



150 Years of Testing - A Critical Investigation of Morphing and Intersecting Paradigms in Educational Assessment

ISCHE 2022, Friday 2 September, 09:00-10:30

A6 SES 07.2: A Critical History of Testing,
Assessment, and Evaluation

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Outset of the presentation

Today, most education systems operate and develop within a triple-A triangle of attainment, assessment and accountability
→ the establishment of standards, measurability and comparability via data, numbers, and metrics.

We might update René Descartes' (1596-1650) ontological theorem *cogito, ergo sum* [I think, therefore I am] to *metitur, ergo est* [it measures; therefore, it is] to establish a precise understanding of this powerful current in education today

What is to be achieved with these studies [i.e. scientific tests]? Simply to get the best in the front row, to put everyone in their right place, to save time and energy in avoiding arbitrariness, and generally equip the nation for a struggle of survival.

Tybjerg, C. H. (1919). De psykologiske Undersøgelser i Amerika [The psychological studies in America]. *Tidsskrift for eksperimentalpædagogik*, pp. 79-81.

...tests and examinations have been used frequently to stop the education of students rather than as a mean to discover and encourage their distinctive qualities... We believe that every modern society rests upon a basis of competence which can be produced only through education. To produce such a level of competence, the educational system must be so organised as to discover and develop the individual talent latent in society and to guide such talent along productive lines.

OECD archive, STP (66)15, Report on Curriculum Improvement and Educational Development, Paris 16 Sep. 1966

Paradigms of Educational Testing

Trawling the research literature on contemporary and historical educational assessment reveal the existence of two recurring but morphing and intertwining knowledge paradigms associated with educational testing across time and place (two historical ideational strands):

- ▶ *An essentialist paradigm*
- ▶ *A dynamic paradigm*

In this presentation I work from the hypothesis that historical and contemporary testing and assessment policies and practices somehow relate to at least one of these two paradigms meaning that they contain some shared orientations, and meaning-makings as well as ontological and epistemological assumptions.

It is helpful to historically unpack these paradigms in order to disentangle agendas, priorities and understandings of assessment policies and practices in a situation where their paradigmatic nature is cloaked and where the paradigms are not necessarily commensurable.



Structure of the presentation

- Paradigm 1: The essentialist paradigm
 - *Definition and characterization*
 - *Historical manifestations*
 - *Contemporary manifestation*

- Paradigm 2: The dynamic paradigm
 - *Definition and characterization*
 - *Historical manifestations*
 - *Contemporary manifestation*

- Concluding reflections
 - *Common denominators*
 - *Differences*

The essentialist paradigm

- The core ideas in this knowledge paradigm is that the human body and its traits and abilities can be scientifically measured, and that the resulting data can be used to make inferences about education practice (identifying kinds of people).
- According to this paradigm, the purpose of education is to align education policy and schooling with what is biologically determined and possible and put everyone in their right place in society.

Currently much of our school's work rests on conjectures and assumptions, but what the Society, through its work, wants to contribute is that pedagogy and practical schooling more and more – as is the case in other scientific fields and other practical enterprises such as industry and agriculture – will be founded on rationally orchestrated research and the experiences that may be deduced from it.

Henning Meyer, 1933



Historical manifestations

- ▶ The paradigm has a very long history, going back to phrenology, the eugenics movement, and practices of IQ testing,
- ▶ A confluence of phrenology, craniometry, cephalometry, physiognomy, medicine, psychometrics, applied psychology, but also religious, and moral components.

When a child, according to tests made in class, or in a regular psychological examination, appears to have little intelligence, this Judgment, always delicate and complicated, can be weighed and confirmed by cephalometry ... a retardation of six years or more appears to me to be significant.

Binet, A. (1910) Les signes physiques de l'intelligence chez les enfants. L'Annee psychol., 1910, 16, 1-30, p. 11

Sometimes it is the duty for the Medical Officer – following upon reports from the Head Teacher of the Special School and the Educational Psychologist and after carrying out mental tests himself – to recommend that a child shall be permanently excluded as ineducable.

