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Contents

1	Background	1
1.1	Contemporary eugenics: An introduction	2
2	Research programme	3
2.1	Thesis statement	4
3	Justification of the thesis	4
3.1	The Bell Curve and education policy	4
3.2	Building a chain of causation	5
3.3	Shockley and Jensen unravel progress	6
3.4	Eugenic thinking, psychometric testing, and school segregation . .	7
3.5	IQ testing, educational attainment and rote learning	10
4	Discussion	10
4.1	Limitations	10
4.2	Further research	11
5	Conclusions	12

1 Background

Towards the end of the nineteenth century, a polymath scientist called Francis Galton founded the field¹ of social engineering *eugenics* (Carlson, n.d.) — which

¹It should be noted that by contemporary standards, the descriptive research created by eugenicists lacks scientific merits.

can be defined as “*the practice or advocacy of controlled selective breeding of human populations (as by sterilization) to improve the population’s genetic composition.*”² In its most extreme form, eugenics research justified genocides in nation-states associated with the *Axis Powers*. Such genocides targeted ethnic minorities, neurodivergent persons, homosexual persons and other “inferior” groups (Eugenics Archive, n.d.).

During this time, America’s urban sectors began to experience both economic and social instability, and the notion of “survival of the fittest” failed to explain the hierarchy between working class and capitalist class because the working class were organising against the capitalist class and having children at a higher rate (Allen, n.d.). America, along with other nation-states, adopted eugenics as one of many potential compromises which allowed for America to remain capitalistic and at the same time prevent the working class from overthrowing the capitalist class.³

The eugenics movement was very successful in integrating itself into American popular culture in the first half of the twentieth century (Selden, n.d.). But as America and other nation-states started to fight each other in World War II, eugenics quickly became unpopular (Levine, 2017, pp. 97–119). In particular, the genocidal aspects of Nazi Germany’s eugenics programmes caused the eugenics movement in America to become unpopular literally overnight.

1.1 Contemporary eugenics: An introduction

After World War II, eugenics remained a totally discredited field until William Shockley and Arthur R. Jensen mainstreamed the race and IQ debate.⁴ The former scholar⁵ was a physicist and electrical engineer who famously invented the transistor. In the year 1956, Shockley and his collaborators won the Nobel Prize in physics for their work on the transistor, and Shockley started up several technology companies in Northern California— where some of its city areas would later be known as *Silicon Valley* (Shurkin, 2006, pp. 150–189).

Later in Shockley’s life, he became physically disabled after a car accident and his ability to do physical exercise decreased.⁶ Shockley would then attend a Nobel conference called *Genetics and the Future of Man* which introduced himself to the ideas of applying science to solving social problems (Shurkin, 2006, p. 193).

²Merriam-Webster (n.d.). *Eugenics Definition & Meaning*. Retrieved on Jan. 28, 2023 from: <https://www.merriam-webster.com/dictionary/eugenics>

³*Ibid.*

⁴See Southern Poverty Law Center (n.d.-a) and Southern Poverty Law Center (n.d.-b) for a general overview of Shockley and Jensen, and their work in the new eugenics.

⁵To clarify, I am referring to William Shockley.

⁶*Ibid.*

Later, Shockley met Arthur Jensen and the former influenced the latter's thinking about genetics, race and IQ.

Arthur Jensen eventually published an article entitled *How Much Can We Boost IQ and Scholastic Achievement?* (Jensen, 1969), where argued that heritability estimates⁷ demonstrate that additive genetic effects is the majority of the variance explained in IQ scores,⁸ implying that differences in average IQ in certain ethnic groups are, to some degree, caused by genetic variants.⁹ After Jensen's article, eugenics and race "science" is now a mainstream discussion amongst academics.¹⁰

2 Research programme

One "side-effect" of eugenics research that this paper intends to investigate is how it managed to influence public policy regarding the American education system. Eugenacists were mainly interested in studying mental traits¹¹ and devised a related, but nonetheless separate, scientific discipline of psychometrics.

Jensen (1969) made two main points relevant to my inquiry: that IQ scores are heavily influenced by genetic variants, and that individuals with lower IQs should be taught with a rote memorisation pedagogy, as opposed to an approach that is allows for student autonomy.¹² This paper intends to investigate whether-or-not modern eugenics research after Jensen's *Harvard Educational Review* paper heavily influenced how today's schoolteachers do their work. If so, to what degree? In what qualitative manner did Jensen's paper influence schoolteachers?

