These days, every brand is obsessed with data. And, they should be. Everywhere you turn, “data” is on the tip of people’s tongues. Access to data has leveled the playing field; now everyone can obtain the same information, driving better decisions in every facet of a brand. And, investors have rewarded those companies, like Facebook and Google, that are built on data.

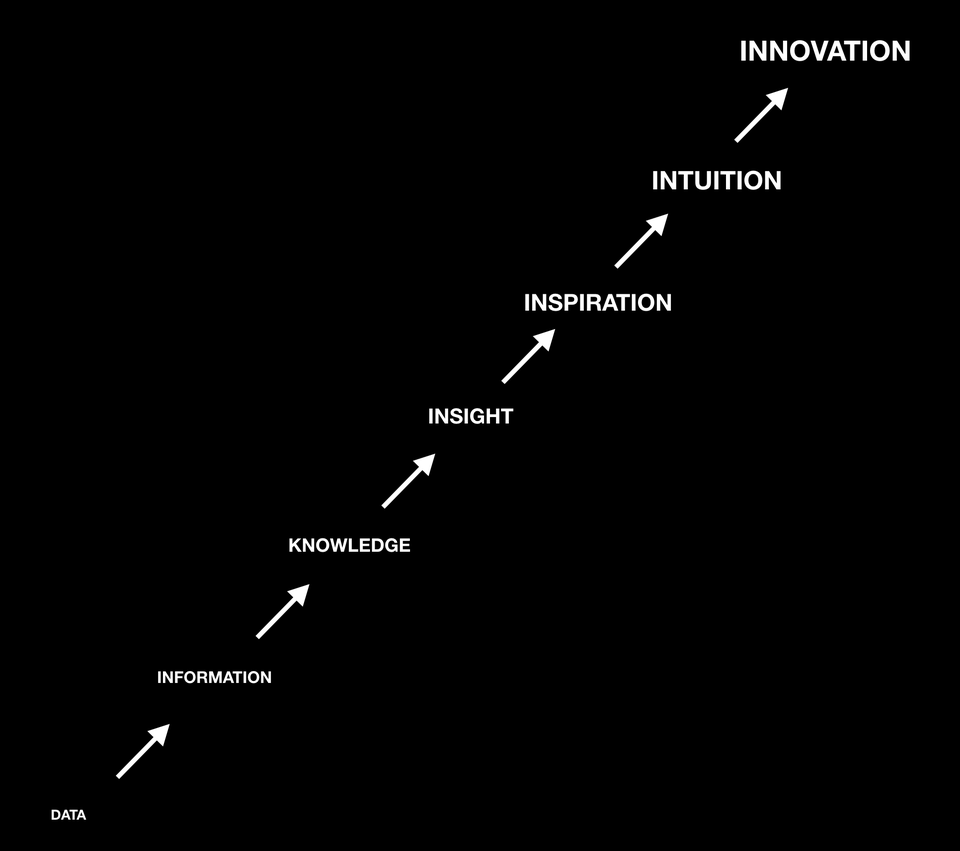
As Einstein said: “Any fool can know, the point is to understand.” How do you transform that data into relevant innovation? Brands need to be fearless about finding ways of learning and knowing that allow for deeper understanding of meaning, context and the shared experiences of everyone involved in their businesses.

By deeply understanding this center of gravity, every brand can drive relevant innovation for their customers more quickly, and not spend time or energy going in the wrong direction.

Information really exists along a continuum, with one step leading to the next. The continuum typically looks something like this:

**Data — Information—Knowledge — Insight**

The problem with the information model above is that three important steps are usually left out. The goal is to drive innovation. With these three steps added to the continuum, it looks more like this:



Data continuum JOHN WINSOR

We’re seeing one approach develop at some of the work we’re doing at the Crowd Innovation Lab at Harvard. Recently, a large financial brand came to us looking for new, creative ways to look at their data. We’ve been working on applying crowd principles to bring more talent to supply more creative solutions for them to use their data to move from simply knowing their consumer to understanding them. It’s something that’s worked well in the solutions the lab has developed with NASA. My sense is that more minds applied to creative solutions will move data up the information ladder faster yielding much better results. Platforms like TopCoder and Kaggle provide brands with a place to experiment with a variety of new solutions and creativity to their explosion of data.

As shown above, the sixth step in the process of understanding data is to hone your intuition. At a time when businesses are under increased pressure to be more creative, more quickly, in an uncertain environment, it is paramount to develop better intuition. Here are some things to think about:

**Practice Makes Perfect** – All of us have the ability to be intuitive; we just need more practice. Start integrating intuition into your decisions by asking yourself, “What if…?” Remember that intuition is a form of pattern recognition. It’s a bit like playing chess. The more you practice, the more patterns you recognize. When you do use your intuition in a way that adds to your decision-making ability, think about what happened. Why did your intuition work so well? Did you recognize a pattern in your work and use abductive thinking to understand what to do next? Can you use it again in a similar way?

