

# Hidden

# persuaders

Exploring the promise and the perils of the new unconscious.

BY JEREMY MERCER

**I**N THE SUMMER OF 2009, A GROUP of students from the Massachusetts Institute of Technology was recruited for what appeared to be a study on bargaining techniques. The students were seated in an office, shown a new car listed at \$16,500 and told to get the best possible price. Offers were made and rejected, deals were struck and then the students went on their way, satisfied it had been a straightforward exercise in negotiation.

Instead, this was a remarkable experiment to see if people could be unconsciously influenced through their sense of touch. Half the students sat in hard wooden seats during the bargaining sessions, while the other half were given soft cushioned chairs. Those on hard chairs were less flexible in their negotiations and, without exception, offered less money—on average, \$347 less—to purchase the car. The

conclusion was emphatic: Hard surfaces make people “harder” in their negotiations because the physical sensation of hardness triggers concepts of stability, which the unconscious brain translates into a more confident bargaining position.

This “hard chair effect” is part of a torrent of new research that is unlocking the mysteries of the human unconscious and showing how its enormous powers can be harnessed. At every moment of our lives, we are bombarded by far more sensations—sights, sounds, odors, tastes, textures—than our conscious brains can process. This means the vast majority of these stimuli are acted on by our unconscious brains and alter our behavior without our awareness. Over the past decade, neuroscientists and cognitive psychologists have been gradually decoding this unconscious operating system and can now tap

into it to induce everything from cleanliness to cleverness in unwitting subjects.

“Our brain’s systems evolved for millions of years with no conscious direction,” says John Bargh, the Yale University psychologist who helped devise the hard chair experiment and a pioneer of the science of the new unconscious. “This unconscious machinery is still there, and it can be used to do all kinds of promising things.”

Promising is an understatement. Want to make a person more pliable? No problem. Just sit them down in a comfortable chair. Trying to make a good impression during a job interview? Give your prospective employer a hot drink and their unconscious brain will make you appear “warmer” and friendlier. Looking to increase donations during a charity drive? A spritz of Windex in the air promotes generosity because the concept of clean is unconsciously tied to

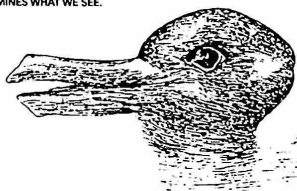
PHOTOGRAPH: LEV DOLGATSHJOV/DREAMTIME.COM

the concept of virtue. How about a treatment for obese patients? Make them play a picture game in which they cross out photographs of cake and cheeseburgers and their unconscious brains will slowly learn to reject fatty foods.

This may sound fantastical, but we are already living in the age of unconscious influence. The science is currently used to sell soup, win votes and calm prison violence, all the while inflaming debates about the existence of free will and the rights of governments and corporations to interfere in the lives of individuals.

It's almost as if the human unconscious has been laid out before us like the keys of a piano. With neuroscientists learning to

AMERICAN PSYCHOLOGIST JOSEPH JASTROW CONCLUDED IN 1884 THAT WHEN WE LOOK AT OBJECTS, OUR UNCONSCIOUS PRE-DETERMINES WHAT WE SEE.



Khan complete in his head, while German philosopher Arthur Schopenhauer noticed that if he ignored a problem, the answer would sometimes pop into his mind. "One might almost believe," he wrote, "that half our thinking takes place unconsciously."

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JOHN BARGH, YALE UNIVERSITY PSYCHOLOGIST

pick out their first choppy melodies, it is time for the rest of us to understand what makes us dance.

**THE IDEA THAT WE ARE BUFFETED** by forces beyond our conscious knowledge has been with us since, well, people began recording their conscious thoughts. Plato described these influences as winged horses dragging us in different directions, while the philosopher Gottfried Leibniz called them "minute perceptions" that affect every facet of our lives. The unconscious has also come to be seen as a font of wisdom and creativity. Poet Samuel Taylor Coleridge famously woke from a dream with hundreds of lines of verse that made up the poem *Kubla*

Not surprisingly, people yearn to control these forces, and history has no shortage of charlatans who have claimed mastery over the unconscious domain. But a true scientific breakthrough didn't come until the end of the 19th century when Joseph Jastrow couldn't decide whether he was looking at a duck or a rabbit.

