

Other kinds of decisions more clearly demand the capacity of intuition to do fast calculation for us, especially when we are under pressure. And sometimes that intuition does appear to be fairly trustworthy. When it can draw on deeply familiar knowledge, such as expert skill, it seems that it can take over fairly reliably. Chess players, for example, can rely on their skilled pattern recognition, so that they do not have to think through all the possible consequences of a single move but instead recognize familiar sequences.

The greater the expertise, it seems, the more reliable the intuition – and the more valuable in situations demanding instant decisions. Professor Hodgkinson of Leeds University tells the story of a Formula One racing car driver who suddenly braked sharply when nearing a hairpin bend, even though it was speed that would win him the race. He could not explain why he abruptly put on the brakes. Later, when shown a video, "he realised that the crowd, which would have normally been cheering him on, wasn't looking at him coming up to the bend but was looking the other way in a frozen, static way. That was the cue. He didn't consciously process this, but he knew something was wrong and stopped in time." He thereby avoided hitting a pile-up of cars on the track ahead. His intuition had saved his life.[5]

[4] Haidt, J. 2012. Moral Psychology. http://people.virginia.edu/~jdh6n/moraljudgment.html

[5] "Go With Your Gut – Intuition is More Than Just a Hunch, Says New Research", Science Daily, March 6, 2008.

Similarly, outstanding athletes develop skill in reading patterns and intuitively anticipating plays. The great hockey player Wayne Gretsky, for instance, has described sending passes into what looks to the rest of us like empty ice, anticipating that teammate will be there.[6] In a contribution to this chapter, David Pinel, experienced kayak guide and outdoor leader, describes trusting to his intuition – what he calls his "spider sense" – as he judges risks in a complex situation, while variables change all around him.

Intuition based on expertise, though, is specific to its particular domain; an intuitively brilliant chess player is not an intuitively dependable outdoor leader, nor does he have any special insights into the stock market. It seems that there is no such thing as a generically intuitive person.[7]

However, even for those us with no particular expertise, there may be moments when we have to rely on our intuitions – for instance, as we decide in a flash whether to trust a stranger, to turn down one dark street rather than another, to believe one person rather than another, or to call for help. In overwhelmingly complex situations most particularly, we can hope our intuitions have picked up more information than we are conscious of taking in, and have made the right connections!

Making moral judgments

In addition to being seen as a way of swift cognitive processing of external patterns, connections, and people, intuition has also been suggested to be a source of our moral judgments. Haidt and Joseph suggest that we make our moral decisions at a gut level, and then rationalize them afterwards:

> Moral intuitions are a sub-class of intuitions, in which feelings of approval or disapproval pop into awareness as we see or hear about something someone did, or as we consider choices for ourselves.[8]

Among the reactions they call moral intuitions are "flashes of feeling" on seeing people suffer, particularly while others cause their suffering, or seeing people cheat or fail to return favours. Haidt has theorized that people possess "moral foundations", and that social liberals and social conservatives intuitively place emphasis on different combinations of moral values.

Jumping into error

Although our swift pre-conscious processing helps us make quick decisions and judgments, it can also lead us into ridiculous mistakes, and possibly dangers of sorts that do not growl and rustle the grass. Warning us about the impact of following our flawed everyday intuitions are Christopher Chabris and Daniel Simons, the researchers who set up the experiment with the invisible gorilla (page 86):

> What we intuitively accept and believe is derived from what we collectively assume and understand, and intuition influences our decision automatically and without reflection. Intuition tells us that we pay attention to more than we do, that our memories are more detailed and robust than they are,

Quick math question

How quickly can you do the following computation?

A bat and a ball together cost one dollar and ten cents ($1.10). The bat costs one dollar ($1) more than the ball. How much does the ball cost?[8]

Did you come up with the answer 10 cents? If so, you have made the same error as most university students surveyed by cognitive psychologists. Pause for a moment to move out of intuitive thinking into more conscious rational thinking. Now try again.