**Tell More Stories** – When you are meeting with your team, instead of just presenting data or analysis, start putting the information into stories. Think more creatively; change the setting of the problem. Talk about it as if it were an article in a magazine: explore how the problem makes you feel and what your gut is telling you to do. Consider the possible endings of the article. Keep the stories short, so that others can share theirs as well.

**Encourage Others** – Using your intuition can be inspiring and contagious. Encourage others to flex their intuition by asking them to dig deeper into how they *feel* about information in a meeting. Remember that intuitive feelings are hard to express and can be accompanied by a lack of confidence. Encourage others to verbalize their stories. Help make sure that intuitive thinking is supported but not overanalyzed. It’s easy to get an intuitive spark, only to throw doubt on it by over thinking. Be positive and welcome out-of-the-box thinking.

**Listen More** – People can develop all kinds of reasons why they should ignore their intuition. Focus on what your gut is saying. It’s not only listening to yourself, it’s listening to the subtle signals in the market that highly intuitive people tend to recognize before others do. Also, listen to what your team members say about their own intuition. Ask them how a situation made them feel. Ask them to think about their feelings instead of the facts around a situation.

**Rely On Experience** – The best way to really grow your intuitive abilities is to get out and have more experiences in the market. Intuition is like a muscle; you can’t sit at your desk pounding away on the keyboard and expect it to get stronger. You’ve got to get out of your chair, get into the market and start using your intuition. Start building mock scenarios around your experiences. Ask yourself the meaning of the things you experience. At first, you’ll make wild guesses, but after awhile, with more experience, you’ll be more accurate.

**Integrate Intuition Into Your Process** - An interesting apparent dichotomy is that many of the companies that embrace and encourage intuition are also very process-driven. Nike, Patagonia, and Etsy innovate constantly, yet have product development timelines and processes that are quite rigorous. By embracing intuition and creativity and also building room for intuitive decision-making as *part* of the process, the two seemly opposing forces enhance each other and add value.

**8 Truths About Intuition**

What to know about what you don’t know you know.

By Matthew Hutson, published December 19, 2019 - last reviewed on January 29, 2020



Lou Brooks, used with permission

In 1997, IBM’s Deep Blue supercomputer beat the world’s best chess player, Gary Kasparov. Immediately, some people noted that we were still superior at the ancient Chinese game of Go. Go, they reasoned, would remain out of robots’ reach for the foreseeable future. Its plurality of possible moves and the nuances in evaluating even who’s winning put it further out of the realm of rote combinatorics and into the orbit of intuition, supposedly humanity’s specialty. “It may be a hundred years before a computer beats humans at Go,” a Princeton astrophysicist told The New York Times soon after the Kasparov match. “Maybe even longer.” If you follow the news, you know it took until 2016.

What does the success of DeepMind’s AlphaGo against the best meat-based players say about intuition, human or otherwise? On one hand, it knocks down some highfalutin’ claims about this special sense, revealing it to be, as some psychologists have long held, nothing more than pattern recognition.

On the other, “pattern recognition” does not do full justice to the many patterns intuition recognizes. Most of human behavior happens automatically, guided by [genetics](https://www.psychologytoday.com/us/basics/genetics) and habit rather than conscious deliberation. “You could not get by if you walked into a restaurant and you had to reconstruct from first principles how to behave,” says Valerie Thompson, a psychologist at the University of Saskatchewan in Canada.

Even for more complex problems, intuition drives decisions, says Gerd Gigerenzer, a psychologist at the Max Planck Institute for Human Development in Berlin. In working with top executives at the largest German firms, he finds that “they go through all the data they have—and they’re buried under data—and at the end the data don’t tell them what they should do.” Intuition, he says, “is a form of unconscious [intelligence](https://www.psychologytoday.com/us/basics/intelligence) that is as needed as conscious intelligence.”

Despite intuition’s ubiquity, we harbor many mistaken intuitions about intuition. Here we’ll consider eight facets of unconscious processing—including its application to [creativity](https://www.psychologytoday.com/us/basics/creativity), [morality](https://www.psychologytoday.com/us/basics/ethics-and-morality), and social interaction—looking at what it does well, where it fails, who uses it, when we trust it, and how to improve it. Building Deep Blue and AlphaGo required a lot of hard, deliberate thought, but it also required loads of human intuition and insight. The fact that we hacked together machines to beat us in a couple of small corners of our own game proves, if nothing else, that we can hack our own intuitions, too.

**1. Intuition Is Highly Efficient—if You Don’t Think About It Too Much**

A body of research reveals that intuition can be not only faster than reflection but also more accurate.