Excerpts from annual reports of the School Medical Officer in Birmingham, 1950-53



Fig. 341. — Negro.⁵⁵⁴



Fig. 343. — Young Chimpanzee.⁵⁵⁵



Greek.



Creole Negro.

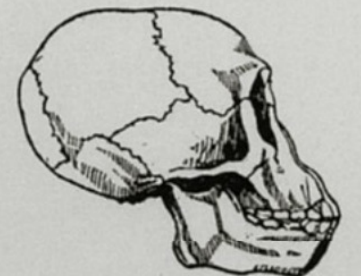


Fig. 344.⁵⁵⁸

The Frederiksberg test battery

- ▶ A performance test: Healy's picture completion test – used as a shock absorber to create a calm atmosphere.
- ▶ The Binet-Simon intelligence test.
- ▶ If necessary: Meyer's standardised tests from Gothenburg 1945.
- ▶ Performance tests: Goddard-Seguín form board, Porteus' maze test, Woodworth-Wells' substitution test, cube imitation, cube construction, Healy's construction test.
- ▶ Standardised attainment tests from the Educational Psychology Study Commission.
- ▶ In case of behavioural problems: the Rorschach test, the Murray Thematic Apperception Test, and the Düss-test.
- ▶ Observation of the child playing in the sandpit.
- ▶ Speak with the child in between the tests.
- ▶ Make a diagnosis.



21 JAN 1958

P37386 BS (a) R 1642/26

CITY OF BIRMINGHAM EDUCATION COMMITTEE
Special Schools After-Care Sub-Committee

No. S.E.M.3

Supervision STAT EX

Name [REDACTED]

Date of Birth 7-2-45

Address 86 HENLEY ST.
B'HAM 14

Age leaving School 13-

School CALTHORPE S.S.

Date of Admission 21-1-52

Date of leaving

Name and Address of
Parent or Guardian

Notified to Local Authority 21-1-58 Examined by Local Authority M.H.S. LIST 192 No, 9165

Home Conditions

General Ability 3-4-57, T.M.A. CA-12²/12, MA-5³/12, IQ 47.
FEB 1958 M.H.S. IMBECILE IQ 47.

Religion

If any Police trouble

Remarks



Contemporary manifestation of the essentialist paradigm

Gene learning, precision learning, neurobiology, neuroscience, and neuro-pedagogy (i.e., the translation of research findings on neural mechanisms of learning to educational practice and policy and to understand the effects of education on the brain).

Work by one of the pioneers of behavioural genetics, Robert Plomin, has shown that most of the variation in performance of children in English schools is accounted for by within school factors (not between school factors), of which the largest factor is genes.

Dominique Cummings 2013

Life is an intelligence test. During the school years, differences in intelligence are largely the reason why some children master the curriculum more readily than other children.

Plomin & Stumm, 2018

The relevance of neurobiology to education was recognized throughout the 20th century (e.g. Thorndike, 1926), but it was not until the 1990s and the “Decade of the Brain” that technological advances led to the theoretical advances that made educational neuroscience viable as a field → the International Mind, Brain and Education Society was founded in 2004.