[6] Malcolm Gladwell, "The Physical Genius", New Yorker, August 2, 1999. http://www.gladwell.com/1999/1999_08_02_a_genius.htm

[7] Massimo Pigliucci and Julia Galef. Podcast "Rationally Speaking: Exploring the Borderlands between Reason and Nonsense". New York City Skeptics. 8 April 2012. http://itunes.apple.com/ca/podcast/rationally-speaking-58-intuition/id351953012?i=112896936

[8] Haidt, J. and Joseph, C. 2004. *Intuitive ethics: how innately prepared intutions generate culturally variable virtues*. Daeddalus Fall. P 56.

that confident people are competent people, that we know more than we really do, that coincidences and correlations demonstrate causation, and that our brains have vast reserves of power that are easy to unlock. But in all these cases, our intuitions are wrong, and they can cost us our fortunes, our health, and even our lives if we follow them blindly.[9]

Intuition, after all, gives us only rough judgments of patterns in the world. It is a way of knowing that we must treat with awareness and care. Its swift connection of events in a narrative, instant inferences of cause, lightning grasp of pattern, unconscious processing of practised skills, and rapid attribution of meaning can all enable us to make quick decisions in situations of uncertainty and to manage some of the complexities of the world. At the same time, however, they can block our better judgment and plunge us into error. If we want to build our knowledge reliably, we need to look more closely at intuition as a way of knowing.

Heuristics and cognitive biases

Some of the common shortcuts in thinking taken by intuition are known as "heuristics", strategies in decision-making and problem-solving that serve us well under many circumstances, especially when information is incomplete or problems are complex. They provide "rules of thumb" for making judgments and decisions by using the swift and associative cognitive system 1 of the brain – intuition as a way of knowing.

The slower, conscious and reflective cognitive system 2 of the brain – reason as way of knowing – may not check, fully or at all, the accuracy of the quick judgments. Kahneman and Frederick explain: "System 1 quickly proposes intuitive answers to judgment problems as they arise, and System 2 monitors the quality of those proposals, which it may endorse, correct, or override. The judgments that are eventually expressed are called intuitive if they retain the hypothesized initial proposal without much modification."[10]

When reason does not override and correct our shortcut heuristics, we commonly demonstrate "cognitive biases", systematic errors in thinking. People have long recognized, of course, the human inclination toward snap judgments, preconceived ideas, and stubborn clinging to what they thought already. The term "cognitive bias" is a newly coined word for a very old human characteristic, studied in our times with the new scientific tools of the cognitive sciences.

Although there are numerous patterns of thinking that carry the label "cognitive bias", a handful of them are particularly illuminating as we try to attain our ideals of open-minded, critical thinking. So far in this book, we have already treated the first four, which we give below in quick summary. We have not previously raised the remaining six, but predict that you will recognize the kind of thinking – in others, and possibly within yourself.

Four biases you've met

One of the things that is truly appealing about these cognitive biases is that we probably recognize most of them. Cognitive scientists, with all their contemporary methods of investigation, are illuminating on the level of the brain some of the foibles that have long attracted satirists, and which we have surely observed, to a degree, ourselves – at least in *other* people!

> A man convinced against his will
> is of the same opinion still.
>
> *Traditional saying*

> Some valuing those of their own Side or Mind,
> Still make themselves the measure of Mankind;
> Fondly we think we honour Merit then,
> When we but praise Our selves in Other Men.[11]
>
> *Alexander Pope, 1711*

[9] Chabris, C. and Simons, D. 2010. *The Invisible Gorilla: And Other Ways Our Intuitions Deceive Us.* Crown, New York. P 231.

[10] Kahneman and Frederick (2002), p. 51. cited in Lockton, D (2012), 'Cognitive biases, heuristics and decision-making in design for behaviour change', working paper, available at http://danlockton.co.uk

[11] Alexander Pope, "Essay on Criticism", 1711. http://poetry.eserver.org/essay-on-criticism.html, accessed 17 June 2012.