We’re fairly good at judging people based on first impressions, thin slices of experience ranging from a glimpse of a photo to a five-minute interaction, and deliberation can be not only extraneous but intrusive. In one study of the ability she dubbed “thin slicing,” the late psychologist Nalini Ambady asked participants to watch silent 10-second video clips of professors and to rate the instructor’s overall effectiveness. Their ratings correlated strongly with students’ end-of-semester ratings. Another set of participants had to count backward from 1,000 by nines as they watched the clips, occupying their conscious working [memory](https://www.psychologytoday.com/us/basics/memory). Their ratings were just as accurate, demonstrating the intuitive nature of the social processing.

Critically, another group was asked to spend a minute writing down reasons for their judgment, before giving the rating. Accuracy dropped dramatically. Ambady suspected that deliberation focused them on vivid but misleading cues, such as certain gestures or utterances, rather than letting the complex interplay of subtle signals form a holistic impression. She found similar interference when participants watched 15-second clips of pairs of people and judged whether they were strangers, friends, or dating partners.

Other research shows we’re better at detecting [deception](https://www.psychologytoday.com/us/basics/deception) and [sexual orientation](https://www.psychologytoday.com/us/basics/homosexuality) from thin slices when we rely on intuition instead of reflection. “It’s as if you’re driving a stick shift,” says Judith Hall, a psychologist at Northeastern University, “and if you start thinking about it too much, you can’t remember what you’re doing. But if you go on automatic pilot, you’re fine. Much of our [social life](https://www.psychologytoday.com/us/basics/social-life) is like that.”

Thinking too much can also harm our ability to form preferences. College students’ ratings of strawberry jams and college courses aligned better with experts’ opinions when the students weren’t asked to analyze their rationale. And people made car-buying decisions that were both objectively better and more personally satisfying when asked to focus on their feelings rather than on details, but only if the decision was complex—when they had a lot of information to process.

Intuition’s special powers are unleashed only in certain circumstances. In one study, participants completed a battery of eight tasks, including four that tapped reflective thinking (discerning rules, comprehending vocabulary) and four that tapped intuition and creativity (generating new products or figures of speech). Then they rated the degree to which they had used intuition (“[gut feelings](https://www.psychologytoday.com/us/basics/intuition),” “hunches,” “my heart”). Use of their gut hurt their performance on the first four tasks, as expected, and helped them on the rest. Sometimes the heart is smarter than the head.



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**2. We Get Too Deeply Attached to Intuitive Beliefs**

Once an intuition hits, we cling to it despite the dangers. Intuition can, for example, lead to all sorts of cognitive and social biases, like the [anchoring](https://www.psychologytoday.com/us/basics/heuristics) effect (where decisions are swayed by the first piece of information thrown at us) and racial [prejudice](https://www.psychologytoday.com/us/basics/bias). Even in areas where the heart should rule, like romance, it can be clueless. In a classic study, when men on a bridge were stopped by an attractive woman and asked to complete a questionnaire, they were more likely to try to contact her afterward if it was a scary suspension bridge, misattributing emotional arousal to sexual [attraction](https://www.psychologytoday.com/us/basics/mating).

Our [dreams](https://www.psychologytoday.com/us/basics/dreaming), those unwilled visions of the night, hold a powerful aura of truth we can’t quite extinguish. People report they’re more likely to change their travel plans if they dreamed about a plane crash than if the government announced an actual travel warning. And test-takers can’t shake the “first instinct fallacy.” Three in four college students reported that when reconsidering an answer on an exam, their initial choice will usually turn out to be correct. But when erase marks on actual exams were analyzed, the reverse was true: Twice as many changed answers went from wrong to right as right to wrong.

“In general,” says psychologist Sascha Topolinski of the University of Cologne in Germany,  “intuition is something emotional that makes you confident in an idea. ‘You cannot take away this feeling from me. I do not trust this car seller. I can’t tell you why, but I’m confident I don’t like him.’”

Intuition about the accuracy of an intuition is even more fallible. When people were asked to rate their [confidence](https://www.psychologytoday.com/us/basics/confidence) that their “gut feelings” had steered them skillfully on a test, confidence ratings had no relationship with actual performance.

Even when we acknowledge the absurdity of an intuition, we often stick with it. Consider superstitions. I’m an atheist who knocks on wood while knowing it’s hogwash. “When an intuition captures [attention](https://www.psychologytoday.com/us/basics/attention) and triggers emotions, it may be especially hard to shake,” says Jane Risen, a psychologist at the University of Chicago. She calls maintaining beliefs we know to be false “acquiescing to intuition.” Intuition may not be magic, but we are truly under its spell.

**3. Intuition Can Be Improved—With Practice**

To have good intuitions in any domain requires a lot of practice. But not all domains are amenable to good intuitions. First, there must be regularities linking events and outcomes—the domain must have high “validity.”

Gary Klein, a psychologist at the Washington, D.C., consulting firm MacroCognition, has long explored the role of [wisdom](https://www.psychologytoday.com/us/basics/wisdom) in the intuition of experts such as fire commanders, who can size up a burning building quickly. “Fires follow the laws of physics,” says Klein.

