

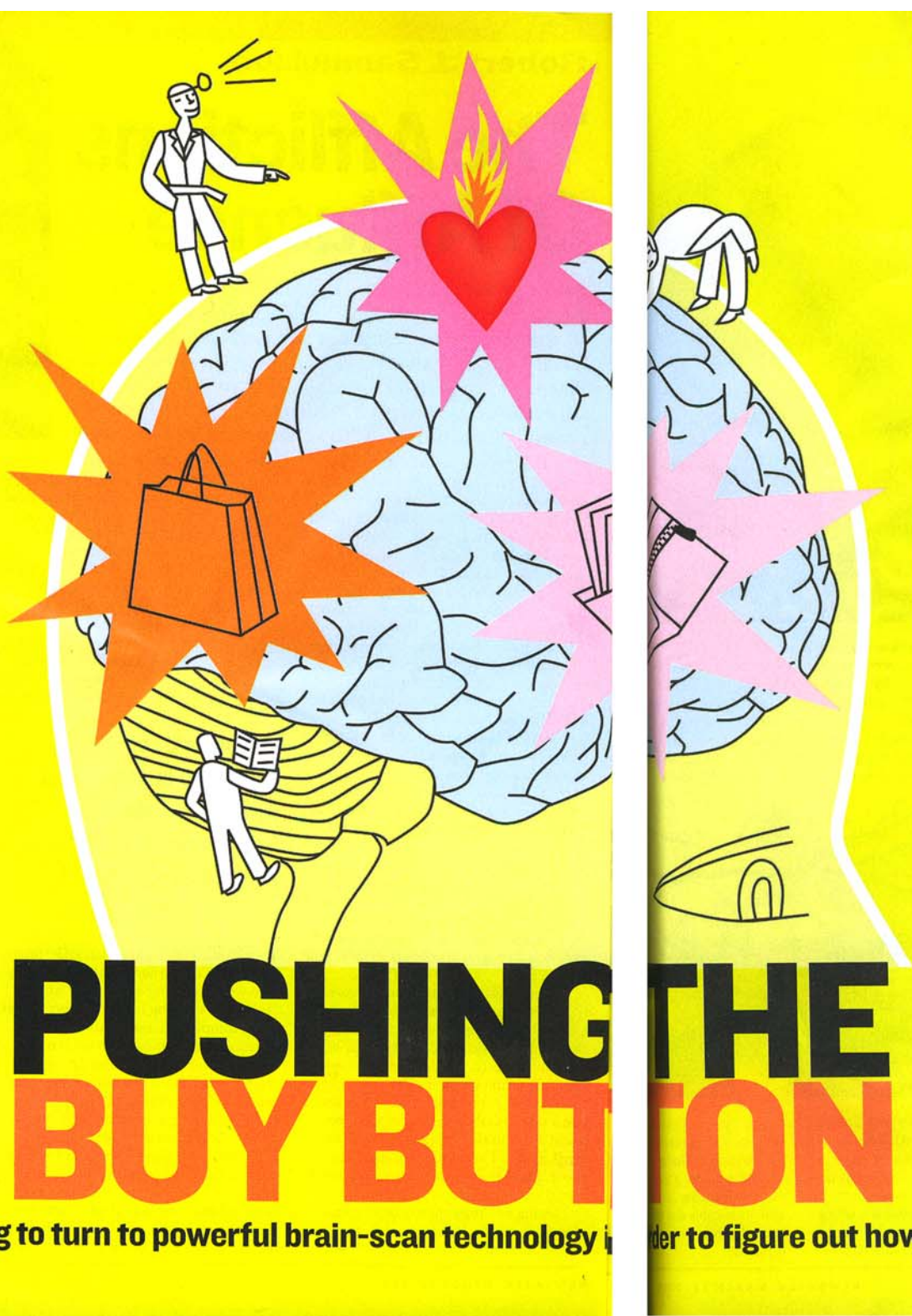
BY CLINT WITCHALLS

THE WOMAN LYING IN THE huge, doughnut-shaped magnet having her brain scanned is perfectly healthy. Radiologists at the Neurosense clinic in south London aren't looking for lesions or lumps. Instead, they've set up a periscope that allows her to view a series of videotaped advertisements. She doesn't have to do anything but watch—and perhaps daydream about whether a particular brand of chocolate seems yummy, or what it would be like to drive that new family sedan. While she's thinking, the doctors are looking to see if certain brain circuits are active and, if so, how excited they get.