Jastrow, a psychologist at the University of Wisconsin-Madison, staged an experiment in 1884 wherein subjects were given two metal balls with an imperceptible weight difference and asked which was heavier. The initial answer was always that they weighed exactly the same; when pressed, however, subjects identified the heavier object nearly 70 per cent of the time. This gave Jastrow the idea that

people had innate powers, and he later came up with his theory of unconscious intelligence after seeing a picture of the famous rabbit-duck in a magazine. These kinds of optical illusions were immensely popular at the time, but Jastrow saw more than visual chicanery at play. He realized his brain had decided what to see before he even knew a decision needed to be made. As he wrote in his book *The Subconscious*, this meant the unconscious brain had an arsenal of hidden powers that merely required an "initial start to run themselves off the reel."

The mad race to exploit the powers of the human unconscious was off to a good start. But Jastrow's work left two gaping questions. What was the root of this unconscious intelligence? And precisely how

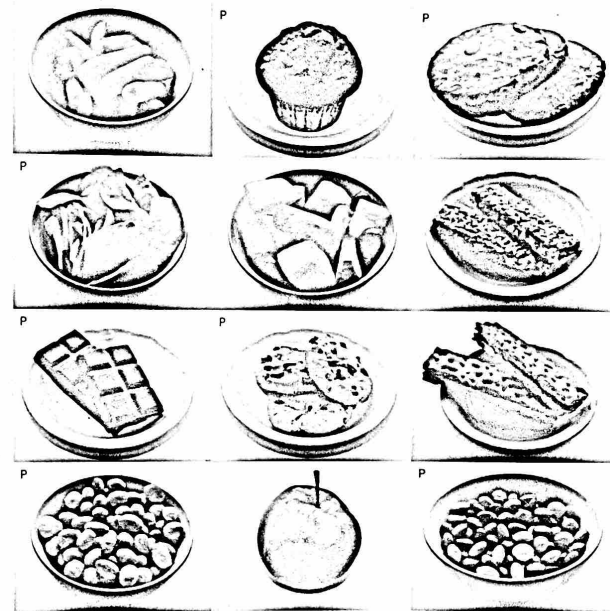
could you give those coveted skills that "initial start?"

The subject was probed by everybody from psychologist Sigmund Freud to cognitive scientist Noam Chomsky, but oddly enough it was epilepsy research that provided an answer. Several patients who had electrodes implanted in their brains to control seizures began reporting vivid hallucinations. To doctors, it seemed like an annoying side effect to a new treatment, but for Benjamin Libet this was a key piece of the puzzle of the unconscious.

Libet, a neurophysiologist from the University of California, San Francisco, began experimenting with these patients in the 1970s and quickly confirmed that they could be made to hallucinate everything

## Healthy living

you might soon be sitting in a doctor's waiting room playing a "Where's Waldo?"-type game that will make you happier and healthier. Behavioral psychologists are learning to help clients repress unhealthy behavior using the unconscious. In one experiment, subjects eliminated pictures with "p's" printed on them, many of which were images of fatty foods. The unconscious brain got the message; after that, test subjects began to reject these foods. Such techniques have been used to make alcohol unappealing. The same logic is behind photographs of diseased lungs on cigarette packs. "People tried to curb these behaviors through education, but it is hard to learn new attitudes that overcome these impulses," says Henk Aarts, director of the research center Goallab at Utrecht University, who designed the experiment. "Using unconscious environmental stimuli is a very good alternative." Aarts sees a future in which public service websites have games that build unconscious defense systems—and he's talked with a publisher about creating unconscious "self-help" magazines that could end up in a doctor's office near you. J.M.



from the feeling of water to the strains of Mozart. What really interested him, though, was the timing of the events. The patients reported the hallucination half a second after the electrode was fired, and half a second is an eternity in neurological time. Libet then ran two more experiments to confirm these results. In one, he pinched subjects while they were hooked to an electroencephalograph (EEG); the brain registered the event a half second before the person reported feeling the pinch. Then, using a special oscilloscope clock, Libet asked subjects to note the exact moment they decided to move their hand. On average, they declared their intention to move a half second after the brain had already issued the instructions.

