

No strings

Details of a climate-change sceptic's links to the energy industry make worrying reading.

Earlier this week, documents were passed to the news media, including *Nature*, that link the global-warming sceptic Willie Soon, a researcher at the Harvard-Smithsonian Center for Astrophysics (CfA) in Cambridge, Massachusetts, to funders in the energy industry and conservative circles.

The files include research contracts and year-end reports, and provide new details on the kind of “deliverables” that Soon was providing for his funders. The group that released them, the Climate Investigations Center in Alexandria, Virginia, raised legitimate questions about whether Soon had properly disclosed this funding to journals that published his work. The CfA has responded by launching an investigation.

Willie Soon has been a poster child for the small community of climate-change sceptics for more than a decade. Environmentalists and other watchdogs have examined and exposed his industry funding countless times. Unknown until now were the explicit details of

the strings that come with such funding. In some cases, these strings included requirements that Soon show copies of proposed publications to Southern Company, a major electric utility that has given him nearly US\$410,000 since 2006, for input before publication. The company did not have the right to require changes, but another provision prevented Soon and the CfA from revealing its involvement without prior notification. This is troubling indeed.

Many scientists receive funding from industry as well as from foundations. Private money for science can often have an agenda, and this is why transparency matters so much. (Global-warming sceptics say that government funding has the same taint, but this comes with an assumption of disclosure.)

CfA director Charles Alcock said that agreeing to provisions to limit disclosure was a mistake, and one that the centre will not repeat. Although it has no explicit rules on disclosure, the centre does expect scientists to follow the publishing rules that journals set out.

One thing does not add up. The CfA, after all, is launching an investigation into one of its own staff members on the basis of the evidence of its own documents, but only after it was forced to hand them to an environmental group under a Freedom of Information Act request. Whether or not Soon fully disclosed the source of his funding to all of the journals remains unclear, but the basic facts were always there.

Alcock says that his job is to protect academic freedom at all costs. Fair enough. But freedom comes with responsibilities. ■

A sore thing

The use of technologies that objectively measure pain must be carefully monitored.

Injuries and illness evoke sympathy, so why do we find it so hard to appreciate another's pain? Why, as William Shakespeare observed, when we encounter: “A wretched soul, bruised with adversity” do “We bid be quiet when we hear it cry”? One answer is that there is no objective way to measure pain. This is especially true for the enduring nature of chronic pain, when the original physical injury — if there was one — is long gone.

For the millions of people worldwide who truly suffer from some type of pain, such scepticism means that they go untreated. The problem is particularly acute for women who, for reasons that are poorly understood, are far more likely to experience chronic pain than men. Yet the stereotype of the ‘hysterical’ woman persists. Women are substantially less likely than men to receive prescription opiates; instead they receive sedatives or antidepressants.

The signal of pain sits in the brain, and researchers are inching towards ‘pain-o-meter’ brain scans that could replace or complement a person's subjective self-reporting of their suffering. An objective measure of the brain activity that accompanies chronic pain could go a long way to changing the public perception that people without obvious physical injuries are imagining or faking their condition.

As we explore in a News Feature on page 474, an increasing number of lawyers want to see the technique introduced as evidence in court, to help injured clients to prove that they are not malingering. Start-up companies are charging ahead to offer commercial scans as documentation.

This development makes many scientists and ethicists nervous. By scientific standards, many of the methods have not yet been tested on enough people to prove that they are accurate and impossible to cheat. In response, lawyers argue — fairly enough — that even if the tests are not statistically indisputable, there is no harm in providing one more piece of evidence to back up their clients' claims.

Much more worrying is the possibility that the technology will be

misused, forcing plaintiffs — or even patients — to prove that they are in pain to receive compensation, insurance coverage or pain medication. Although it is unlikely that physicians will begin routinely ordering expensive scans of their patients' brains before prescribing opiates, it is easy to imagine insurance companies wanting proof of chronic pain before they shell out for years of treatment.

Pain-o-meters have a research use as well. Several major pharmaceutical companies are already beginning to use such neuroimaging techniques to test new painkillers — a notoriously difficult task because of the myriad threads that create the mental tangle of the pain experience. Fear, depression, attention and the power of suggestion all colour a person's report of sensation. The end result is that promising analgesic drugs are thrown out because patients might not think they are helping, even if they are actually fixing the biological cause of the pain. An objective measuring stick could allow researchers to push this jumble aside, treat the pain, and then treat the factor that is making the patient think that they are still in pain. At the same time, a better understanding of what pain looks like could reveal new drug targets.

Discussion of chronic pain mirrors other debates in medicine, most notably the distinction frequently drawn between physical and mental suffering. Legal systems and society as a whole persist with the idea that mental anguish is somehow different and less important. US courts, for instance, allow compensation to be paid for physical injury, but rarely emotional injury.

Laws and attitudes have simply not evolved with the scientific understanding of the brain. The idea that illnesses such as depression or post-traumatic stress disorder are the result of physically disordered brain circuits is catching on. Neuroscientists are comfortable blurring the line between the physical and the mental as they search for the biological roots of disease.

Pain does more than blur the lines between the mental and the physical; it unites them. Because each individual's experience is the product of so many components, brain scans may not pick up what feels very real to the sufferer. Scientists know surprisingly little about how exactly chronic pain intertwines with emotional and mental processes, which seem to be responsible for perpetuating the feeling long after the injured nerves have healed.

Measuring pain might not make it go away, but it could still offer some relief. ■

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