1. Confirmation bias

Confirmation bias, our tendency to notice and interpret in terms of what we already think, should be familiar to you by now. Do you recall the problems it poses for a coherence check for truth? (See page 57) If we judge the truth of a claim based only on whether or not it "makes sense", or is consistent with what we know already, we may be inclined to reinforce what we already believe and screen out the knowledge claims that would throw parts of our current body of beliefs into question. Confirmation bias works that way, in a pre-conscious way: it makes us notice what agrees with our beliefs and not notice or reject what does not. Do you recall the difficulties, which we considered for sense perception, of suspending expectations to see what is actually there? This is a major cognitive bias, a generic tendency that takes a number of different more specific forms.

2. Inattentional blindness

Cognitive scientists tell us that we are biased in a way that is the negative version of confirmation bias: we do *not* notice what we do *not* expect to see. Remember the experiment with the invisible gorilla (chapter 5)?

3. Hindsight bias

This is the "I knew it all along" bias, which you met in the chapter on memory. Hindsight bias is confirmation bias turned to the past: what we know in the present affects what we recall ourselves as having noticed in the past, and how we recall ourselves as having interpreted it. We often think, in *hindsight*, that we had more *foresight* than we exhibited at the time, or wonder why other people could *not* have foreseen what later became obvious: for instance, how could American authorities *not* have recognized danger signals before the terrorist attacks known as 9/11?

4. Availability bias

Do you remember that you met this one, too, in the chapter on memory? (You don't?) Intuitively, we treat the events that pop to mind most readily as being common or representative ones. Yet the reason they come quickly to mind may be that they stand out as dramatic – because they are unusual. We are inclined, it seems, to be overly impressed and influenced by anecdotal evidence – stories or examples that lodge themselves in our memories.

Six more worth meeting

5. Affect heuristic

The affect heuristic is particularly recognizable, perhaps, to those of us aware that we simply do not like to make rational, even mathematical, calculations to weigh pros and cons or likelihoods. Intuitions are notoriously bad at dealing with statistics and calculation of probability, but we are nevertheless inclined to accept them. In judging probable risks and benefits, the affect heuristic categorizes risks in an oversimplified way as either good or bad – based on the *emotions* associated with each of the alternatives. As advertisers have discovered, tying a pleasant feeling with an option actually encourages us to believe that the risks in choosing it are low. Conversely, associating the option with fearful language or imagery will make us consider it riskier and see fewer benefits. We do not think analytically when we depend on our shortcuts, and we do not grasp the big picture. The result can be the rather entertaining inconsistencies described by writer David McRaney:

> Stories make sense on an emotional level, so anything that conjures fear, empathy, or pride will trump confusing statistics.... It makes you carry pepper spray while you clog your arteries with burritos. It installs metal detectors in schools but leaves french fries on the menu. It creates vegetarian smokers. Well-known, primal dangers are easy to see, easy to guard against, even when greater dangers loom.[12]

An evolutionary basis is suggested for some of the heuristics, and their simplification of the world could surely be useful for survival. It's easy to conjecture a possible basis for the affect heuristic in the positive or negative emotional associations that might gather around safe or dangerous places. But it is also easy to see the limitations of this shortcut thinking in more complex situations.

[12] McRaney, D. 2011. *You Are Not So Smart: Why You Have Too Many Friends on Facebook, Why Your Memory is Mostly Fiction, and 46 Other Ways You're Deluding Yourself*. New York. Gotham Books. P 145.

6. Halo effect

Similarly, intuitions can recognize patterns and connections – but cannot be depended on to do so accurately. The "halo effect", for example, persuades us that someone very good at one thing is likely to be very good at something else; the good judgment of a neighbour's character, for instance, is carried over to an assessment of his intelligence, or the good judgment of an employee's competence at one task is generalized to an appraisal that she is good at her whole job. Similarly, attractive people were assumed in studies to be more likeable and to have a greater probability of leading happy and satisfying lives; they were already "winners" in one domain so assumed to be so in all.

A more delicious example of the halo effect is the carryover of positive qualities of food in a way that encourages us to ignore their negative qualities. Health psychologist Kelly McGonigal reports, "Research shows that dieters significantly underestimate the calories in a food that is labeled healthy or organic. Dieters also perceive it as being more appropriate to eat every day, even if it is obviously an indulgence...".[13] It is sad to recognize that even organic foods, or ones packed with nutrients, can completely sabotage a restricted diet if they are also sweet and fatty.