"Clearly," Libet wrote, "the brain process [begins] before the appearance of the conscious will to act."

The experiments turned the debate over the existence of free will on its head because the results suggested free will was undermined by the biological functioning of our brains, meaning our lives are spent reacting to the unconscious brain as well as initiating our own actions. More crucially, this delay in reaction also became the prime candidate to explain unconscious intelligence.

For the conscious brain to cope with the frenzy of information that surrounds us would be like a person standing in a thunderstorm trying to count the raindrops. So, the unconscious filters the stimuli, a

process that takes about half a second, then sends the most important information to the brain's conscious command center.

This filtering system works in two ways. First, the brain hard wires certain unconscious responses, such as to be wary of sharp edges or back away from intense heat to free up space for other forms of cognition. Second, the conscious brain delegates work to the unconscious so the brain can concentrate on vital decisions. Imagine the route you take home from work each day; you turn left without conscious thought while your mind is daydreaming, trying to solve a problem or considering what to have for dinner. This collected body of evolved and learned automatisms is Jastrow's arsenal of hidden skills. >>>

Libet's delay also provided a clue to the "initial start" needed to run those skills off the reel. If it took half a second for the conscious brain to recognize stimuli, that meant there was a range of rapid events that never reached the conscious brain, like the frames that make up a motion picture. These subliminal events are one set of unconscious triggers. Then, the conscious brain perceives a second set of events, known as supraliminal, that are deemed unimportant and left to the unconscious to handle, like the sensation of a hard chair when you are intent on buying a car.

"This reality is very hard for people to accept," says Ap Dijksterhuis, director of

basic sensations for eons. In one experiment, he had subjects conduct personality assessments after holding either a hot coffee or an iced coffee. The hot coffee group unanimously rated people as friendlier and more open, leading Bargh to conclude that physical warmth evokes concepts of comfort in the unconscious brain, thus making other people seem less hostile.

Bargh then tried to harness our learned unconscious by mining the lode of unconscious associations people acquire. He asked subjects to solve scrambled sentences that included words such as "gray," "forgetful" and "wrinkled." He discovered this evoked the notion of old age in

triggered calmness. Sure enough, during the six-week trial, there was less aggression, less vandalism and a drop in the use of sedatives. "The results were very interesting for us," says Roland Ekkers, a police spokesperson. "Our new police chief has already ordered more trials to see if this works in different environments."

The Rotterdam experiment was a significant leap from the laboratory to the real world, and it's no coincidence that it happened in the Netherlands. The country is home to two advanced research centers on unconscious influence: the Unconscious Lab run by Dijksterhuis and the GoalLab at the University of Utrecht, run by social

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AP DIJKSTERHUIS, DIRECTOR OF THE UNCONSCIOUS LAB  
AT RADBOUD UNIVERSITY IN NIJMEGEN, THE NETHERLANDS

the Unconscious Lab at Radboud University in Nijmegen in the Netherlands. "People try to control their behavior by conscious decisions, but really it is only the illusion of control."

**WHICH MORE OR LESS BRINGS** us back to John Bargh, who connected advances in biological anthropology to the unconscious. By the early 1990s, scientists like Terrence Deacon had come to the persuasive conclusion that our higher consciousness was a late evolutionary development. After all, for most of our planetary history, life unfolded in an entirely instinctive manner. "What we call the conscious was simply added on top of existing brain infrastructure," says Bargh. "Those old systems are still there."

So Bargh had a rather impetuous idea: Why not hotwire the unconscious brain and take it for spin? The initial project was to use triggers such as heat, cold and light, because we have been living with these

the unconscious brain. As a result, subjects behaved in an "elderly" manner, walking more slowly and methodically down a hallway, for example.

