QUARTZ

POLICY OF TRUTH

Lying gets easier on the brain the more you do it

Neil Garrett | March 09, 2017

Can you keep a secret? (Reuters/Ira Schwarz)

Cast your mind back over the past week. How many times were you tempted to act dishonestly? Perhaps you were given too much change at the pub and deliberated whether to tell the barman. Maybe you thought of lying about your weekend plans in order to avoid an awkward dinner party. Dishonesty is a common temptation. We face such moral dilemmas all the time. They aren't opportunities to act with egregious dishonesty. Rather, these are the prosaic choices that shape much of our daily lives. Since the temptation for dishonesty is always there, we have to continually make decisions about how moral we want our behavior to be. And part of what guides these decisions is how unpleasant being dishonest makes us feel.

I recently conducted a study at University College London with Tali Sharot, Dan Ariely, and Stephanie C. Lazzaro about the temptation to be dishonest. We investigated whether having opportunities to act dishonestly on a repeated basis could affect our readiness to choose dishonesty over and above honesty. The idea is that if someone initially decides to act dishonestly, they will feel bad about it, and so can only bring themselves to be dishonest by a small amount. The next time they act dishonestly, even though it still feels bad, it doesn't feel *as* bad. As a result, one could be dishonest to a greater extent before reaching a point where they feel bad enough to stop.

Understanding why requires connecting two important ideas. The first relates to the role that emotional arousal plays in moral decision-making. The second concerns a feature of how the brain operates when contexts are repeated, known as *neural adaptation*.

Some moral dilemmas provoke emotional reactions that restrict our willingness to act disreputably, and are accompanied by bodily responses like increased heart rate and perspiration. When this happens, our willingness to act disreputably is reduced. For example, in a study by the psychologists Stanley Schachter and Bibb Latané in 1964, students were given the opportunity to cheat in an exam but beforehand half of them were given beta blockers, a pill which lowers physiological reactions. The remaining students were given a placebo. The students that had their arousal levels pharmacologically reduced cheated more on the exam compared to those given a placebo. So there is a physiological reaction against taking the less-than-virtuous path. But when this reaction is absent, that path becomes more tempting.

The second idea is neural adaptation. When entering a restaurant, you notice the wonderful smells of the freshly made food. But after a while, you become less sensitive to these aromas and soon stop noticing them. This is an example of neural adaptation: the brain becomes less sensitive to stimuli after repeated exposure, which keeps our attention from being sapped by aspects of the environment that don't really need it. In the restaurant, after you've got used to the aromas, you can focus on more important things: conversation, what to order, and so on.

These two ideas—the role of arousal on our willingness to cheat, and neural adaptation—are connected because the brain does not just adapt to things such as sounds and smells. The brain also adapts to emotions. For example, when presented with aversive pictures (eg, threatening faces) or receiving something unpleasant (eg, an electric shock), the brain will initially generate strong responses in regions associated with emotional processing. But when these experiences are repeated over time, the emotional responses diminish.

In our study, we went one step further. Might the brain also adapt to behavior of our own making that we find aversive? In other words, if we engage in behavior we feel bad about over and over again, does our emotional response to this behavior adapt? If so, then we've got a prediction: since we know that emotional responses can constrain our willingness to be dishonest, if these responses decrease through adaptation, dishonesty ought to increase as a result.

To test this, we needed to run an experiment that did two things. We needed a task that encouraged individuals to be dishonest on a repeated basis. And we needed to gauge how individuals' emotional arousal levels changed as opportunities to be dishonest repeated themselves.

We had participants lie in an fMRI scanner and send messages to a second person, who sat outside the scanner, by entering keyboard responses. Participants were instructed that their responses would be relayed via connected computers. In some stages of the task, participants had repeated opportunities to make their messages dishonest in order to earn additional money. Importantly, they could be as dishonest as they wanted to—it was entirely up to them and could vary from message to message. This allowed us to see if the messages were equally dishonest, or if there was a change in people's willingness to be dishonest over time. Meanwhile, the fMRI data allowed us to examine how emotional arousal levels changed as dishonest messages were sent. We did this by examining the amygdalae, two almond-like regions embedded deep within the brain that respond to negative emotions such as fear and threat.