⁷In Jensen's biostatistical model, $V_G(x)$ represented the variance explained by additive genetics and $V_E(x)$ represented the variance explained by environmental causal agents. The $V_E(x)$ is the sum of $V_{\text{shared environment}}(x)$ and $V_{\text{non-shared environment}}(x)$. The $V_{G(\text{Between})} = .45$ and the $V_{E(\text{Between})} = .12$, whilst the $V_{G(\text{Within})} = .35$ and the $V_{E(\text{Within})} = .08$ —implying that additive genetics explains more of the variance in IQ scores than the shared and non-shared environments of twins, be they identical or dizygotic. I adapted this information in Table 1 from Jensen (1969).

⁸"Variance explained" is defined, in this context, as a fraction of $IQ_R \div IQ_T$, where IQ_R is the sum of the differences of an individual's IQ and the variance component's prediction of the individual's IQ, and IQ_T could be seen the sum of the differences of an individual's IQ and the average IQ of a population.

⁹There is a difference between "variance explained by additive genetics" and "caused by genetic variants." The former refers to a statistical construct that explains what per cent of individuals' IQ are explained by additive effects of genes, whereas the latter refers to specific genetic variants directly affecting a person's IQ score.

¹⁰As noted by the Southern Poverty Law Center (n.d.-b).

¹¹They also studied less subjective traits like height, eye colour and inherited physical illnesses, but they put much emphasis on mental traits.

¹²Such as the *Montessori Method*; see *What is Montessori Education?* – Retrieved on Jan. 28, 2023 from: <https://amshq.org/About-Montessori/What-Is-Montessori>

2.1 Thesis statement

In this paper, I claim that a mainstreaming of the debate on race, biology and IQ¹³ differences, and the increase of both IQ testing and high-stakes testing¹⁴ and the increased use of rote-teaching methods are a contributing cause to schools segregating by IQ scores and high-stakes testing, which in turn is a contributory cause to the consequence of a normalisation of high-stake testing and inequality between different social groups.

3 Justification of the thesis

As discussed earlier, the Jensen (1969) review article made way for more race and IQ research to be done. Nearly three decades later, two influential social scientists, Richard J. Herrnstein¹⁵ and Charles Murray,¹⁶ published an influential academic tome called *The Bell Curve*¹⁷ (Herrnstein & Murray, 1996) which attempted to demonstrate the construct validity of IQ measures by using a statistical technique called *multivariate logistic regression analysis* to work out various probability measures of someone having some dichotomous sociological feature. Typically, these sociological properties are undesirable¹⁸ and their probability of having the property will decrease as one's IQ increases.

The Bell Curve later discusses the differences in IQ scores between different ethnic groups and genders, and in the end, it proposed decreasing financial support for America's welfare state, and eliminating affirmative-action and other positive-discrimination programmes to assist disadvantaged groups.

3.1 The Bell Curve and education policy

Richard Herrnstein died shortly before the publishing of *The Bell Curve*, and Charles Murray has spent the majority of his career writing and publishing books related to public policy. Another book that he has written that is relevant to my thesis called *Real Education* (Murray, 2009). Here, Murray uses IQ testing and

¹³In this paper, I may use intelligence and IQ interchangeably. Unless specified otherwise, intelligence will refer specifically to IQ testing

¹⁴High-stakes testing is the use of tests for educational attainment as a significant factor as to how much funding to provide a school. Educational attainment refers to tests that supposedly measure whether-or-not the testee has mastered a particular subject matter.

¹⁵A behavioural scientist at Harvard University.

¹⁶A public policy analyst at the *American Enterprise Institute*.

¹⁷The Bell Curve has not been formally peer-reviewed.

¹⁸Such as the probability of dropping out of high school, the probability of being interviewed by law enforcement, et cetera.

Gartner’s theory of multiple intelligences to argue in favour of four basic points: that “ability varies,” that “half of children are below average,” that “too many people are going to college,” and that “the future of a nation-state depends on how the academically gifted are educated.”