The old age experiment was performed in 1991, but Bargh didn't dare publish his results. When he presented the work at conferences, he was ridiculed. "It was too counterintuitive," he says now. "I had fruit thrown at me, in a good-natured way." Dutch researchers, however, embraced this new line of inquiry, and within weeks graduate students had replicated Bargh's old-age results and extended them to other stereotypes, such as "professor" or "super-model." "Thank God for the Dutch," Bargh says. "They are light years ahead on this."

In the summer of 2008, officers at the main police station in Rotterdam tried an unusual tactic to improve detainee conduct. They began pumping minute amounts of orange blossom scent into the holding cells. Studies showed that people's behavior could be unconsciously modified through odors and that orange blossom

psychologist Henk Aarts. The Rotterdam police station experiment was inspired by a study by Aarts in which subjects filled out a questionnaire and were offered a plate of cookies as a reward. Half were in a lemon-scented room and half were in an unscented room. Even though nobody noticed the smell of lemon, members of this group were three times more likely to clean up their cookie crumbs, allegedly because lemon scent has become unconsciously associated with cleanliness.

"We are at the beginning of what is possible," says Aarts. "When I apply for grants, I tell institutions, 'We know more about black holes than we do about the unconscious. We have to do this.' They are starting to listen."

They are doing more than just listening. Unconscious influence is now a hot trend in university research departments. Last summer, the august journal *Science* published a review of seminal experiments in the field, a stamp of approval from the scientific establishment that would have been

## Mind exercise

Behavioral psychologists like to test the mental agility of their subjects before conducting an experiment. A common method of doing so is to ask them to solve a word puzzle like this one. To put yourself in the shoes of the subject, stop reading, grab a pencil and take two minutes to find as many words as possible, reading left to right, up and down, and diagonally.

Done? How many words did you find? Do you feel good about your performance? You should, because this was actually an unconscious priming exercise intended to make you more optimistic. Each of the nine hidden words—upbeat, uplifted, believing, promise, hope, possible, faith, trust and rosy—evokes optimism. If you didn't notice, the words entered your brain through the back door. This so-called "supraliminal influence" can trigger unconscious associations that leave you more positive. Though it might seem like a party game, unconscious influence has profound implications. In one instance, female students unconsciously prompted to dismiss the myth that women aren't good in science saw their physics marks soar. | J.M.

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unimaginable just a few years ago. Indeed, the new research is flabbergasting.

At the University of Toronto, Chen-Bo Zhong has proven that light is an unconscious trigger for ethical behavior; students in dim rooms cheat at twice the rates of students in well-lit rooms. Zhong also showed that exposing people to fast food logos accelerated their actions, because a learned "impatience" function had been unconsciously triggered. "This is a whole different behavioral model," Zhong says. "Before, economists talked about making rational decisions to maximize utility, but unconscious cues play a much bigger role than we ever thought."

At University of Wisconsin-Madison, James Shah had subjects perform an anagram-solving exercise on a computer. Half the group had the words "father" or "dad" flash on their screens in 10-millisecond bursts. The subjects exposed to fatherly words scored better on the test, leading Shah to conclude that patriarchal concepts have become linked to success and ambi-

tion in the unconscious brain and thus tend to focus people better on tasks.

Aarts himself is working on reducing obesity through unconscious influence. In initial experiments, he asked overweight subjects to sort through photographs and reject any with red dots. A significant number of dotted images were pictures of fatty foods. After the test, subjects reported being less tempted by these foods because, Aarts concluded, their brains had been unconsciously trained to reject them.

Hearing all this, it might seem there is an easy path to self-improvement: Think of your father before an important exam and crumple pictures of your favorite Scotch to save your liver. Alas, this is impossible, because the unconscious is always one step ahead of the conscious. Just as you don't laugh when you tickle yourself, your conscious brain can't fool your unconscious brain.

Which brings us to a rather eerie question: If we can't pull these triggers in our unconscious brains, who can?