7. Sunk cost fallacy

The "sunk cost fallacy" seems at first to be quite different from the halo effect, but has in common with it a way of thinking that ignores complexities and discourages us from changing our minds. Once we have put time or money into a choice, we are likely to stick to it rather than lose what we have invested: we will go to a film when we actually want to stay home because we have already paid for the ticket, and will usually not walk out of the film when it proves to be boring because we made the effort of going to it. Similarly, a manager of a company, having made an investment in equipment, might learn of a different model that could do the same thing more cheaply and save money overall, but does not make the change because he does not want to waste the money he has already spent.[14] In a more serious example, a country may add to its military forces even when a conflict is not going well because withdrawing would be difficult when so many lives have already been lost in the cause.

In a more serious example, a country may add to its military forces even when a conflict is not going well because withdrawing would be difficult when so many lives have already been lost in the cause.

8. The just-world fallacy

This cognitive bias depends on believing that the world is fair, and that people *deserve* their fortune or misfortune. We would like the world to work this way. If we feel the world is fair, then we gain a sense of greater control of our own lives and a greater sense of security: since we do not deserve misfortune, it is not going to happen to us. The intuitive belief that the world really does work this way is the just-world fallacy.

This fallacy, unfortunately, leads to a tendency to blame the victims of misfortune for their own victimization. Has a woman been raped? She must have been doing something that provoked the attack! Despite all information about actual circumstances of rapes (the rapist is usually someone familiar to the victim, and what the victim was wearing is irrelevant), this message continues to be common – with the blame and shame often assigned to the woman. A similar reaction is sometimes voiced about people who have been bullied. Couldn't she stand up for herself? Couldn't he fight back? What is wrong – *with the victims?*

While good fortune and bad do often come from personal qualities and effort, often they do not. In

Discussion Activity

Adopt a bias

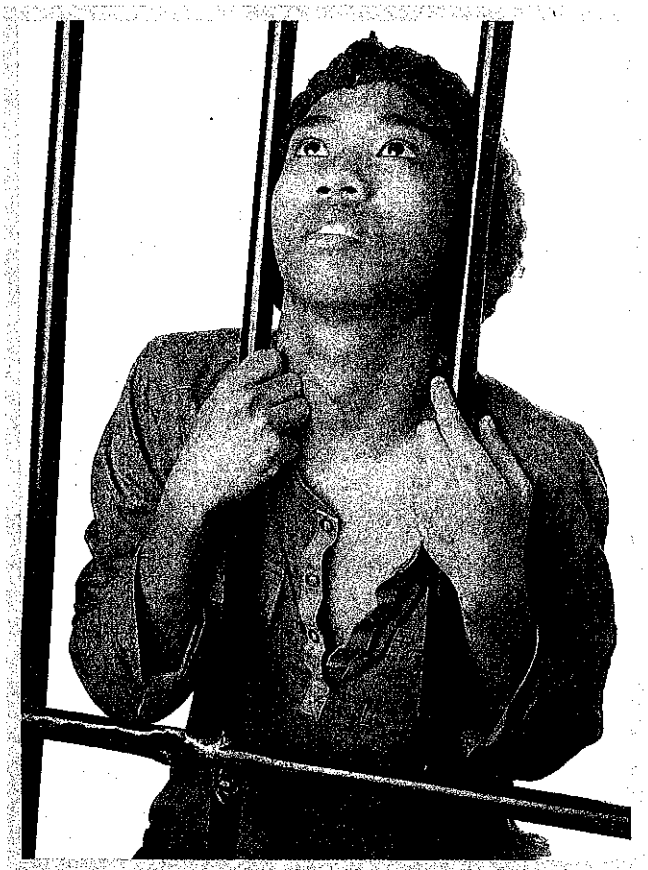
Choose just one of the cognitive biases given here and adopt it for a week. Watch out for it in your own thinking and try to notice its effect on what you see and hear around you. When the week is done, bring to your TOK class any examples of it that you have noticed. If everyone in the class also takes on a cognitive bias, trade your best examples.