Murray then proposes various solutions to the problems that face America’s education system, which include: large scale experiments to demonstrate his thesis, psychometric testing for all students, extended disciplinary measures, individualised learning programmes for gifted students, vocational education, certification programmes as a means to “undermine the [Bachelors of Arts degree],” the implementation of a charter school system, and teacher accountability.

The Bell Curve and Charles Murray did indeed have some impact on America’s education policy. One interesting fact is that its contents and excerpts of the book have been discussed in college courses (Price, 1996), though most students are often savvy enough to not believe in its conclusions.¹⁹ Ifill (2000) notes that Murray and his works have helped to influence public policy in eliminating the welfare state and reinforcing the negative connotation of a “welfare queen.” Other scholars such as Gordon and White (1998), and Gould (1996, pp. 367–390) have noted that Murray was able to influence many civilians and policy makers with their work.

From this, it is fair to suspect that Arthur Jensen and Charles Murray’s ideas, and the ideas of other eugenicists had, to some degree, influenced educational public policy. This paper intends to demonstrate this to be the case.

3.2 Building a chain of causation

I propose the following causal model to explain the situation in question:

Let a_1 be William Shockley’s discussions with Arthur Jensen, a_2 be the publication of the Jensen (1969) article, a_3 be the mainstreaming of the race, biology and IQ debate, a_4 be an increase in the use of IQ tests, a_5 be an increase in the use of educational attainment tests, a_6 be schools segregating by IQ tests or high-stakes tests, a_7 be the normalising of rote-teaching methods, c_1 be a normalising of high-stakes tests and c_b inequality between different social groups. The following propositional calculus models my idea of how such events have unfolded:

1.	$a_1 \Rightarrow a_2$
2.	$a_2 \Rightarrow (a_3 \wedge a_4 \wedge a_5)$
3.	$(a_3 \wedge a_4) \Rightarrow a_6$
4.	$(a_4 \wedge a_5) \Rightarrow a_7$

¹⁹*Ibid.*

5.	a_1
6.	$(a_6 \wedge a_7) \Rightarrow (c_1 \wedge c_2)$
7.	$\therefore c_1$
8.	$\therefore c_2$
9.	$a_2 \therefore$ Modus Ponens, Ln. 1, 5
10.	$a_3 \wedge a_4 \wedge a_5 \therefore$ Modus Ponens, Ln. 2, 9
11.	$a_3 \wedge a_4 \therefore$ Simplification, Ln. 10
12.	$a_4 \wedge a_5 \therefore$ Simplification, Ln. 10
13.	$a_6 \therefore$ Modus Ponens, Ln. 3, 11
14.	$a_7 \therefore$ Modus Ponens, Ln. 4, 12
15.	$a_6 \wedge a_7 \therefore$ Conjunction, Ln. 13, 14
16.	$c_1 \wedge c_2 \therefore$ Modus Ponens, Ln. 6, 15
17.	$c_1 \therefore$ Simplification, Ln. 16
18.	$c_2 \therefore$ Simplification, Ln. 16

In other words, Arthur Jensen’s conversations with William Shockley influenced him to publish the review article (Jensen, 1969), which caused the mainstreaming of the relationship between race, biology and intelligence, an increase in IQ testing and an increase in educational attainment tests. In turn the presence of the mainstreamed debate and IQ testing caused the segregation of schools by IQ or high-stakes testing, and the increase in IQ testing and educational attainment testing led to the normalisation of rote-teaching methods. The consequences of all of this is the normalisation of high-stakes testing and increasing inequality between different social groups.

It should be noted that the causal model presented above is a somewhat *oversimplified* account of history. This simplification makes the historical analysis easier to comprehend and demonstrate with historical facts and other observations, but in doing so it “misses out” on a lot of other important events going on “behind the scenes.” I will discuss these limitations more later in this paper.

3.3 Shockley and Jensen unravel progress

The first and fifth premise are both fairly easy to demonstrate. Scholars have already established that William Shockley and Arthur Jensen were allied by their attempts to rehabilitate the race, biology and intelligence debate (Bird, 2019; Shurkin, 2006, pp. 215–244). Furthermore, one can confirm the existence of the Jensen (1969) paper simply by querying it in the archives of the *Harvard Educational Review*. Nonetheless, I do think that discussing the mainstreaming of the race, biology and intelligence debate may provide the reader some context on

how influential to society it was and still is. I will cite scholars who have already shown how the Jensen (1969) paper mainstreamed the race, biology and intelligence debate, and put an emphasis on IQ testing and educational assessment tests.