To begin with, participants were often only a little dishonest, though these small trespasses were accompanied by strong responses in the emotion-processing network. But over time, the participants seemed to get used to it, adapting to the adverse feeling that came with sending dishonest messages. They ceased having strong emotional responses. And eventually, the door flew open: they could be much more dishonest than at the beginning, but with increasingly limited emotional sensitivity. Dishonesty began to feel not so bad.

This study might suggest a pessimistic view of humanity, with everyone gradually becoming emotionally null to bad behavior, more corrupt, and more egotistical. But that's not the only way to see these results. One positive message to take away is that emotion plays a crucial role in *constraining* dishonesty. Perhaps that means a solution to dishonesty is available: strong emotional responses in situations where dishonesty is a temptation could be reinstated so as to reduce one's susceptibility to it. In fact, a recent study achieved this by having a group of participants believe that their hearts were pounding quickly when they faced the temptation to be dishonest. This group cheated less than an alternative group of participants who were made to believe that their heartbeats were calm and steady.

There have also been a number of behavioral interventions proposed to curb unethical behavior. These include using cues that emphasize morality and encouraging self-engagement. We don't currently know the underlying neural mechanisms that can account for the positive behavioral changes these interventions drive. But an intriguing possibility is that they operate in part by shifting up our emotional reaction to situations in which dishonesty is an option, in turn helping us to resist the temptation to which we have become less resistant over time.

This post originally appeared at Aeon and has been republished under Creative Commons. Learn how to write for Quartz Ideas. We welcome your comments at ideas@qz.com.

Our world today is replete with data. But over 80% of this data is invisible to computers, locked away in unstructured repositories like textbooks, formulas, and human conversations. Capturing value from this information will entail fostering a new generation cognitively-inspired technologies to learn from and enrich human abilities.

According to IDC, by 2020 these systems will deliver nearly $47 billion in revenue. And while many have framed the emergence of cognitive systems within an anxious, man vs. machine narrative, the real technologies materializing in this space are creating a new "Cognitive Era"—one that augments, not replaces, human capabilities and values with computational heft.

Chief among these solutions is IBM Watson. Watson analyzes high volumes of data and processes information more like a human than a computer—by understanding natural language, generating hypotheses based on evidence, and learning as it goes.

Since its triumph on the television quiz show Jeopardy! IBM has advanced Watson's capabilities and made it available via the cloud. Watson now powers new consumer and enterprise services in the health care, financial services, retail and education markets. In 2016, approximately 400 million people interacted with Watson while developing world-altering innovations. Below, we outline a few examples of what Watson is working on today.

Working toward well-being

Health and well-being are central to the human experience. As we live longer, cognitive technologies offer the opportunity to improve medical outcomes and create care solutions tailored to the needs of individuals and communities alike.

At Alder Hey Children's Hospital, for example, young patients in Europe are getting more personalized care. Working with Watson, Alder Hey is developing the UK's first cognitive children's hospital. By analyzing feedback from patients and parents, the hospital can personalize patient care and help alleviate a child's anxieties. In doing so, they're improving patient experiences and providing comfort where it is needed most.

Medtronic Care is also looking to cognitive technology to improve care for millions with diabetes. More than 415 million people around the world suffer from diabetes. Working with Watson, Medtronic is creating an app for people with diabetes. When implemented it will use data from sensors, insulin pumps, wearables, and scientific studies to help predict potential hypoglycemia hours in advance.

Inspiring cutting-edge care

Beyond immediate patient care, cognitive systems are also advancing the field of medicine by providing research institutions with analytical tools capable of uncovering patterns and surfacing discoveries that would be difficult to reach through traditional research methods.

For example, to improve well-being, health-care innovation, and lives in Finland, Tekes has partnered with Watson Health to develop a comprehensive cognitive healthcare business while advancing R&D. Similarly, Mayo Clinic is using cognitive technologies to efficiently match patients to clinical trials. By working with Watson, Mayo Clinic can help offer its patients cutting-edge medical options while also working to advance the discovery of promising new forms of care.