[13] McGonigal, K. 2012. "The Halo Effect: An Example of Marketing Genius that Can Derail Diets", The Science of Willpower. Psychology Today. http://www.psychologytoday.com/blog/the-science-willpower/201202/the-halo-effect-example-marketing-genius-can-derail-diets

[14] Kanodia, C., Bushman, R., and Dickhaust, D. 1989. "Escalation Errors and the Sunk Cost Effect: An Explanation Based on Reputation and Information Asymmetries". *Journal of Accounting Research*. Vol. 27. No. 1. P 59.

the real world, people do not have equal chances from the beginning or equal control of their lives. In the real world, the bad guys do often thrive while the good guys get crushed. Rationally, we know this. Yet we are inclined to feel otherwise. In one study, participants observing two men solve puzzles were told that one of the men was given a large amount of money at the end – and that it was awarded randomly. Yet even though they knew the reward was random, the observers still evaluated more highly the person who was given it, deciding that he was "smarter, more talented, and more productive."[15]

Like other cognitive biases, this one cuts out all the complexities of causation to affirm a simple pattern of the world – in this case with a sense of how the world *should* be as a secure place in which to live. The social implications of this cognitive bias are evident. It generates a belief that the poor *deserve* to be poor and that the wealthy *deserve* their wealth. The further implications for action are also clear: the belief that people deserve what they get can undermine compassion and reduce a sense of responsibility to take action on behalf of the unfortunate. The just-world fallacy turns our eyes away from examining the complex psychological and social causes of misery that befalls individuals or groups.



What is your first reaction to this photograph? Do you wonder what he did to be put behind bars? Do you assume that he must have *deserved* to be put in prison? The just-world fallacy reduces a world of complex social causes to a version of the world where people "get what's coming to them" – whether fortune or misfortune.

9. Attribution bias

In the attribution bias, we assign much better causes to our own actions and much better reasons to our own beliefs than we do to other people's. If we are successful ourselves, for instance, we might attribute our success to our ability and hard work (our own characteristics), while we might attribute someone else's success to their connections and pure luck (situational circumstances). If we trip and fall ourselves, we might attribute our fall to a crack in the pavement (situational circumstances), while if someone else trips and falls, we might consider him clumsy (his own characteristics).

Particularly interesting about this bias is recent recognition of the influence of culture: Asians are more likely to take the situational circumstances into account for other people as well as themselves and not fall into this bias. This difference fits with other findings about cultural differences in how we see and think: studies indicate that where Americans focus on particular details, Asians take in more of the context; and that where American news emphasizes personal attributes, Asian news focuses more on situational factors.[16]

The attribution bias is recognizable within western public discussion where perspectives conflict; people often present themselves as rational and clear thinking, while they claim that their opponents are emotionally driven and muddled. According to psychologists, the attribution comes as a swift and intuitive bias of judgment, with justifications and arguments added later to confirm

[15] McRaney, D. 2001. *You Are Not So Smart: Why You Have Too Many Friends on Facebook, Why Your Memory is Mostly Fiction, and 46 Other Ways You're Deluding Yourself*. New York. Gotham Books. Pp 108–9

[16] Winerman, L. February 2006. "The culture-cognition connection", *Monitor, American Psychological Association*. Vol 37, number 2. P 64. http://www.apa.org/monitor/feb06/connection.aspx accessed 3 June 2012.

For Reflection

Much of the cognitive study on these biases seems to have been conducted in the United States. What difference would it make if instant cognitive reactions were studied in a culture that put less emphasis on the individual and individual choice? We can expect to learn more in upcoming years, as this is a fairly new area of study, and is being carried out in other parts of the world as well.

Add to your Life List of Interesting Issues, to explore when you can, the religious framing of ideas of the "just world" and human deserving. Think about heaven and hell, karma, and reincarnation, about ideas of divine punishment (plagues and pestilence), about the difference between determinism and fate in approach to the question of free will, about the "problem of evil" in philosophy, and about the whole idea of causation.

the instant judgment. One social psychologist gives a striking example from studies of attitudes toward gun control in the United States:

> ...you will hear someone attribute their own position to reasoned intellectual choice ("I am for gun control because statistics show that crime decreases when gun ownership decreases" or "I'm against gun control because studies show that more guns means less crime"), and attribute the other person's opinion on the same subject to emotional need ("He's for gun control because he is a bleeding-heart liberal who needs to identify with the victim" or "He's against gun control because he's a heartless conservative who needs to feel emboldened by a weapon")[17]

As is evident in this example, the actual presentation of arguments to support the intuitive judgments can be deliberate and developed. Here, the treatment of the opposing point of view uses a form of the straw man fallacy of argument (page 129) to caricature opponents, the more readily to dismiss what they say.