Scherz (2021, p. 64) noted that the discussion of biology's application to sociological problems have been more extreme. They cite a biologist and science journalist called Nicholas Wade as an example. Wade has claimed that there are genetic differences between African, Asian, European and Austonesian populations, using this to construct a basis of race "science" and attempts to demonstrate that there are differences in intelligence, as measured by IQ tests. Scherz also notes that the quantitative and research tools used by sociobiologists, evolutionary psychologists and behavioural geneticists—all of whom study some combination of race, biology and intelligence—have developed in a eugenic context.

In two book reviews, Comfort (2018, 2022) noted that behavioural geneticists are relying too heavily on a Mendelian interpretation of genetics when research intelligence and other behavioural traits. Comfort discusses a relatively new technique in quantitative biology: *genome wide association studies*, or the GWAS. This research method involves scanning genomes for genetic variants and correlating them to behavioural traits, and behavioural geneticists are using it to predict the probability of what one's resulting IQ score would be based on their genome.

Behavioural geneticists would then give "personalised" education plans to every student, and while this may be well intentioned, it does reflect eugenic policy to some degree because it relies heavily on genetics in the social engineering of students. Plant biologist Bird (2021) is in agreement with Comfort.

Finally, Carlson (2009) give a history of the eugenics movement and its effects on American education system. I will elaborate on their work later, but it is worth mentioning here as they give a similar account of how the eugenics movement caused the American education system to become more segregated and adopt standardised testing.

3.4 Eugenic thinking, psychometric testing, and school segregation

The main objective of this paper is to demonstrate the third, fourth and sixth premises. The third premise states that the increase in IQ testing and an increase in educational attainment testing has caused schools to be segregated by IQ tests or high-stakes tests. Stoskopf (2002) and Carlson (2009) both draw parallels from the twentieth-century eugenics movement to America's modern education system. They both note that psychologists like Lewis Terman, Edward Thorndike and H. H. Goddard developed IQ tests to identify individuals who are "feeble-minded," and the proceed to segregate them into institutions and sterilise them. Immigrants

coming to the United States were given these IQ tests and if they scored low, they were banned from entering the state.

There are a number of key facts in the twentieth century eugenics movement to take note of here:

- **Fact 1:** Eugenic-minded psychologists such as Lewis Terman, H. H. Goddard and the other eugenicists believed that low intelligence was caused by a recessive allele pairing in some gene in an unidentified locus. (Stoskopf, 2002, p. 127)
- **Fact 2:** Terman and Goddard were convinced that undesirable traits, such as crime or poverty, were caused by low intelligence. (Stoskopf, 2002, p. 127)
- **Fact 3:** Public education was under attack by entities that deemed it “inefficient” and unaccountable when “producing” their product—the student in this case. (Stoskopf, 2002, p. 128)
- **Fact 4:** Terman conceptualised a link between eugenic thinking and an industrial model of education. (Stoskopf, 2002, p. 128)
- **Fact 5:** Terman (1916, pp. 91–92) stated that no amount of schooling could make people in the working class intelligent, that “Indians, Mexicans and negroes” have a “prevalence” of “deficiencies,” and that they should be segregated into classrooms that are less academic and more practical.
- **Fact 6:** More than one-hundred and thirty (130) different standardised tests were used to classify students into classes to be segregated into, and that these tests put disproportionate numbers of ethnic minorities and immigrants into non-academic classes (Stoskopf, 2002, p. 129).

Stoskopf, along with Carlson (2009), drew parallels between the twentieth century eugenics movement and America’s twenty-first century education system. The reader is inclined to ask themselves “how can it be demonstrated that the mainstreaming of the race, biology and intelligence debate, and an increase in the use of IQ testing, caused segregation in the working class and ethnic minorities?”

A tool that can be used to demonstrate that the mainstreaming of the debate on race, biology and intelligence, and the overemphasis of the quantitative assessment of intelligence both acted as contributing factors to the high-stakes testing is the *argument by analogy* (Bartha, 2022) where this paper intends to find

enough similarities between eugenic thinking and the causal agent that this paper is attempting to demonstrate. In this case, the best way to draw an argument by analogy is to compare all of the key facts discussed earlier to observations on America's modern education system.

