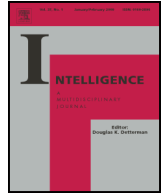




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Intelligence



Room 70: An exhibition on the life and work of Professor Sir Godfrey Thomson

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A recent exhibition (July 29th–Nov 26th 2016) at the University of Edinburgh Main Library chronicles the life and times of Sir Godfrey Thomson – and everything about it reeks of quality. Look at the promo USB stick; it's more tasteful than most of my jewellery. There's a 30-page full-colour brochure; a set of six colour postcards; a neat 'fast facts' pull-out, some weird little badges and a cool pin inscribed 'Room 70'. Man, they've invested in this gig. Even the dado is gorgeously half-panelled in tongue and groove to resemble the original Room 70 (Thomson's intelligence test research unit). There is a replica Room 70 door, a looped film and a specially commissioned piece of music. Why all this effort?

Ian Deary, Martin Lawn and David Bartholomew, three Thomson Musketeers, together with colleagues and helpers, invested heavily, for nearly a decade, in historical research. Who can fail to be charmed by the image of an august scholar scurrying on a bicycle to a just-in-time materials rescue from a demolition crew taking down the house that Thomson had built. The intrepid trio tracked down relevant artefacts and have mounted what is ostensibly a show about Professor Sir Godfrey Thomson, forgotten early Scottish IQ testing pioneer. Thomson is the cynosure, but this exhibition is about much more. It poses and answers the question 'what is IQ testing good for?'

Godfrey Thomson was largely responsible for a uniquely Scottish experiment that can reasonably be called the world's most significant IQ-testing programme. It is notoriously difficult to gather data from truly representative samples. Scotland killed it. The Scottish Mental Survey of 1932 tested the cognitive ability of most of the country's population of 11-year olds. The Moray House Test no. 12 (developed in Room 70 at Moray House under Thomson's supervision) was administered to

87,498 children in 1932. The population was re-tested in 1947 to find out whether the nation's intelligence was declining (it was not).

Thomson was very clear about the goal of IQ testing. Thomson aimed to identify "intelligent children who might be overlooked" for reasons including poverty, so that they could gain access to the "higher education likely both to make them happier in their lot, and useful to a society and civilisation which needs them". It is not hard to guess why this aspiration was dear to Thomson's heart. His mother had raised him alone; she was poor. A benefactor paid for Thomson's education because his exceptional talent had been spotted (he ranked third in England on a Queen's Scholarship). Thomson viewed improvements in the measurement of cognitive ability testing as a crucial component in creating educational justice for young people. Even bright children from poor backgrounds fared badly in conventional subject-based examinations because their schooling rarely prepared them sufficiently.

Evidence concerning Thomson 'the man' occupies the first room in the first of the three-room show. Unsurprisingly in a man who gained two Doctorates (one each in physics and statistics), the exhibits reveal a man of systematizing tendencies – he recorded his son Hector's development in regular two-hour sessions of word sampling. Hector grew up to become a classicist, and with the exquisite taste of a nominative determinist, he wed a woman called Andromache. Thomson's own marriage was a great success. His wife wrote, "We were superlatively happy. I would have given my life for him at any time in the 42 years of our married life". Doting father, uxorious husband, Thomson hit the trifecta by sustaining long close friendships with peers, "I was a better man for knowing him" (Sir James Duff). A well-meaning but signally deficient oil portrait (the design is adventitious rather than composed, and the palette infelicitously unifies Thomson's head with the bookcase), in this first room, reveals a man who impressed the painter, Westbrook, with his "terrific head". Westbrook wasn't wrong; it's a head all right. Big, and bristling with ideas.

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The expression of those ideas is manifest in the second room, in five cabinets: Thomson as educator, his theory of intelligence, testing Scotland's IQ, Scotland in miniature, and what, for me, was like being a Mormon and seeing the golden plates - the raw data from the world's first whole population IQ-type test. It is wonderfully, and surprisingly, moving to come face to face with this Cambrian stack of blue ledgers, carefully prepared so that just a few of the hand-written entries are visible (following permissions) including that of an eminent Scottish poet. I don't know how many published findings depend on these data, but that number is at least in the hundreds. The data have contributed to determining: basic descriptive properties of intelligence, such as its distribution; how that overlaps and varies between men and women; links between intelligence and other characteristics and, importantly, how childhood cognitive ability is linked to ageing, health and lifespan. Having read so many papers from Scotland's research engine, it's awesome to come face to face with the foundational mother lode.

Thomson held teaching in the highest esteem. He even turned down an unsolicited job offer from Karl Pearson, founder of the world's first statistics department (at University College London), in order to maintain his role as a leading educator. He favoured combining the Department of Education with a teaching college. Readers of this journal might be surprised to learn that, in Scotland, teachers once learned about individual differences in intelligence from leading experts. It was the best of times, it was the age of wisdom, pedagogically speaking. Although Thomson thought that objective intelligence tests would play a key role in matching children to a suitable education, he was passionate about his own tests, viewed them as being improvable and thought that major educational decisions should not depend on a single mental test score.

