163 ways to lose your job

Paul Collins on Thomas Edison and the 'brainmeter' craze

On 20 May 1921 excited crowds milled around Boston's railway station hoping to catch a glimpse of Albert Einstein, who was making his first visit to America's most famously learned city. After an impromptu tour, the physicist was whisked off to breakfast with the city's mayor and the governor of Massachusetts. Afterwards, as the diners relaxed over cigars, reporters lobbed the celebrated genius a question more fit for a teenager: 'What is the speed of sound?' Einstein was stumped. He didn't know off-hand, he admitted. 'EINSTEIN SEES BOSTON; FAILS EDISON TEST,' crowed the next day's headlines – and Thomas Edison claimed his most prominent victim yet in a 'brainmeter' craze that revolutionised public attitudes towards aptitude tests.

Early in 1921 New Yorkers who answered an anonymous job ad in *The New York Times* received a curious reply: they were to go to Newark, New Jersey, take an early-morning bus on the West Orange line to Thomas A. Edison Industries, and ask at the front desk for a Mr Stevenson. No letter of introduction or resumé was required. Applicants who followed the mysterious instructions found themselves ushered inside a laboratory and subjected to a barrage of 163 seemingly random questions: Is Australia larger in area than Greenland? Of what wood are kerosene barrels made? What is copra? Those looking up in bewilderment might have noticed Thomas Edison himself overseeing his latest invention: the country's most peculiarly influential and controversial employment test.

If Edison's recruitment strategy was novel, mental testing was not. Fifty years earlier, the English eugenicist Francis Galton explored ways of testing mental ability, which he believed followed a Gaussian bell curve, with most scorers falling near the average, tapering off on either side. Testing received a further boost in the US after the assassination of President James Garfield in 1881 by a disgruntled jobseeker, which prompted the Civil Service Reform Act and the introduction of competitive exams for many federal jobs.

Yet the most prominent early mental tests were for measuring not ability, but disability. The Binet test of 1905 was first used in France to identify children with special needs, though it was soon co-opted for measuring children of all abilities. During the First World War, the US army introduced its Alpha test to check the abilities of its literate recruits. Of the 1.7 million recruits tested, the top two scorers proved to be a former lumberjack and a professor at Yale.

Thomas Edison – whose inventions included a peculiarly influential and controversial employment test

But it was Edison's test that captured the public's attention. 'Men who have been to college I find to be amazingly ignorant,' Edison proclaimed to *The New York Times* in May 1921. Though he hadn't been to college himself, Edison was a great believer in its potential, and he professed bitter disappointment in his job candidates. 'They don't seem to know anything,' he grumbled. The home-schooled inventor revealed that as well as testing prospective employees, he had also subjected those already working for him to the 163-question test he had concocted himself. Employees who failed – 'XYZ men' in Edison's parlance, versus Grade-A men – were given a week's pay and sacked.

Public reaction was swift: 'Was any man ever kinder to his aged mother because he knew what copra is?' demanded *The New York Times*. 'Let him burn his questionnaire...[and] spare himself the mortification of someday seeing some of his XYZ's command the plaudits of the world.' Professors and students took umbrage at the implication that colleges should be filling heads with trivia. One fumed that it was 'not a Tom Edison test, but a Tom Foolery test', while a professor at New York University opined that 'a touching faith in higher education and a profound misunderstanding of its aims are often displayed by men who have succeeded without college training'.

After the complete test was leaked to newspapers, the questions spread across the country in a national craze. 'If You Cannot Answer These You're Ignorant, Edison Says,' declared one Pennsylvania newspaper, while police in Massachusetts picked up a deranged young man claiming that he was on the run from assassins who were after his book of Edison test answers, 'valued at $1,000,000'.

Journalists gleefully sprang Edison questions on politicians, professors and captains of industry. New York's governor failed; so did the mayor of New York City, its police commissioner and, rather alarmingly, its superintendent of schools. One particularly enterprising reporter tracked down Edison's son Theodore, a student at the Massachusetts Institute of Technology. He also failed. 'Dad would find me amazingly ignorant,' the younger Edison admitted.

His father faced a media circus: the Fox movie studio ran mock Edison tests of biblical trivia to advertise its 'super-screen spectacle' *The Queen of Sheba*, while ads for *Vogue* magazine assured women readers 'Never mind the Edison questions! All you need to know is how to be becomingly dressed'. Others were more seriously interested in its value: within days, the Eastman Kodak company announced a similar test for its employees, and the elite Groton School in Massachusetts extended its use to applicants.

Yet Edison insisted his test sprang from his belief that an employee's

reliability was linked in part to a good memory and attention to detail. 'Of course I don't care whether a man knows the capital of Nevada, or the source of mahogany,' he explained. 'But if he ever knew any of these things and doesn't know them now, I do very much care about that.'

Edison could point to his results as proof that he had isolated a specific mental ability, rather than a bell curve. Of 718 men who took the test, only 57 scored more than 70 per cent – the pass mark – and 32 of those scored more than 90 per cent. Rather than a well-populated middle ground, those tested appeared split between A-men who could answer the questions, and XYZs who believed Bengal was the capital of Maine, that tides caused the phases of the moon, and the 'candidate [who] reasoned that if the active principle of coffee is caffeine, that of tea ought in all fairness to be taffeine'.