Starting off, the first and second key facts that low intelligence is the product of heredity, and that low intelligence causes undesirable traits such as crime or poverty, is thriving in today's modern education system. Herrnstein & Murray (1996) infamously argued this, and the notion that low intelligence is inherently bad is embedded deeply in American culture to the point that ableist epithets such as "stupid," "idiot" and "moron" is common place (Freedman, 2016). Furthermore, Murray (2009) argued that "ability varies," and that those who score low on intelligence tests,²⁰ should be put on non-academic and practical or trade education tracks.

The third and fourth key facts regarding the eugenics movement involve the attack on public education for being "inefficient" and "unaccountable," and needing to be implemented like an industrialised model is seen in the modern American education system today. Arthur Jensen was amongst one of the first in America's modern education system note that school integration was going to fail (Southern Poverty Law Center, n.d.-b). American think tanks, such as the likes of the *Heritage Foundation*, have written about what they see as the inefficient and unaccountable aspects of public education (Schwalbach, 2018; Lips, 2008).

America's modern education system has also seen a corporatization of its university systems where education and scholars are treated like a product and service worker (Clay, 2008). In its elementary and high schools, some schoolteachers are taught to be like workers in a factory. Teachers in training tell a story of how educators are like blueberry processing plants, who have to select out "defective" berries coming from a conveyor belt and discard them (Carlson, 2009).

The fifth key fact regarding the eugenics movement involves how no amount of education can make an "defective" individual educated in the liberal arts, and that the lack of support to this "defective" subset of students disproportionately affected ethnic minorities, recent immigrants, and the working class. There is a similarity in America's modern education system as García (2020) notes that uneven distribution of resources by ethnic and working class groups has widened, and that black students are mainly effected.

The sixth key fact regarding the eugenics movement involves the heavy use of standardised testing in their education systems. It is fairly easy to demonstrate that America's modern education system uses not just standardised testing, but also high-stakes testing, as Stoskopf (2002); Carlson (2009); Hunter-Doniger (2016) have shown. Given that both the eugenics movement and the American modern

²⁰Be they IQ tests or in one of the subsets of Gartner's theory of multiple intelligences.

education system share many characteristics in common, it is fair to construct an argument by analogy stating that the American modern education system is like the policies proposed by the twentieth-century eugenics movement.

3.5 IQ testing, educational attainment and rote learning

A tendency to rely on IQ testing and educational attainment tests had an effect on how teachers go about teaching their subject matter. Hunter-Doniger (2016) has written much about how eugenic thinking in the twentieth-century has found itself in America's modern education system. They start by noting the overemphasis on STEM education and that ethnic minorities are less likely to be exposed to the liberal arts (Hunter-Doniger, 2016, p. 1). They then go on to state their thesis that eugenic thinking "lurks" in this overemphasis in STEM education and briefly discuss the history of eugenics in the United States (Hunter-Doniger, 2016, p. 1–3).

As the eugenics movement was establishing itself in America, liberal arts education was beginning to formalise itself into educational institutions (Hunter-Doniger, 2016, p. 3). A committee of ten schoolteachers in the twentieth-century recommended eight (8) years of elementary education and four (4) years of high school education, and that students are treated equally—which was heavily challenged by the eugenics movement (Hunter-Doniger, 2016, p. 3). They then go on to discuss how eugenic thinking created an artificial hierarchy of academic disciplines, with science and STEM education on the top and the liberal arts on the bottom, and how the Carnegie Foundation had an influence on how twentieth-century American education worked out (Hunter-Doniger, 2016, p. 5).

In particular, the Carnegie Foundation introduced a "Carnegie unit" to quantify how much time a student spent studying a subject matter. The hard sciences would have more Carnegie units than those of the liberal arts. This devaluing of liberal arts education reflected Herbert Spencer's disdain of the liberal arts (Hunter-Doniger, 2016, p. 5–6). Finally, they end their article by discussing how IQ testing, educational attainment tests affected how teachers, even teachers of liberal arts subject matters, used a rote method to teach their subject matter (Hunter-Doniger, 2016, p. 6–8).