Kathryn Asbury
and Robert Plomin

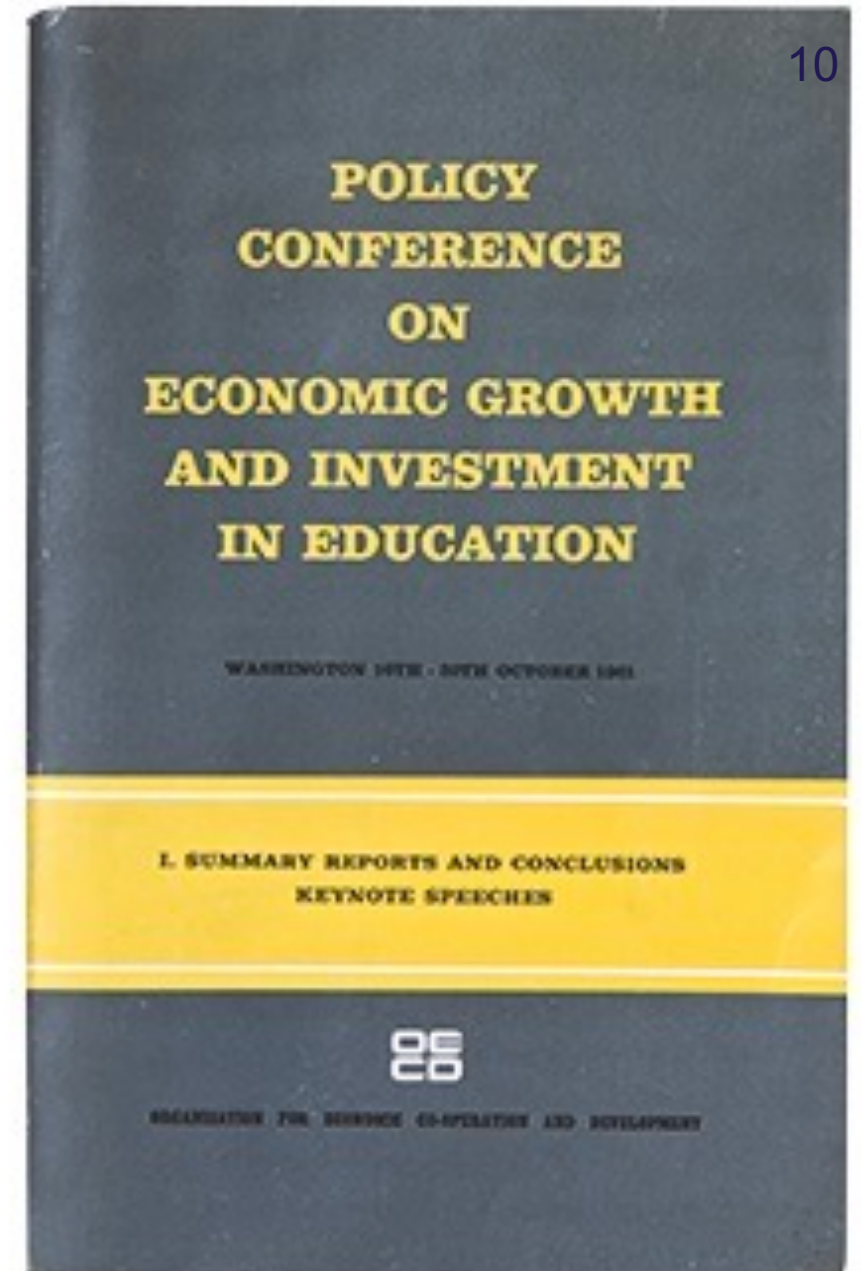
G is for Genes

The Impact of Genetics on
Education and Achievement



The dynamic paradigm

- This paradigm revolves around the desire to regulate the population and society in general and the economy and economic growth in particular (creating the right kind of people).
- Education is viewed as an economic production factor in general and as a tool for maximizing the outcomes of the human resources in particular.
- It essentially expresses an instrumental reason often guided by ideals about development and modernization.
- The purpose of education within this paradigm is to deliver an apt and educated workforce with the right competences for the labour market (human capital theory – the cultivation of skills and competencies).
- In terms of research, data, statistics, standards, and benchmarks become important tools for regulation and for making individuals, organizations, and institutions comparable, guided by ideals about the optimization of society.
- Accountability – an agent is being held to account by a principal



Historical manifestations

Historically, the pillars underpinning this paradigm in education have been human capital theory and concerns about educational investment optimization, effectiveness, manpower planning, and the question of how education can sustain economic success.

We may then conclude that the wisdom of expending public and private funds on education is not to be measured by its direct fruits alone. It will be profitable as a mere investment, to give the masses of the people much greater opportunities than they can generally avail themselves of.