Her experience could foretell the future of marketing. Sellers have always expended a great deal of time and energy trying to figure out what potential buyers really think (as opposed to what they say when you ask them). Now, using powerful brain-scan technology, they can do so scientifically. Ford of Europe uses such "neuromarketing" techniques to better understand how consumers make emotional connections with their brands. DaimlerChrysler has funded several research projects at the University of Ulm in Germany, using brain-imaging technology to decode which purchasing choices go into buying a car. Firms like Oxford-based Neurosense have sprung up to make neuromarketing a bona fide business tool. "The 1990s were declared 'the Decade of the Brain,'" says Justine Meaux, a neuroscientist and marketing strategist at BrightHouse, an Atlanta, Georgia-based neuromarketing company. "We learned more about neuroscience in those 10 years than in the entire history that preceded them. I think business neuroscience is just one more field of inquiry."

Since the 1950s, the best tool for identifying which ads and products people will like has been the focus group. The problem is, it's notoriously unreliable, largely because social dynamics get in the way of truthful answers. Some subjects want to please the focus-group leader. Others want to dominate the group. "Almost every focus group throws up someone more vocal and bossy, who either inspires others to follow or react against [them] or both," says Tim Ambler, senior fellow at London Business School. Perhaps that's why only one in 100 products survives in the marketplace after the typical product launch.

Imaging technology, on the other hand, holds out the promise of objectively meas-



PUSHING THE BUY BUT TON

Companies are starting to turn to powerful brain-scan technology in order to figure out how we choose which products to purchase

uring a person's reaction by seeing how his brain is responding. Given that 95 percent of human cognition takes place unconsciously, there's a lot more information to be had by going straight to the source and observing which regions of the brain are active. Forget what the focus-group participant is telling you—look at those lively spikes on her left inferotemporal cortex.

The roots of neuromarketing go back to neuroscientist Antonio Damasio's assertion a decade ago that humans use the emotional part of the brain when making decisions, not just the rational part. That's precisely what marketers wanted to hear. Since then, researchers have turned to fMRI (functional magnetic resonance imaging), which maps blood flow to different areas of the brain, to explore what goes on in the act of

crunching sound of a candy bar, or to its flavor? Neuromarketers are still exploring exactly what kind of information they can tease out of test subjects with questionnaires and fMRI scans.

The use of brain research to sell products has created some controversy. Detractors fear that once the "buy button" in the brain is identified, unscrupulous companies will use this knowledge to get us hooked on their products, to the detriment of our health, our wallets and our sanity. Already, they point out, aggressive marketing contributes indirectly to obesity, diabetes, alcoholism, lung disease and gambling. Others object to the commercial use of medical equipment. In December, Gary Ruskin, executive director of Commercial Alert, a public-interest watchdog, sent a

Does the brain respond to the crunching sound of a candy bar, or to its flavor?

buying. The idea is that when the "buy" regions of the brain go into action, they draw a bigger blood supply to support their work, which shows up—millisecond by millisecond—on an fMRI scan. (According to researchers, the act of deciding whether to make a purchase lasts 2.5 seconds.)

When the possibility of buying something first occurs to a person, the visual cortex, in the back of the head, springs into action. A few fractions of a second later the mind begins to turn the product over, as though it were looking at it from all sides, which triggers memory circuits in the left inferotemporal cortex. Just above and forward of the left ear. Finally, when a product registers as a "strongly preferred choice"—the goal of every advertiser—the action switches to the right parietal cortex, above and slightly behind the right ear. "We can scan people looking at lots of different images, find out afterward which ones they remembered and then go back to the scan data and find out what was specific about the brain activity that occurred in response to the remembered images," says Michael Brammer, chairman of Neurosense.

Companies still need to come up with several product designs and ad campaigns for screening. But fMRI scans should help them narrow down which ones work across the broadest range of people. Or neuromarketing could be useful in finding out how a consumer experiences a product. For instance, does the brain respond first to the

letter to Emory University, which conducts research on behalf of BrightHouse, asking it to stop its experiments.

Neuromarketing researchers argue that the technology shouldn't be stopped just because it might be abused. "This is a descriptive technique—it describes what the brain is doing," says Neurosense cofounder Gemma Calvert. "With fMRI you can't modify brain behavior. You can't make people go out and buy something." Companies like BrightHouse are trying to distance themselves from the term neuromarketing, which has a sci-fi feel to it, and their clients and funders often prefer to remain anonymous.

Perhaps the best defense is that the research may help scientists understand the workings of the brain. "I cannot think of a more important issue these days than understanding the neural substrates of cultural messaging," says Read Montague, director of the Human Neuroimaging Lab at Baylor College of Medicine in Houston, Texas. "As far as I know, humans are the only creatures that will die for an idea. However, we know very little about the neural substrates that allow some ideas or messages to insinuate themselves in our nervous system and control behavior." Why, for instance, do people have strong preferences for Pepsi or Coke, even though chemically the two soft drinks are virtually identical? That's a tough one, even for brain scientists. ■