This particular cognitive bias certainly stands in the way of the exchange of knowledge; it suggests that, in some contexts, people do not enter into knowledge exchange at all. Even though they contribute their own thinking to the common pool, they do not take from it the thinking of others. Instead, they stand outside the "zone of exchange" and verbally throw stones at each other.

When we come to evaluate conflicting perspectives, then, we certainly need to look at how insiders present their ideas, and not just at what outsiders claim their ideas to be! Recognition of attribution bias also hands to all of us who want to become fair thinkers, with critical and open minds, the challenge of looking at our own tendencies when we evaluate knowledge claims and perspectives.

10. Bias blind spot

We saved for the end the cognitive bias that we think you will like the most. "Bias blind spot" is our tendency to notice how others are affected by cognitive biases but to be blind to how we might be biased ourselves. In response to this one, what can we do but laugh? What funny creatures we are!

Which comes first – belief or justification?

Clearly, to consider knowledge fully, we have to consider *people*. People are the ones doing the knowing – people with all their ways of knowing, all the beliefs they build from them, and all their biases. No matter how much we insist that people *should* weigh the evidence before reaching conclusions, we have to accept that human beings are not evidence-weighing machines.

Science commentator Michael Shermer goes so far as to suggest that our ideal model of knowing that we presented in chapter 4 – examining justification and *then* deciding what to accept – is backwards from what people actually do:

> We form our beliefs for a variety of subjective, personal, emotional, and psychological reasons in the context of environments created by family, friends, colleagues, culture, and society at large; after forming our beliefs we then defend, justify, and rationalize them with a host of intellectual reasons, cogent arguments, and rational explanations. Beliefs come first, explanations for beliefs follow.[18]

[17] Shermer, M. 2011. *The Believing Brain*. New York. Times Books, Henry Holt and Company. P 265.
[18] Shermer, M. 2011. *The Believing Brain*. New York. Times Books, Henry Holt and Company. P 5.

Confirmation bias seems to rule out thoughts! If we aspire to be critical thinkers with open minds ourselves, we obviously need to look considerably more closely at some of our human tendencies. When we are considering how our minds deal with justifications, we need to gain knowledge of our own selves and the way we exchange ideas with others.

Overcoming problems of intuition

How, then, can we learn about ourselves and learn to think more clearly, taking our intuitive judgments into account? Just as we did in treating sense perception as a way of knowing far back in chapter 5, we propose not becoming distressed over human imperfection but instead working as thoughtfully as we can with the ways of knowing we have.

Back then, we gave four suggestions for overcoming limitations of sense perception: pay attention, suspend expectations, disentangle observation from interpretation, and check your own observations. At this point, having examined other ways of knowing, do you see even more clearly how challenging these goals can be?

Would you agree that an exploration of knowledge is, in effect, an exploration of our own humanity? That is, in our view, one of the things that makes it so interesting!

So here are some ideas on getting the most from intuition as a way of knowing.

a. Learn about cognitive biases.

We are not doomed forever to leap into the same errors. The very awareness that we are inclined toward particular cognitive biases is a step toward recognizing them, moving to a deliberate and rational response, and correcting our thinking.

b. Try to activate rational thinking.

When we reach a conclusion intuitively, we may be right, especially in situations where our swift judgments have considerable experience and background knowledge to draw on. Yet we may be wrong. The quick hunch or the "funny feeling" ideally should not conclude our inquiry but launch it! As cognitive scientist David Myers says, "Smart thinking, critical thinking, often begins with self-reliant hunches, but continues as one examines assumptions, evaluates evidence, invites critique, and tests conclusions."[19] The role of intuition in the methods of the sciences, for example, is exactly that: to generate hunches and hypotheses. Then reason, the companion system in our dual-system cognition, can take us the next step.

c. Practise counter-arguing and shifting perspectives.