Thomson favoured comprehensive schooling. He thought that the most effective way of managing the huge natural variation that exists among people's cognitive abilities was to provide classes with a range of academic challenge within the same school. He considered that the slow exposure of students' IQ-type tests over time was more illuminating than a single snapshot (given that anyone can have a bad day). He assumed that comprehensive education would foster children's ability to move into classes that would provide a suitable academic fit. Selection, then, but within a single institution.

What about the children for whom higher education would not be a clear benefit? In Thomson's day, they seemed in less urgent need of assistance. In the years before WWII and its concomitant massive demographic transition from agriculture to industry, from countryside to the city, the precariat was not the unskilled; there were plenty of jobs. Thomson was much more concerned about the value to the country of identifying potential intellectual stars whose discoveries and inventions would raise living standards for all, and reduce the quotidian ugly toil that was the lot of the vast majority. "it is necessary to ask about the dependence of civilisation on intelligence and about the relative importance, to civilisation, of intelligence and other qualities".

Thomson famously (within psychometrics circles) argued with Charles Spearman about the structure of intelligence, a discussion that continued for around 30 years. If you do not live under a large rock you likely know that, to some extent, all cognitive abilities (such as reading, writing and algebra) overlap. The most replicated finding in the human behavioural sciences, this cognitive covariation merits the status of 'fact'. Why cognitive abilities covary to some extent is not

known. Spearman favoured a statistical hierarchical 'g' factor. Thomson thought that each ability taps something in the mind; he developed a 'sampling' theory of intelligence. Following Spearman's death, Thomson conceded that there probably is a general factor in intelligence. It is not yet clear whether Thomson's or Spearman's theory more aptly describe the cause of the mental matrix. Science grinds on and advances in genetics and neuroscience have set new quarries running. Elaborating the genetic and structural mechanisms, which cause us to pick out relevant stimuli from our environments and turn them into cognitive behaviour would have been difficult to probe without insights from the matrix of test scores. The all-positive correlation matrix of test scores may generate a hierarchical g factor, without that g being unitary at any biological level, other than perhaps the descriptive (such as brain integrity, or low overall mutation load to mention a couple of hypotheses). These contemporary pursuits are on show in the third room of the exhibition.

This third room showcases the work done since the great cohort IQ testing conducted in 1932 and 1947. The second wave of stunning IQ research in Scotland depends on a sample of people (the Lothian Birth Cohort) whose test scores in childhood are known and who now regularly take give data on traits from grip strength, to heart health, as well as 3D brain structural imaging. The exhibition guestbook knits the old and the new, "A revelation, a return visit will be necessary to better understand this fascinating information" wrote one member of the Lothian Birth Cohort. Another visitor wrote that her mother had been Thomson's housekeeper. These are lovely connections and contribute to the vitality of the exhibition, which attracted over 8000 visitors.

The exhibition deserves a permanent site. Showing the material history, and coupling quaint test items with personal histories is an excellent way to burst the membrane of the bubble that keeps public apart from intelligence researchers. A sensitively curated exhibition, like this one is not shrill, as articles can be. Putting the people together with the work, and the aims and uses of the research is an effective and natural way to show, not tell. This exhibition showcases a man worth knowing, a body of work that matters, and connects it with cutting edge biomedical research. It should be a fixture.

Further Reading

- Brody, N. (1992). *Intelligence*. San Diego: Academic Press (Chapter 1 Historical Background has good discussion of Thomson's and Spearman's contrasting views).
- Deary, I. J. (2014 July). An intelligent Scotland: Professor Sir Godfrey Thomson and the Scottish Mental Surveys of 1932 and 1947. *British Academy Lectures 2012–13* (pp. 95–132) <http://doi.org/10.5871/bacad/9780197265666.003.0005>.
- Deary, I. J., Lawn, M., Brett, C. E., & Bartholomew, D. J. (2009). "Intelligence and Civilisation": a Ludwig Mond lecture delivered at the University of Manchester on 23rd October 1936 by Godfrey H. Thomson. A reprinting with background and commentary. *Intelligence*, 37(1), 48–61 <http://doi.org/10.1016/j.intell.2008.07.005>.
- Lawn, M., Deary, I. J., Brett, C., & Bartholomew, D. J. (2009). Godfrey Thomson and the rise of university pedagogical study: a recorded lecture delivered at the University of Edinburgh in November 1950 by Godfrey H. Thomson: a transcript with commentary. *History of Education*, 38(4), 565–585 <http://doi.org/10.1080/00467600902916561>.

Link to Relevant Film Clip

Introduction to the exhibition (7 minutes), includes music specially commissioned by Professor Ian J Deary. <https://vimeo.com/175293625/0d1a00014cb> A short film about the exhibition can be found here: <https://www.youtube.com/watch?v=Z0bidTDX4ll&t=2s>.