The global economy is significantly more chaotic, preventing predictability. (As Gigerenzer notes, five years before the 2007 housing crisis, the president of the American Economic Association said, “Macroeconomics…has succeeded. Its central problem of [depression](https://www.psychologytoday.com/us/basics/depression) prevention has been solved.”)

Whether you should trust your feelings should hinge not on the strength of those feelings—we have poor intuitions about intuitions—but on the structure of the domain you’re operating in. Look outward, not inward.

Second, you need clear feedback to hone your intuitive decisions. A review of the literature shows that weather forecasters, test pilots, and chess masters had more reliable expertise than psychologists, admissions officers, and judges. Outcomes in the latter’s areas are fuzzier and can play out long after you’ve made a decision. That goes for much of everyday life, too.“You don’t do a diary and an Excel file where you write, ‘Okay, on October 1, I made this decision, or I bought this product,’ and so on,” Topolinski says. We lack hard data about what we do.

Good intuitions in one domain don’t guarantee good intuitions in another. As Gigerenzer puts it, “A soccer player who has great intuitions about scoring a goal may have bad intuitions about spending his money. So there cannot be a general test of intuition.” Even within a domain, expertise can vary between different kinds of tasks.

We can use focused thinking not only to train our intuitive expertise over time but also to invite or avoid intuitions in the moment. Metaphors and sketches are excellent tools to help us reframe problems or see solutions more clearly.

Klein coaches people to consider premortems: When considering a plan, imagine from a future vantage point that it failed and think about what went wrong. This thinking tool makes weak points real—intuitive objects rather than abstract and ignorable hypotheses.

Philosopher Daniel Dennett of Tufts University has coined the term intuition pumps for thought experiments meant to reframe problems. But he notes that they can be used for good or for evil.

“One should learn how easy it is to build bogus intuition pumps that will provoke fist-pounding intuitions that aren’t worth your allegiance,” Dennett says. “But also, intuition pumps can help you out of imagination blockades. Caution is advised.”

The role of deliberation in honing instincts and knowing when to trust them reveals reflection’s close [collaboration](https://www.psychologytoday.com/us/basics/teamwork) with intuition, in both its development and deployment. “Our reflective deliberation scaffolds off our intuition,  but it goes both ways,” says psychologist Gordon Pennycook of the University of Regina in Canada. We also tend to use them in tandem.



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**4. Intuition Is Sensing; Insight Is Seeing**

Intuition is closely related to another I word, insight. Sometimes the two are conflated, which is understandable. Both relate to realizations emerging from [subconscious](https://www.psychologytoday.com/us/basics/unconscious) processes, offering guidance and hiding their tracks. But they’re fundamentally different.

“Insight is about seeing,” says Eugene Sadler-Smith, a [management](https://www.psychologytoday.com/us/basics/leadership) researcher at Surrey Business School in England. “You can articulate the solution, and you can explain it to someone else.” Whereas intuition is sensing: “We can sense a solution to a problem, or we can sense a decision that we should take. It’s a judgment—it’s almost like a hypothesis. We don’t know whether it’s right or wrong until we act on it.”

According to MacroCognition’s Gary Klein, “Intuition is how we use our experience to know how to act. Insight runs in the opposite direction. It’s not just drawing on what you know. It’s changing what you know.”

To that end, we sometimes need to clear intuition out of the way to obtain the sudden solutions we call insight. Breakthroughs are often counterintuitive. One way to demonstrate the role of habitual hindrances is to look at magic tricks. Illusions work through mental jujitsu, using our assumptions against us. To discover how a trick is done, one must relax certain mental constraints—a good tactic for eliciting insights in general.

In one study, participants watched video clips of a dozen magic tricks, and half received a verbal clue directing their attention to an assumption. For example, when the magician appeared to throw a coin from one hand to another before making it disappear, the clue was “transfer to other hand.” Given such prods to counter their intuition about what they saw, their solution rate went from 21 percent to 33 percent.

Intuition’s relationship with insight is complicated. It can sometimes indicate when an insight is possible. A common laboratory test of insight is the remote associates test (RAT): Given three words, such as cottage, swiss, and cake, can you find a fourth that connects them? (In this case, cheese.) A variation on this task shows people either a coherent or a random word triad and makes them guess quickly whether it’s solvable before asking them for a solution. Even in cases where people can’t summon the solution, they’re better than chance at judging the triad’s coherence.

Scientists use creative intuition to select which paths to follow toward potential discoveries. “This is this idea of sensing the right direction,” Sadler-Smith says, “like a radar that says ‘Go down there, but not down there.’” Nobel laureates have discussed their use of hunches. Michael S. Brown (Medicine, 1985), has said, “As we did our work, I think, we almost felt at times that there was almost a hand guiding us.”