To break free of some of the influence of confirmation bias, we can try to develop flexible habits of mind. When we reach a conclusion, we can ask ourselves: what could be said against it, or from another point of view? When we find ourselves facing opposing perspectives, we can ask ourselves: what differing assumptions are we starting with, and do we have different values that affect the information we consider important? What do we have in common? (As ever, see page 28.) Demonstrating these thinking skills is built right into the criteria for assessment for the TOK course. Being able to think flexibly is likely to make you a better researcher in any area of knowledge and probably a more effective member of your various communities.

d. Think about people, not just points of view.

Understanding how intuitions work can illuminate what is going on in some polarized knowledge exchanges. Australian scientists John Cook and Stephan Lewandowsky, having investigated why many people reject the science of climate change, identify three "backfire effects" when people encounter strong arguments opposed to their own views.

- Oppositional argument often entrenches confirmation bias; when they feel fundamental beliefs to be threatened, people strengthen their views in resistance.
- Complex factual explanations in support of an argument can provoke people to accept instead an argument that is simpler and intuitively easier to grasp, even if it is inaccurate.
- Repeating a false but familiar account in order to refute it simply makes it more likely to be remembered, uncritically.

Their overriding point is that communicating knowledge (and not just on a particular topic or

[19] David G. Myers, "'Do What You Feel, Maybe – the power and peril of relying on intuition", In Character, January 1, 2007. http://incharacter.org/archives/self-reliance/do-what-you-feel-maybe-the-power-and-perils-of-relying-on-intuition/

from a particular perspective) has to take into account not just the facts but also the people: "It's not just *what* people think that matters, but *how* they think."[20]

We would go further to suggest that, in exchanging knowledge claims and justifications, the quality of the connection with people may in many contexts be as important as the quality of the information. The counter-arguing that we suggest above does not have to follow the "argument is war" conceptual metaphor identified in English idiom! We are probably more effective in communication of knowledge if we treat others with respect, move exchange of ideas out of a confrontational arena if possible, and develop our patience, capacity for empathy, and self-knowledge.

Intuition: a TOK way of knowing

And so, we conclude with one last suggestion on getting the most out of our intuitions.

e. Appreciate the power of intuition well used.

Although intuition does create some problems as we try to build knowledge reliably, it can also help us greatly in grasping patterns and relationships, and in making quick judgments and decisions. As a way of knowing, it draws on all of the others to give us swift access to our experience, skills and knowledge.

When we have a "funny feeling" that something is wrong with a friend, an "inkling" that the person we've just met is not fully trustworthy, or a "hunch" that it might be useful to take our research in a particular direction, we might well listen to our intuitions. They may not be enough in themselves for a sound conclusion, but they can alert us to situations that our more rational processing has entirely missed.

They might, too, jolt us to action that saves our lives. *There, exactly there – in the bushes! You leap back, stumbling, heart pounding. Just in time!*

> Intuition is bigger than we realize. It feeds our expertise, creativity, love and spirituality. It is a wonder. But it's also perilous. Today's cognitive science aims not to destroy intuition but to fortify it, to sharpen our thinking and deepen our wisdom.... In realms from sports to business to spirituality, we now understand how perilous intuitions often go before a fall, and how we can therefore think smarter, even while listening to the creative whispers of our unseen mind.[21]
>
> *David G. Meyers*

For Reflection

Do you trust your own intuitions? Why or why not? If your answer is, "It depends", then on what does it depend?

Is additional experience, reflection, and critical thinking likely to affect the nature or quality of your intuitions?

Is intuition a convincing justification for shared knowledge?

[20] Cook, J., Lewandowsky, S. (2011), The Debunking Handbook. St. Lucia, Australia: University of Queensland. November 5, 2011. http:/sks.to/debunk

[21] David G. Meyers, "The Powers and Perils of Intuition", Psychology Today, November 1, 2002. http://www.psychologytoday.com/articles/200212/the-powers-and-perils-intuition