Many testing experts found the Edison test crude and wrong-headed. 'It would be more sensible in testing a man's intelligence to ask how he would go about finding the answers to such questions,' pointed out Harvard psychologist A.A. Roback. And yet the attendant publicity was a fillip for the budding testing industry. The state of New Jersey soon awarded a top civil service job solely on the results of a three-hour questionnaire; the winner, as it happened, was a former Edison A-man. The administrator of the New Jersey test, Princeton psychologist Carl C. Brigham, went on to play a leading role in the introduction of what has became every American high schooler's *bête noire*: the College Board's Scholastic Aptitude Test (SAT).

Like the Edison test, the SAT stripped knowledge from context or process: only right and wrong answers mattered. How one reached them didn't count. And like Edison, the College Board sought to measure aptitude rather than any elusive quality that might be labelled intelligence. Critics argued that the test's potential for cultural bias made it suspect, and it hardly helped that Brigham had previously used the results of the army's Alpha test to push for anti-immigrant legislation – although he later renounced the notion of inferior nationalities. Brigham's SAT went on to be a permanent feature of American higher education.

Edison himself joined in the reinvention of his test for college applicants. In 1929, now 83, he announced a nationwide search for his intellectual 'successor' – beginning with a competition for a scholarship to MIT. Forty-nine finalists came to Edison's factory for an ice-cream social, a day out at Coney Island, and a day-long final exam conducted by the inventor himself, and marked by an all-star panel, including Edison, Henry Ford, Charles Lindbergh and George Eastman. The winner was Wilber Huston from Seattle. After recovering from the shock of being dubbed 'America's brightest boy', Huston went on to become mission director for the launch of NASA's Nimbus and Landsat satellites – proving that Edison could at least pick a rocket scientist out of a crowd. And though both the test and its creator soon passed into history, the fashion for mass short-answer testing that they popularised remained.

The Edison test's most famous flunker never did see its point, though. When he was caught out by reporters in Boston in 1921, Albert Einstein replied patiently that he didn't bother carrying information like the speed of sound around in his head. Why go to the trouble, he told them, when he could just look it up in a book?

Printed with permission from New Scientist Magazine, issue 9 August 2008. Copyright Reed Business Information Ltd.

Paul Collins *is Assistant Professor in the Department of English at Portland State University*
pcollins@pdx.edu

Flabbergasted – but not a shocker!

We have all heard about those that obeyed in Milgram's famous study – the majority of 'teachers' who were prepared to administer the full range of 'shocks'. But what about those who didn't?

A fascinating account from one of them, Joseph Dimow, was published in the 2004 issue of *Jewish Currents* (see www.jewishcurrents.org/2004-jan-dimow.htm – thanks to www.mindhacks.com for the tip). Dimow talks of the suspicions he had over the true nature of the experiment, the possible reasons for his resistance, and the significance of the findings.

Dimow writes of how his suspicions were aroused by 'the way the straws had been handled, by the idea that they would risk shocking a stranger, and by the fact that he, the professor, had been in the area with me the whole time and had never gone to observe the learner'. On receiving reassurances from Milgram and the 'learner', Dimow began the experiment and gave several shocks. 'With each, the learner's cry of pain became louder – and then he asked to stop, and I refused to go any further. The professor became very authoritative. He said that I was costing them valuable time, it was essential for me to continue, I was ruining the experiment. He asserted that he was in charge, not me. He reminded me that I had been paid and insisted that I continue. I refused, offered to give him back the five dollars, and told him that I believed the experiment to be really about how far I would go, that the learner was an accomplice, and that I was determined not to continue.'

According to Dimow, 'the most disturbing part of the entire experience' was when Milgram brought in the learner. 'I was flabbergasted. His face was covered in tears and he looked haggard. He offered his hand and thanked me for stopping the experiment, saying that the shocks hadn't really hurt but anticipating them had been dreadful. I was confused as to whether he was in earnest or acting. I left unsure, and waited outside for the learner so I could discuss it with him. After about a half hour he had not appeared, and I was convinced that he was an actor and that my suspicions about the experiment had been correct. The report that I received confirmed that the experiment was designed to see how far subjects would go in obeying orders to administer pain to others. It had arisen out of the desire to understand the widespread obedience to horrendous and brutal orders in Nazi Germany. The report also confirmed that the professor and learner were indeed actors, although not professionals – and I have always thought that they deserved Academy Awards anyway.'

Dimow attributes his resistance to his upbringing 'in a socialist-oriented family steeped in a class struggle view of society', his years of service in the army, and a 'position during the late 1940s as a staff member of the Communist Party... In the early 1950s, I was harassed and tailed by the FBI, and in 1954... I was arrested and tried under the Smith Act on charges of "conspiracy to teach and advocate the overthrow of the government by force and violence". We were convicted, as expected, and I was about to go to jail when the conviction was overturned on appeal. I believe these experiences also enabled me to stand up to an authoritative "professor".'

Jon Sutton