But we tend to have poor intuition about how close we are to an insight. In one study, participants were given math and logic problems, whose solutions required either a central insight or mere grinding, and were asked to estimate their distance from the solution every 15 seconds. Unlike for the non-insight problems, estimates for insight problems remained fairly flat until the final “Aha!”

In a second study, participants’ predictions of whether they’d be able to solve insight problems had no correlation with the truth, unlike for routine algebra problems. Topolinski notes the age-old attempt to perform a mathematical feat called “squaring the circle” before it was proved impossible in 1882. “There were many blind tracks that people followed for millennia,” he says. Similarly, Einstein produced his theories of relativity, “then for the rest of his life he’s concocting a possible theory of everything.” Such a theory may be out there, but “for his capabilities and his time, this was a wrong intuition.”

**5. Stress Favors Intuition; Sadness Doesn’t**

Deliberation is a luxury. In dire situations—say, while being chased by a bear—you don’t have time to weigh all your options. You follow your first instinct (run, presumably). [Anxiety](https://www.psychologytoday.com/us/basics/anxiety) engendered in any situation similarly pushes you toward fast and frugal reflexes. If you’re truly in danger, that can be handy. Otherwise, reflection might be better.

One study looked at the effects of [stress](https://www.psychologytoday.com/us/basics/stress) on [decision-making](https://www.psychologytoday.com/us/basics/decision-making) by attaching electrodes to participants’ hands and randomly zapping them. Meanwhile, the poor souls had to complete analogies by flipping through answers one at a time: “Butter is to margarine as sugar is to...beets, saccharine, honey, lemon, candy, chocolate.” Compared to participants who didn’t receive shocks, they were more likely to jump on an answer without even viewing all the options and, as a result, got more wrong.

Stress’s effects on the brain are mediated in part by the release of the [hormone](https://www.psychologytoday.com/us/basics/hormones) cortisol. In one experiment, researchers gave participants a cortisol-increasing drug or a [placebo](https://www.psychologytoday.com/us/basics/placebo), then had them do something called the cognitive reflection test (CRT). The CRT consists of three questions, each with an intuitive but wrong answer. For instance, “A bat and a ball cost $1.10. The bat costs $1.00 more than the ball. How much does the ball cost?” You want to say 10 cents, but a quick calculation reveals the ball is 5 cents and the bat is $1.05. Most people, even students at elite colleges, fail to get all three problems right, but cortisol reduced correct answers even further.

Even as stress triggers heuristic thinking—habits and short-cuts—it degrades more sophisticated intuitive processing. Remember the remote associates test (cottage, swiss, cake)? One study found that increasing anxiety in participants by showing them hair-raising images scrambled their intuitions about whether a connecting word existed.

The morbid images may have affected this performance measure, called an intuition index, in part by lowering participants’ mood. Sadness tends to make people think analytically. We’re sad when something’s wrong, which may be time for focused problem-solving.



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**6. Some People Are More Intuitive Than Others**

Some researchers believe there are individual differences in broad intuitive ability. A recent study found two clusters of intuitive skill. One is related to insight—such as conceiving a new metaphor—which is linked to intelligence. The other,  related to implicit learning, or learning complex information without being aware of what you’ve learned—say, picking up a new language—is not strongly linked to intelligence.

Perhaps more consequential for behavior than general intuitive ability is thinking style—the degree to which you rely on intuition and reflection in the first place. A common measure in research is the Faith in Intuition (FI) scale, in which people rate agreement with statements like “I believe in trusting my hunches.” FI and similar measures have been linked with several positive characteristics. People with high FI receive high intuition index scores—as long as they’re in a positive mood, a state that brings intuition out to play.

Another scale, with items like “I generally make decisions that feel right to me,” correlated with better recognition of social norms, as measured by how accurately people estimated their peers’ acceptance of behaviors likes stealing and fighting. And another correlated with greater creativity on several tasks such as drawing and thinking of uses for a cardboard box.

But people who put faith in intuition also pay a price. They perform worse on tasks requiring logic. They report having experienced more setbacks resulting from poor decisions, ranging from missing a flight to getting [divorced](https://www.psychologytoday.com/us/basics/divorce). They report greater [magical thinking](https://www.psychologytoday.com/us/basics/magical-thinking)—belief in astrology, ghosts, luck, God, and so on. And in one study, they were more likely to stereotype based on [gender](https://www.psychologytoday.com/us/basics/gender) (but only in a positive mood).

Topolinski suggests that people might want to seek careers that match their thinking style. An accountant won’t get as far relying on her gut as would, say, a counselor. And in any profession, if you know you put great faith in feelings, you might make room for extra reflection on tasks where snap decisions can get you into trouble, like getting to the airport.

**7. Morality Intuitions Are Easily Swayed**

Some of our deepest-held beliefs involve morality, how we feel people should behave toward one another. And although they may seem as rock-solid as fact—Thou shalt not kill—they’re just as guided by intuition as anything else.

We can reason about many of them, but only to a point. For many, especially on controversial or subtle issues like abortion, it comes down to intuition: It just feels wrong (or right).