Meaningful insights

From ensuring rigorous and thorough industrial inspections to crunching large volumes of data to understand financial risk, cognitive technology is at the forefront of efforts to create more secure, efficient organizations through meaningful insights. Working with Watson, for instance, the drones of Aerialtronics can inspect oil rigs, wind turbines, and cell towers, and predict repairs, helping make the world safer, cleaner, and more cost-efficient.

Such systems are also helping reinsurance and insurance companies price their products better. For instance, Watson reads millions of pages of data, including unstructured data like discussion notes, contracts, or tickets, to help Swiss Re assess risk factors and make more informed decisions regarding price-risk accuracy. This helps Swiss Re reduce costs while increasing quality.

Making productivity personal

Sometimes, improving lives is as simple as using cognitive platforms to improve customer experiences. In the case of Spanish bank, CaixaBank, this means that customers are getting answers faster.

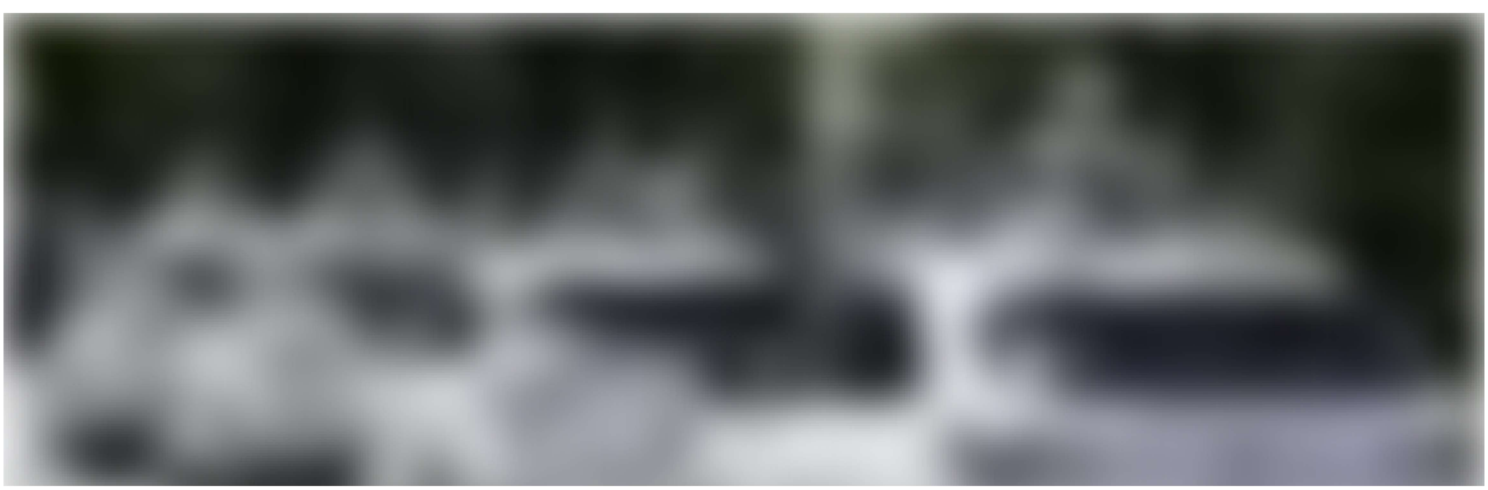
Time is crucial for international business, but it is not simple to know and fulfill all the international norms. At CaixaBank, foreign-trade specialists have to answer a wide range of technical questions about business worldwide. Bank specialists can tap into Watson—in their native Spanish—and answer customer queries in real time and with greater accuracy.

Already, the advance of cognitive—the daily progress of Watson—is beginning to change the way the world works, decides, innovates, learns, and thinks. Learn more about how cognitive businesses are learning to reimagine what is possible around the UK, France, Germany, Russia, and beyond.

This article was produced on behalf of IBM by Quartz Creative and not by the Quartz editorial staff.