**I**N SEPTEMBER, DURING LAST YEAR'S Advertising Week conference in New York City, there was an intriguing new item on the agenda: the NeuroStandards project. The spate of unconscious research and the spread of technology like fMRI brain scanning has given rise to the "neuro-supplier" business—firms promising maximum unconscious impact for advertising campaigns and product packaging. The Advertising Research Foundation wanted to bring order to this giddy new sector, hence the NeuroStandards initiative.

"It's obvious there's value in these methods, but it's difficult for marketing personnel to evaluate what is very complicated science," says Sheila Seles of the Advertising Research Foundation. "We wanted to start the process early and get a step ahead of something that is sure to have major implications for the industry."

One sign of just how seriously the business of unconscious influence is being taken is the list of corporations sponsoring the project—General Motors, American

Express, ESPN and the MillerCoors brewing company, to name but a few. This economic potential is driving new research on the unconscious, but industry findings are rarely made public. "Companies aren't necessarily willing to disclose their techniques or break client confidentiality agreements, so we still aren't clear what potential we are talking about," says Roger Dooley, who runs the blog Neuromarketing. "At this stage, I'd say what neurosuppliers will do is eliminate waste by cutting out the 50 percent of ads that don't work."

Some business owners aren't shy about their flirtation with neuromarketing. Campbell Soups hired neurosuppliers to

Germany discovered that authentic smiles inspire greater unconscious compliance than forced or artificial smiles, and advised sales clerks on how to hone smiles that make customers malleable. At the University of Waterloo in Canada, marketing psychologists have shown that by subliminally triggering associations of sadness, subjects could be prompted to consume more "mood-restorative products." It doesn't take imagination to foresee bars and restaurants finding ways to trigger sadness to boost alcohol sales.

Of course, this manipulative use of unconscious influence has been a staple of political campaigns for years. Research

launched a vitriolic campaign against Sunstein, who advises the Obama administration, calling him "the most dangerous man in America." After First Lady Michelle Obama recently suggested the designs of restaurant menus could be changed to promote healthy eating, Beck declared, "I don't want anybody nudging me. Get away from my French fries, Mrs. Obama. First politician that comes up to me with a carrot stick, I've got a place for it."

Campaigns are underway in both the U.S. and Britain to curb the use of unconscious influence, also known as "choice architecture," by governments because it is seen to impinge on individual liberty. And,

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assess unconscious responses to their redesigned labels. And—in what was more of an experiment than a business gambit—*New Scientist* magazine asked a company called NeuroFocus to pick the cover of its August 7, 2010 issue. Nineteen subjects were shown potential cover illustrations while being monitored on an EEG; the cover that rated highest according to NeuroFocus' parameters—a wispy image of an unravelling galaxy—was used, and sales were 12 percent higher than for the same issue a year earlier and a significant jump over the 2010 average. The editors, however, remained cautious, noting that it might "have sold just as much without being neuromarketed or that we would have gotten the same result by asking our 19 volunteers which cover they preferred."

To get an idea of the corporate world's more unnerving uses of unconscious influence, look at the few public academic studies. Thorsten Hennig-Thurau of the Bauhaus-University of Weimar in

shows that people unconsciously become more averse to risk or change when they are anxious, which leads to a preponderance of fear-mongering advertisements from incumbent politicians worried about losing their seats.

As one might expect, unconscious influence elicits concerns across the political spectrum because it allows governments and corporations to influence people's behavior without their knowledge or consent. In their book *Nudge: Improving Decisions About Health, Wealth, and Happiness*, authors Richard Thaler and Cass Sunstein examined how children could be unconsciously persuaded to eat more apples and bananas by placing fruit at eye level in cafeterias. "In the right circumstances, the gains from such rules can be sufficient to make it worthwhile to take a few cautious steps down that possibly slippery slope," they concluded.