Moral intuitions are unavoidable and also valuable, says psychologist Matthew Feinberg of the Rotman School of Management in Toronto. They drive kindness as well as social justice movements. “But moral intuitions are also at the heart of many, many problems in society.” Impassioned gut reactions can derail rational discussion, as opponents are labeled evil.

Many findings highlight the unconscious processing built into moral judgment. Often we base opinions on things we’d never factor into a deliberate decision. In one study, participants’ approval of [sex](https://www.psychologytoday.com/us/basics/sex) between cousins depended on whether someone had secretly deployed fart spray nearby. Visceral repulsion led to moral repulsion.

In another study, participants were asked whether it was okay to push a large man off a footbridge to block a trolley from killing five other people. If they’d just watched a clip from Saturday Night Live, versus a documentary, their mood was more positive, and they were four times as likely to approve. This does not sound like reflection: Thou shalt not kill—unless you’ve heard a good joke lately.

Of course, morality is based on more than fleeting incidental cues. We also have deeper values like fairness and loyalty, each an abstraction formed from a lifetime of experience. Psychologist Jonathan Haidt of New York University has delineated five distinct “moral foundations” that guide our behavior: fairness, loyalty, authority, purity, and avoiding harm. Studies suggest that political liberals prioritize fairness and harm avoidance; conservatives favor loyalty, authority, and purity.

And Feinberg has found that we can shape people’s moral intuitions by catering messages to their preferred values. When he framed an argument for universal health care in terms of purity (fewer diseased Americans) versus fairness (health care for all), conservatives expressed more support for Obamacare. When he framed an argument for military spending in terms of fairness (fighting inequality) versus authority (American supremacy), liberals expressed more support.

Likewise, he swayed conservatives to support same-sex [marriage](https://www.psychologytoday.com/us/basics/marriage) through loyalty (patriotic couples) and environmentalism through purity (a clean planet). He also used moral reframing to reduce conservative support for [Donald Trump](https://www.psychologytoday.com/us/basics/president-donald-trump) (he disloyally dodged the draft) and liberal support for Hillary Clinton (she unfairly favors Wall Street).

Examples, metaphors, images, and stories can give shape to our own and others’ intuitions not only in [politics](https://www.psychologytoday.com/us/basics/politics) but in all realms of life: science, relationships, [education](https://www.psychologytoday.com/us/basics/education). We gain new models of the world, and thought—conscious and not—fills them in.

As for messages meant to elicit gut reactions, “We see a lot of that on the Internet these days,” says the University of Saskatchewan’s Thompson. “[Memes](https://www.psychologytoday.com/us/basics/memes). That’s exactly what they are.” One could fairly call memes the fart spray of the internet.



**8. You Can Read People by Reading What They Write Online**

Humans have strong intuitions about other people. That’s because character judgment has such dire consequences, and because we have so much experience with it, over our lifetimes and over evolution. What happens when people-reading goes online? And when it’s limited to the reading of what others write? Increasingly, we must assess each other via snippets of text, rather than, say, darting eyes or kind smiles, but that doesn’t hold back our snap judgments.

Generally, when asked to rate a writer’s [personality](https://www.psychologytoday.com/us/basics/personality) traits based on emails, personal essays, streams of consciousness, mock diary entries, mock blog posts, Twitter feeds, and dating ads, readers agree with each other more than chance would allow, indicating that there are cues in written reports that reliably trigger our intuitions. Which cues do we use?

In dating profiles, studies show, swear words suggest high [neuroticism](https://www.psychologytoday.com/us/basics/neuroticism) and low [conscientiousness](https://www.psychologytoday.com/us/basics/conscientiousness) and [agreeableness](https://www.psychologytoday.com/us/basics/agreeableness). Angry words suggest the same in tweets. In personal essays, exaggeration suggests [extraversion](https://www.psychologytoday.com/us/basics/extroversion) and [openness to experience](https://www.psychologytoday.com/us/basics/openness). Past tense suggests depression in blog posts, and cognitive words like know suggest it in diaries. Surely deliberation plays a role in judgments, but I doubt anyone is counting past-tense verbs.

Our judgments about traits from writing samples are also frequently more accurate than chance would allow. And some people are better than others at reading between the lines. One study, by Hall of Northeastern University, found that the best judges were female, agreeable, conscientious, emotionally stable, compassionate, interested in others’ lives, and big readers, especially of fiction.

Judgments of personality can come from the thinnest of slices—even just an email address. What’s thinner than an email address? Punctuation. A study found that angry- and happy-seeming emails have many exclamation points and few question marks, and feminine-seeming emails have both. Other work found that smileys in formal emails don’t make the writer seem warm but do make him or her seem incompetent. Meanwhile, adding a smiley with a nose to a dating profile will win more replies, while adding a noseless smiley will get you fewer ;-). To think, your future may depend on an emoji.