A timeline of when self-driving cars will be on the road, according to the people making them

Sarah Kessler | 3 hours ago



Depending on your definition of self-driving cars, they're either already here, coming soon, or a distant aspiration. (AP Photo/Eric Risberg)

Cars are already driving themselves on roads in California, Texas, Arizona, Washington, Pennsylvania, and Michigan. Though they are still restricted to specific test areas and driving conditions, it's pretty clear that at some point in the future, completely driverless cars will be a mainstream reality. When that future will arrive, though… depends on who you ask.

Predictions for the arrival of fully autonomous vehicles range from a few years to a few decades, a disparity exacerbated by varying definitions of "autonomous." While some people use this word to describe cars that self-drive only in specific conditions, others peg their estimates to the point at which cars are so autonomous that they don't even need a steering wheel, or a brake pedal.

"It will happen in very discrete baby steps," Otto co-founder Lior Ron recently said of the driverless car trajectory. "[It will first] happen in some friendly way to the city, with wide lanes, not many pedestrians, between 1am and 5am. Then it's going to be actually [driving in] daylight. Then more difficult driving conditions."

The consequences of that timeline are huge—self-driving vehicles could replace 3 million US jobs, change city infrastructure, and upend the average commute—but actually pinning it down is difficult. As Chris Urmson, who formerly led the self-driving car project at Google parent Alphabet, put it during a 2016 talk at South by Southwest: "How quickly can we get this into people's hands? If you read the papers, you see maybe it's three years, maybe it's 30 years. And I am here to tell you that honestly, it's a bit of both."

Here's a detailed look at when we'll realize the various definitions of our driverless future, according to the experts and executives hoping to make it a reality.

2017

Elon Musk, CEO of Tesla

What does he mean by autonomous vehicle on the road? According to Business Insider, "A Tesla will drive in fully autonomous mode from LA to New York City."

2020

Toyota

According to the Wall Street Journal, autonomous for Toyota means allowing "vehicles to get on and off the highway and change lanes without driver input."

Nissan

Per Mashable, Nissan's version of autonomy is cars "capable of navigating city intersections and heavy urban traffic without driver intervention."

2021

BMW

According to CNN, BMW's driverless future means cars that can "drive on... highways and in urban environments."

Ford

What does Ford mean by autonomous? According to its website, "high-volume, fully autonomous SAE level 4-capable vehicle in commercial operation." SAE level 4 refers to a 0-to-5 scale created by the Society of Automotive Engineers. At level 4, the vehicle can handle all driving capabilities, even if a human can't intervene, but is limited to "some driving modes." According to the Wall Street Journal, such a car "will only be self-driving in the portion of major cities where the company can create and regularly update extremely detailed 3-D street maps."

Lyft co-founder John Zimmer

According to a blog post Zimmer authored last year, "a fully autonomous fleet of cars will provide the majority of Lyft rides across the country" but such cars will start out with "a long list of restrictions. They will only travel at low speeds, they will avoid certain weather conditions, and there will be specific intersections and roads that they will need to navigate around."

2027

Lior Ron, co-founder and president of Uber-owned automated trucking company Otto

At a recent conference, Ron was asked what fully autonomous means to him. He replied: "Broad-scale deployment of driverless trucks."

2026

Adrian Lund, president of the Insurance Institute for Highway Safety and the Highway Loss Data Institute

Per Automotive News, Lund said “a car with no steering wheel or pedals would make it a Level 5 automated vehicle [on the SAE International scale].”

2030

Kia

According to The Verge, Kia’s autonomous cars would be “the kinds… that can pick you up without a driver and leave you somewhere else, without you necessarily having to ever take control.”

2032 to 2047

Mary Cummings, a professor of mechanical, electrical and computer engineering at Duke University

What she means by autonomous: According to the Wall Street Journal, a car that “operates by itself under all conditions, period.”

2035

BCG

According to a 2015 report, BCJ pegs the driverless future as when “12 million fully autonomous units sold a year globally.”

“A ways off”

Edwin Olson, the director of the APRIL robotics lab at the University of Michigan

What he means by autonomous cars on the road: According to Vox, a car that you "can just put your kid in and ship off to school."