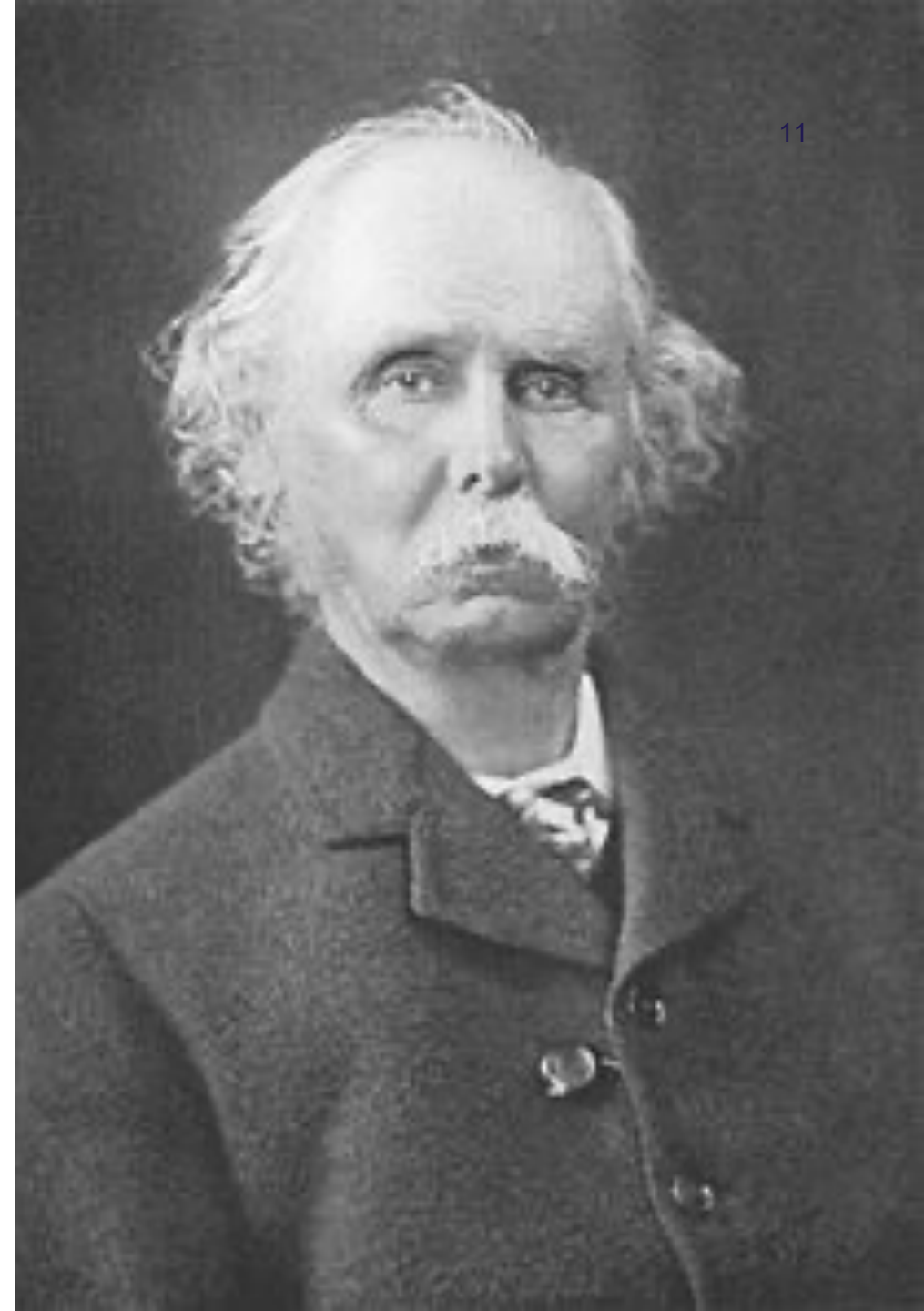
Alfred Marshall (1842–1924) 'economics textbook' 1890 (§7)

- ▶ WWII → Douglas Aircraft Corp. → Ford foundation and RAND
"Systems Analysis and Education"

"We went out to the RAND Corporation and got Joe [Joseph E.] Kershaw, who was then head of their economics department and getting very tired of working on weapons systems, to take a colleague and go sit in a local school system for a couple of months and see if "systems analysis" could be applied to a public school system"

Philip Hall Coombs, head of the Ford Foundation's Fund for the Advancement of Education

The school effectiveness movement of the late 1970s focusing on 'effective schools' and the identification of best practices in pedagogy and school leadership.



