

science evolved. At their worst, relativists maintained that scientific knowledge was entirely a social construct, no more 'true' than Galenic medicine or witchcraft. It is because this absurd argument still persists among some historians that Wootton's nuanced approach is needed.

But few historians of science are that extreme, and Wootton sometimes exaggerates the position of the milder 'relativists' who he says dominate the discipline today. For example, he takes particular issue with Shapin's highly influential 1985 collaboration with science historian Simon Schaffer, *Leviathan and the Air-Pump* (Princeton University Press), which argued that the reception of Boyle's experiments on gases and vacuums had as much to do with politics as with objective 'evidence'. But Shapin and Schaffer do not imply that Boyle's gas law is, as a result, mere convention. Rather, they challenge the naivety of the idea that science, proceeding openly and aloof from its sociopolitical environment, reaches incontrovertible truths by unassailable reason. Wootton's equally valid point is that the undoubted contingency of science's methods and context does not make its results any less reliable, or not always. The two views do not seem incompatible.

"What marks out modern science", Wootton writes, "is not the conduct of experiments ... but the formation of a critical community capable of assessing discoveries and replicating results". Science needed to be reported openly and debated by peers, as it was (after a fashion) in the Royal Society's *Philosophical Transactions*, the first true scientific journal, launched in 1665. It is a very plausible case, and one that most historians of science should not find too hard to swallow.

In any event, Wootton admits that he is seeking a middle ground: he comes not to bury relativism, but to curb its excesses. Far from renewing hostilities, this timely and thoughtful book should encourage historians of science to discover how much they agree on, and to refine the points of dispute. "The task," Wootton says, "is to understand how reliable knowledge and scientific progress can and do result from a flawed, profoundly contingent, culturally relative, all-too-human process." That is beautifully put and, in my view, right on the mark. ■

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DIGITAL PRIVACY

Subverting surveillance

Anthony King tours a playful exhibition that probes covert data collection and tracking.

When US computer analyst and government contractor Edward Snowden began lifting the lid on the covert surveillance activities of the US National Security Agency (NSA) in 2013, the social implications shocked even cynics. Now, *Secret*, the latest show at Dublin's Science Gallery, probes this dark side of the digital age through 23 eclectic exhibits.

Curated by Ian Brunswick, Marie Redmond, Tad Hirsch and Julian Oliver, *Secret* asks what is being hidden from us, what we are hiding and why. It pushes visitors to debate the automated collection of data by businesses and governments. And it prompts us to playfully subvert mass surveillance, echoing the gallery's 2012 exhibition *Hack the City* (see *Nature* **486**, 470; 2012) and its call to take back urban spaces and services.

Once inside the gallery, first up is *Please Empty Your Pockets* by artist Rafael Lozano-Hemmer — an exhibit inviting you to decant your possessions onto a conveyor belt with a scanner. It feels invasive as you divest yourself of your smartphone. And it reminds you that such 'exposure' is nothing compared to how our movements, conversations and personal data are collected, archived and utilized by others every day, often by means of smartphones set to track our every move.

You can fight back — for instance, throwing a spanner in the works of Big Brother by using artist Benjamin Grosser's *ScareMail*. This browser extension supplements e-mail signatures with spurious algorithm-generated narratives, replete with probable NSA search terms such as 'facility', 'plot' or 'dirty bomb'. E-mail-surveillance programs aim to detect certain keywords, so such bogus stories disarm them. Another browser add-on, *AdNauseum* by artist Daniel Howe and designer Mushon Zer-Aviv, blocks ads on web pages while simultaneously clicking each ad in the background — dual action that whitewashes a user's profile with a meaningless spray of data. Its anarchic aim is to fan mistrust between advertisers and ad networks.

Downstairs, you get a chance to sample the fruit of a bizarre digital accident. Artist Zoë Irvine unwittingly recorded two years' worth of her phone calls — but only her side of the conversation. In *Your Voice Is You*, you can listen in on a white rotary-dial telephone. Using voice-analysis

Secret: Nothing to See Here
Science Gallery, Trinity College Dublin.
Until 1 November.

Transparency Grenade by Julian Oliver explores the ease of leaking information.



software, Irvine has organized her one-sided chats under the categories truth, confusion, embarrassment, stress, excitement, anticipation and suspected lies. It feels oddly intrusive, even given Irvine's licence to eavesdrop.

Visitors can also play intelligence analysts in the interactive artwork *Crowd-Sourced Intelligence Agency* by Jennifer Gradecki and Derek Curry. Faced with 100 tweets from each of more than 26,000 Science Gallery Twitter followers, you are asked to tag a post as threatening, non-threatening or flagged for review by other agents, adding notes to explain your decision. "It opens up the process for people to participate in surveillance themselves," explains Gradecki. When a tweet is evaluated, the original poster is notified and given a link to the post on the artwork's website. The point? That such overt, democratic involvement is denied us when government or corporate entities explore social media.

There is a frolicsome flavour to the *Spy Puzzle Café* by artist Ruben Pater (working as Untold Stories), where you can test your puzzle-solving acumen by navigating a maze in the form of a portrait of Snowden. And there are special events: for example, you can try your hand at lock-picking in a two-hour workshop for the true enthusiast. Lock-picker and ethical hacker Martin Mitchell will reveal how to unlock devices by analysing and manipulating the components. Of course, it is what you do with this knowledge that matters; as exhibition researcher Zack Denfeld puts it: "We want to encourage impish curiosity."

This is a show that strives to teach, tease and irk visitors into considering the ubiquity of secrets and secret-breakers. There is enough thought-provoking fun here to deflect the worst of any angst over digital surveillance, even as it continues to nibble at our collective psyche. ■

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