4 Discussion

4.1 Limitations

As previously discussed, the research methods of this historical account of the eugenics movement is highly rigid and somewhat reductionistic. I use propositional

logic to organise facts and their relationship to historical events and causality, which unfortunately leaves out a lot of other important phenomena going on “behind the scenes.”

A more sophisticated approach of *historiography* applied to the eugenics movement and the American education system is recommended to get a holistic perspective about its history. This paper examined a “narrow road” that contributed to a specific aspect of America’s modern education system. I recommend that the reader consults as many publications— be they academic, popular or even self-published— on the eugenics movement, the American education system, or even publications that discuss the relationship between the two, as possible.

Furthermore, the method of *argument by analogy* is my main tool for demonstrating a causal link between events. In order for an argument by analogy to work, the things being compared and contrasted must have all of its properties being identical to each other with the exception of the “key” property being contrasted (Weston, 2008, pp. 31–36). When making analogies between things that are the subject of historical study, it is self evident that the properties being compared, whether a historical artifact or an event, are not going to be exactly the same in all of their properties with the exception of the one difference in the “key” property being studied. That will introduce limitations to the conclusions drawn by this historical research paper.

Finally, a lot of this paper’s propositions were defended by citing authorities who have previously done their research without an attempt at reproducing their work. I could not do this because of time constraints and a lack of indepth understanding of the historical subject. I urge the reader to follow the citations and do their own research if they can.

4.2 Further research

It may be worth looking into how the eugenics movement may have institutionalised the hard sciences, engineering, and trades, and “palling” them in the process. Here, I do briefly want to discuss how the eugenics movement made technical fields more boring by citing what other scholars in some of these technical fields believe.

Lockhart (2009) argued that mathematics is as much of a liberal art as music or illustration, and that the only difference between mathematics and other liberal arts is that contemporary Western cultures do not recognise mathematics as such. He discusses how formal and rote-teaching teaching, the kind of teaching that was recommended by Jensen (1969) and Murray (2009), has made mathematics more boring and dull, and how allowing children to discover mathematical constructs and “struggle” a bit when doing so would make for a more wholesome experience when learning mathematics.

Akmut (2019) has argued, through a somewhat cryptic monologue, that the field of computer science, what many would classify to be a “STEM” field, can be looked at as a social science or a liberal art. Assuming that I am understanding their writings correctly,²¹ they are trying to say that both the hardware and software that makes up computers are socially constructed, and that computer science is a subset of social science because of its social nature. Therefore, computer science is a part of the liberal arts. If this is indeed the case, then computer science should be taught like philosophy or anthropology. Similarly, a philosopher called Matthew Crawford initially found work at think tanks and other institutions that aim to affect public policy. Realising that there is not much “thinking” going on in these institutions, they opted for work in the trades, and discovered that there is a lot of intellectual value in mechanical or materialistic work.²²

The work of these three scholars do beg the question: *did eugenics education have an effect on how what Western society would call “STEM education” is taught?* Hunter-Doniger (2016) did demonstrate and discuss how eugenic thinking devalued the liberal arts, influenced how arts teachers tried to conform to eugenic-minded pedagogy, and did briefly discuss how eugenic-minded pedagogy influenced how science and technical teachers taught their subject matter. Nonetheless, it would be interesting to explore these ideas further.

5 Conclusions

Despite its flaws, this paper has demonstrated some degree of a link between the eugenics movement and America’s modern education system. Jensen (1969) and Murray (2009) have been successful in their agenda to introduce rote based pedagogy in both the elementary and high schools, and the university. Jensen and Murray were also successful in their agenda to segregate the public school system, and may even succeed in completely privatising it in the future. The effects of eugenic thinking has caused segregation in the public school system that is arguably worse than it was in the early twentieth-century.

To reverse segregation and make society more equal, the civilians that make up said society must learn to move away from its beliefs in radical individualism and worship of exceptional individuals. It is alright to admire someone for their achievements, but not to the point that it causes a positivist thinking and tendency to inquire at what causes differences in whatever arbitrary measure of intelligence or “human worth.”

²¹I do recommend that the reader reads Akmut’s article to get a more accurate look at what they said.

²²See their book (Crawford, 2010) to learn more of their experiences.

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