Neither head nor heart can survive on its own, and negotiating their symbiosis is a challenge that’s much harder than mastering chess or Go. “‘It’s not about whether intuition or analysis is best,’” Sadler-Smith tells managers. “The real skill in decision-making, problem-solving, creativity, whatever, is blending those two things together. And in a way that’s kind of a lifetime project, isn’t it?”

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“I go with my gut feelings,” says investor Judith Williams. Sure, you might think, “so do I,”— if the choice is between chocolate and vanilla ice cream. But Williams is dealing with real money in the five and six figures.

Williams is one of the lions on the program *The Lions’ Den,* a German television show akin to *Shark Tank*. She and other participants invest their own money in business ideas presented by contestants. She is not the only one who trusts her gut. Intuition, it seems, is on a roll: bookstores are full of guides advising us how to heal, eat or invest intuitively. They promise to unleash our inner wisdom and strengths we do not yet know we have.

But can we really rely on intuition, or is it a counsel to failure? Although researchers have been debating the value of intuition in decision-making for decades, they continue to disagree.





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**A SOURCE OF ERROR?**

Intuition can be thought of as insight that arises spontaneously without conscious reasoning. Daniel Kahneman, who won a Nobel prize in economics for his work on human judgment and decision-making, has proposed that we have two different thought systems: system 1 is fast and intuitive; system 2 is slower and relies on reasoning. The fast system, he holds, is more prone to error. It has its place: it may increase the chance of survival by enabling us to anticipate serious threats and recognize promising opportunities. But the slower thought system, by engaging critical thinking and analysis, is less susceptible to producing bad decisions.

Kahneman, who acknowledges that both systems usually operate when people think, has described many ways that the intuitive system can cloud judgment. Consider, for example, the framing effect: the tendency to be influenced by the way a problem is posed or a question is asked. In the 1980s Kahneman and his colleague Amos Tversky presented a hypothetical public health problem to volunteers and framed the set of possible solutions in different ways to different volunteers. In all cases, the volunteers were told to imagine that the U.S. was preparing for an outbreak of an unusual disease expected to kill 600 people and that two alternative programs for combating the disease had been proposed.

For one group, the choices were framed by Tversky and Kahneman in terms of gains—how many people would be saved:

* If Program A is adopted, 200 people will be saved.
* If Program B is adopted, there is 1/3 probability that 600 people will be saved, and 2/3 probability that no people will be saved.

The majority of volunteers selected the first option, Program A.

For another group, the choices were framed in terms of losses—how many people would die:





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* If Program C is adopted 400 people will die.
* If Program D is adopted there is 1/3 probability that nobody will die, and 2/3 probability that 600 people will die.

In this case, the vast majority of volunteers were willing to gamble and selected the second option, Program D.

In fact, the options presented to both groups were the same: The first program would save 200 people and lose 400. The second program offered a one-in-three chance that everyone would live and a two-in-three chance that everyone would die. Framing the alternatives in terms of lives saved or lives lost is what made the difference. When choices are framed in terms of gains, people often become risk-averse, whereas when choices are framed in terms of losses, people often became more willing to take risks.

**INTUITION’S BENEFITS**

Other cognitive scientists argue that intuition can lead to effective decision-making more commonly than Kahneman suggests. Gerd Gigerenzer of the Max Planck Institute for Human Development in Berlin is among them. He, too, says that people rarely make decisions on the basis of reason alone, especially when the problems faced are complex. But he thinks intuition’s merit has been vastly underappreciated. He views intuition as a form of unconscious intelligence.



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Intuitive decisions can be grounded in heuristics: simple rules of thumb. Heuristics screen out large amounts of information, thereby limiting how much needs to be processed. Such rules of thumb may be applied consciously, but in general we simply follow them without being aware that we are doing so. Although they can lead to mistakes, as Kahneman points out, Gigerenzer emphasizes that they can be based on reliable information while leaving out unnecessary information. For example, an individual who wants to buy a good pair of running shoes might bypass research and brain work by simply purchasing the same running shoes used by an acquaintance who is an experienced runner.

In 2006 a paper by Ap Dijksterhuis and his colleagues, then at the University of Amsterdam, came to a similarly favorable view of intuition’s value. The researchers tested what they called the “deliberation without attention” hypothesis: although conscious thought makes the most sense for simple decisions (for example, what size skillet to use), it can actually be detrimental when considering more complex matters, such as buying a house.



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In one of their experiments, test subjects were asked to select which of the four cars was the best, taking into account four characteristics, among them gas consumption and luggage space. One set of subjects had four minutes to think about the decision; another set was distracted by solving brainteasers. The distracted group made the wrong choice (according to the researchers’ criteria for the best car) more often than those who were able to think without being distracted. But if participants were asked to assess 12 characteristics, the opposite happened: undisturbed reflection had a negative effect on decision-making; only 25 percent selected the best car. In contrast, 60 percent of the subjects distracted by brainteasers got it right.