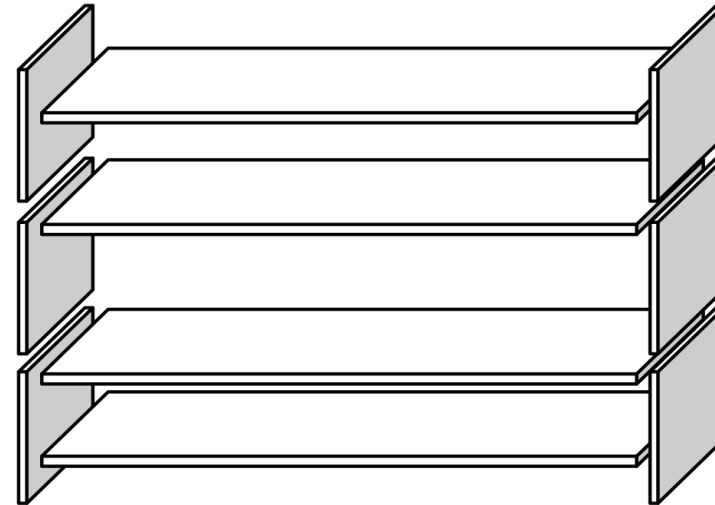
"Real world" test item from PISA

Question 1: BOOKSHELVES

M484Q01

To complete one set of bookshelves a carpenter needs the following components:

- 4 long wooden panels,
- 6 short wooden panels,
- 12 small clips,
- 2 large clips and
- 14 screws.



The carpenter has in stock 26 long wooden panels, 33 short wooden panels, 200 small clips, 20 large clips and 510 screws.

How many sets of bookshelves can the carpenter make?

Answer:

Contemporary manifestation of the dynamic paradigm

- ▶ Yufan, Du (2022) "Application of the Data-Driven Educational Decision-Making System to Curriculum Optimization of Higher Education", <https://doi.org/10.1155/2022/5823515>
- ▶ OECD's Programme for International Student Assessment. PISA measures 15-year-olds' ability to use their reading, mathematics and science knowledge and skills to meet real-life challenges.
- ▶ The OECD Initiative on Employment and Skills Strategies. In October 2017, the annual meeting of the initiative meeting was hosted in Hanoi, Vietnam with a focus on "Building Talent for the Next Production Revolution" (OECD 2017, p. 48).
- ▶ The OECD's 'Future of Education and Skills 2030' programme, which seeks to redesign and implement curricula using a 'more evidence-based and systematic' approach while developing a conceptual framework for Learning 2030 and a framework for Teaching 2030 (OECD 2019, p. 22).



21st-Century Readers

DEVELOPING LITERACY SKILLS IN A DIGITAL WORLD



Programme for International Student Assessment

Concluding reflections

It can be difficult to discern the two paradigms at surface level... they are often intertwined and intersecting.

➤ Multiple common denominators:

- Turning children into measurable and classifiable beings for the sake of an efficiently organised society
- A lens of deficit (something potentially wrong with the testtaker)
- (Neo-)positivism (ontology) and quantification (epistemology)
- Direction towards the future (promissory component – implications for creating a better society)

➤ But also multiple differences:

- Dynamic versus static idea about the child – are children's abilities, talents, faculties moving (moving) or fixed (static) targets?
 - Purpose of assessment – determine to handle/act/intervene or determine to improve/act/intervene
 - Norm group in order to determine normality/deviance (Bell-curve thinking) versus comparability and relativity
 - The strong accountability component associated with the dynamic paradigm requires agency (accountability chains)
- Assessment technologies, programs and instruments in education have considerable impact on students' lives → historical research holds the potential to critically reflect on the implications emerging from the assumptions and conditions built into assessment technologies, programs and instruments and thus to see options more clearly.

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