Others aren't so sure. Glenn Beck, the populist Fox News personality, has

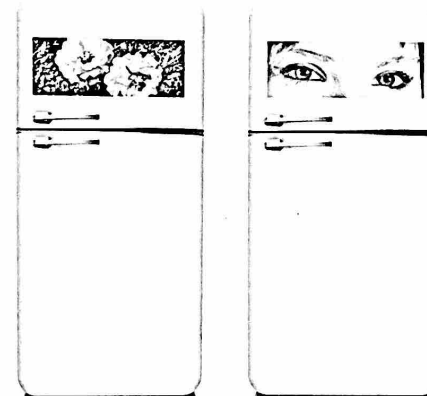
in the U.S., the Center for Digital Democracy staff members are studying whether new rules need to be put in place for unconscious advertising. "If this type of messaging bypasses our rational defenses, then the traditional protection of free speech for advertisers might not apply," says Jeff Chester, the Center's executive director.

In Austria, Robert Schorn, a professor of strategic marketing at the University of Innsbruck and a member of a committee formed by the government to see if unconscious influence needs to be regulated, is addressing these questions. Schorn gained prominence with an experiment held at a highway rest stop. Cash boxes were set up in bathrooms to collect a 30-cent fee. Some facilities had the word "honest" discreetly placed on the walls, while others featured "dishonest" or the nonsense word "crehun." Those exposed to the word "honest" were 35 percent more likely to pay the fee.

"The key is to prevent people from being unfairly manipulated," comments

## A clean kitchen

The joys of communal living are often offset by the irritations of a shared kitchen: jam jars mysteriously scraped bare, dirty dishes amassed in the sink, detergent bottles unrefilled. Might there be an unconscious solution? Melissa Bateson, a researcher at Newcastle University's Institute of Neuroscience, ran an experiment in a staff kitchen in which an honor system was used to pay for coffee, tea and milk. For 10 weeks, Bateson decorated the price list with pictures of either human eyes or flowers. Once fluctuations in consumption were accounted for, an average of almost three times as much money was collected during the weeks with pictures of eyes. Bateson believes cooperation is an innate behavior that helps us adapt to groups, but this instinct wanes when we're alone. The eyes triggered an unconscious "community" function because they created the sensation of being among people. "The human perceptual system contains neurons that respond selectively to stimuli involving faces and eyes," Bateson concluded. "The images exerted an automatic and unconscious effect." I.J.M.



Schorn. "The job of science is to know how this unconscious influence can be used and misused in consumer situations, in political situations. Then once science understands the continuum, it's up to governments and communities to decide what should be allowed."

**F**OR AS LONG AS PEOPLE HAVE sensed unseen forces in their lives, they have sought to tame them—through prayer, through meditation, through reason, through science. And for just as long, people have sought to influence our decisions: politicians who want our votes, suitors who want our love, businesses who want our money. After all, for decades, automobile advertisements have placed seductive women next to cars in the hope that desire will unconsciously leap from flesh to fender. So, aren't the possibilities offered by the science of the unconscious just one more step down this well-traveled road?

No. It's more like we've abruptly changed directions. We used to believe that people consciously formed their decisions and guided their behavior; now, we seem to have discovered that the unconscious brain has its hands firmly on the wheel. And it can be unsettling to take a back seat to our unconscious, especially when others can easily lean in and whisper instructions to the driver.

In *Introductory Lectures on Psychoanalysis*, written in 1917, Freud predicted that once the role of the unconscious was fully understood, this would result in a scientific upheaval on par with everything that happened in the wake of Copernicus' theory of a heliocentric universe and Darwin's theory of evolution. Freud also thought this revelation would be a "wounding blow" for humanity because the mind would no longer be able to claim to be "master of its own house, but must content itself with scanty information of what is going on unconsciously."

Freud was half right. Insights into how the unconscious brain shapes our lives are certainly causing upheaval. But instead of dealing a wounding blow, this understanding has the potential to be a crowning achievement. Whatever space our conscious mind ultimately occupies, it was from here that the circuitry of the unconscious was explored and exposed.

By becoming aware of these unconscious forces, we empower ourselves to make decisions with full-spectrum consciousness of their influences and effects. We may not have our fingers on the keys of our unconscious, but hopefully we will be able to recognize the songs and decide for ourselves whether or not we want to dance to those tunes. ■

JEREMY MERCER, who wrote about dissent in the May 2010 issue, consciously hopes this article will trigger unconscious urges to explore his memoir *Time Was Soft There* (Picador).