Investigators have been unable to replicate these findings, however. And in a 2014 review Ben R. Newell of the University of New South Wales and David R. Shanks of University College London concluded that the effect of intuition has been overrated by many researchers and that there is little evidence that conscious thought arrives at worse solutions in complex situations.

**WHAT ABOUT REAL LIFE?**

Of course, problems in the real world can be considerably more complicated than the artificially constructed ones often presented in laboratory experiments. In the late 1980s this difference sparked the Naturalistic Decision Making movement, which seeks to determine how people make decisions in real life. With questionnaires, videos and observations, it studies how firefighters, nurses, managers and pilots use their experience to deal with challenging situations involving time pressure, uncertainty, unclear goals and organizational constraints.

Researchers in the field found that highly experienced individuals tend to compare patterns when making decisions. They are able to recognize regularities, repetitions and similarities between the information available to them and their past experiences. They then imagine how a given situation might play out. This combination enables them to make relevant decisions quickly and competently. It further became evident that the certainty of the decider did not necessarily increase with an increase in information. On the contrary: too much information can prove detrimental.

Gary Klein, one of the movement’s founders, has called pattern matching “the intuitive part” and mental simulation “the conscious, deliberate and analytical part.” He has explained the benefits of the combination this way: “A purely intuitive strategy relying only on pattern matching would be too risky because sometimes the pattern matching generates flawed options. A completely deliberative and analytic strategy would be too slow.” In the case of firefighters, he notes, if a slow, systematic approach were used, “the fires would be out of control by the time the commanders finished deliberating.”





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**INTUITION IS NOT IRRATIONAL**

Kamila Malewska of the Poznán University of Economics and Business in Poland has also studied intuition in real-world settings and likewise finds that people often apply a combination of strategies. She asked managers at a food company how they use intuition in their everyday work. Almost all of them stated that, in addition to rational analyses, they tapped gut feelings when making decisions. More than half tended to lean on rational approaches; about a quarter used a strategy that blended rational and intuitive elements; and about a fifth generally relied on intuition alone. Interestingly, the more upper-level managers tended more toward intuition.

Malewska thinks that intuition is neither irrational nor the opposite of logic. Rather it is a quicker and more automatic process that plumbs the many deep resources of experience and knowledge that people have gathered over the course of their lives. Intuition, she believes, is an ability that can be trained and can play a constructive role in decision-making.

Field findings published in 2017 by Lutz Kaufmann of the Otto Beisheim School of Management in Germany and his co-workers support the view that a mixture of thinking styles can be helpful in decision-making. The participants in their study, all purchasing managers, indicated how strongly they agreed or disagreed with various statements relating to their decision-making over the prior three months. For example: “I looked extensively for information before making a decision” (rational), “I did not have time to decide analytically, so I relied on my experience” (experience-based), or “I was not completely sure how to decide, so I decided based on my gut feeling” (emotional). The researchers, who consider experience-based and emotional processes as “two dimensions of intuitive processing,” also rated the success of a manager based on the unit price the person negotiated for a purchased product, as well as on the quality of the product and the punctuality of delivery.

Rational decision-making was associated with good performance. A mixture of intuitive and rational approaches also proved useful; however, a purely experience-based and a purely emotional approach did not work well. In other words, a blending of styles, which is frequently seen in everyday life, seems beneficial.

Economists Marco Sahm of the University of Bamberg and Robert K. von Weizsäcker of the Technical University of Munich study the extent to which our background knowledge determines whether rationality or gut feeling is more effective. Both Sahm and Weizsäcker are avid chess players, and they brought this knowledge to bear on their research. As children, they both learned intuitively by imitating the moves of their opponents and seeing where they led. Later, they approached the game more analytically, by reading chess books that explained and illustrated promising moves. Over time Weizsäcker became a very good chess player and has won international prizes. These days he bases his play mainly on intuition.





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The two economists developed a mathematical model that takes the costs and benefits of both strategies into account. They have come to the conclusion that whether it is better to rely more on rational assessments or intuition depends both on the complexity of a particular problem and on the prior knowledge and cognitive abilities of the person. Rational decisions are more precise but entail higher costs than intuitive ones—for example, they involve more effort spent gathering and then analyzing information. This additional cost can decrease over time, but it will never disappear. The cost may be worth it if the problem is multifaceted and the decision maker gains a lot of useful information quickly (if the decision maker’s “learning curve is steep”). Once a person has had enough experience with related problems, though, intuitive decision-making that draws on past learning is more likely to yield effective decisions, Sahm and Weizsäcker say. The intuitive approach works better in that case because relying on accumulated experience and intuitive pattern recognition spares one the high costs of rational analysis.

One thing is clear: intuition and rationality are not necessarily opposites. Rather it is advantageous to master both intuition and analytic skills. Let us not follow our inner voice blindly, but let us not underestimate it either.