

# Mind games

How not to mix politics and science.

Politicians are rarely elected solely for the soundness of their policies. As the armies of image consultants and pollsters will attest, people often vote with their hearts, and nothing matters more than following the pulse of that elusive prize: the voters' emotions.

But how do you find out what people are feeling? In a blaze of colour on the 11 November 'op-ed' (invited opinion) page of *The New York Times*, some scientists proclaimed that, based on analysis of brain-imaging data from just a handful of swing voters, they had divined what the rest of the undecided masses truly think about the upcoming US presidential elections. Apparently just asking them was simply not good enough.

So how did they uncover the innermost thoughts of their 20 subjects? The authors used functional magnetic resonance imaging (fMRI) to scan the subjects' brains while they viewed images of political candidates. This imaging technique can be used to measure changes in oxygenated blood and hence to infer changes in metabolic activity in different parts of the brain. Some parts of the brain reliably alter their activity under certain conditions, and scientists have used this fact, along with information drawn from other techniques in both humans and animals, to document which brain area is associated with which cognitive function. For example, greater activity in the insula is often reported when people experience disgust, whereas more activity in the amygdala is reported when people are anxious.

The authors of the op-ed up-ended this logic. For example, they observed more activity in the insula while their subjects looked at a picture of Democrat hopeful John Edwards and deduced that they must be disgusted by him, albeit unconsciously. Bad news for John Edwards — except that there is an inconvenient truth gumming up the deductions: increased activity in any brain area is rarely exclusive to any one function. That insula activity did not necessarily mean the subjects were disgusted. Insula activity has also been associated with drug craving, the taste of chocolate, pain and the quality of orgasm. Not necessarily such bad news after all.

The op-ed work has not been published in a peer-reviewed journal, and the article is self-evidently too insubstantial in scientific detail to assess the strength of either the methods or the data. A group of

cognitive neuroscientists was swift to object to its conclusions — which veer close to a modern-day phrenology — in a response to *The New York Times*.

The results described in the op-ed are apparently the claims of a commercial product posing as a scientific study. This is only partially transparent. Three of the authors list their affiliation with FKF Applied Research, a company based in Washington DC that is notorious for using similar brain-scan analysis to conclude which TV adverts aired during a major sporting event were most effective. In its own words, the company is a "business intelligence firm selling fMRI brain scan-based research to Fortune 500 companies".

More troubling for a mainstream newspaper that prides itself on its balanced reporting is the absence of declarations from three other authors. Rightly listed as affiliated to a neuroscience institute at the University of California, Los Angeles, one is also a co-founder of FKF Applied Research and all three, according to a previous publication, have benefited from funding from the company.

Articles on *The New York Times* op-ed pages are opinionated by definition, and shouldn't normally require peer review. But here, the paper's editors have instead published the results of (to put it mildly) questionable scientific research, disseminating this information to millions of their readers who may not have the background to recognize for themselves the absurdity of some of the authors' conclusions.

Although it is a gross disservice to science and indeed to politics, it is a great deal for the company. Scientific publication would have required the authors to divulge their data and qualify their assumptions — and some journals might even have required that they declare their financial interests. Whatever the motives, seducing *The New York Times*' editors with the allure of Technicolor brains lighting up with Hillary Clinton angst yielded no more or less than a multimedia advertisement for the company's product to millions of readers.

And does anyone need a \$3-million scanner to conclude that Hillary needs to work on her support from swing voters? ■

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## Replicator review

*Nature* has implemented a peer-review policy for strong claims.

The transfer of a nucleus from a somatic cell of one organism into an enucleated germ cell of another for therapeutic or reproductive cloning is now well-established in many species, but has proved notoriously difficult to do in primates. Indeed some experts have concluded that it simply couldn't be done. Woo Suk

Hwang's high-profile paper reporting that it had worked in human cells turned out to be fraudulent, making the goal seem even more elusive.

*Nature* has now published what we expect to be the final word on whether nuclear transfer can work in a primate — a paper by J. A. Byrne *et al.* showing not only that it is possible to clone primate embryos by somatic-cell nuclear transfer but also that precious embryonic stem cells can be derived from the embryos (see page 497). If embryonic stem cells live up to their promise, the technology could be used to derive patient-tailored stem cells. Even if they don't, the ability to clone primate embryos means that researchers may be able