The Inappropriately Excluded

HAWKING

by Michael W. Ferguson

The probability of entering and remaining in an intellectually elite profession such as Physician, Judge, Professor, Scientist, Corporate Executive, etc. increases with IQ to about 133. It then falls about 1/3 by 140. By 150 IQ the probability has fallen by 97%! In other words, a significant percentage of people with IQs over 140 are being systematically and, most likely inappropriately, excluded from the population that addresses the biggest problems of our time or who are responsible for assuring the efficient operation of social, scientific, political and economic institutions. This benefits neither the excluded group nor society in general. For society, it is a horrendous waste of a very valuable resource. For the high IQ person it is a personal tragedy, commonly resulting in unrealized social, educational and productive potential.

The very limited research that has been done on this phenomenon has focused on possible flaws in high IQ people that might explain the exclusion. In order to be explanatory, the flaw would need to increase with IQ. However, the evidence that exists suggests that it is not the result of of a compensatory flow, but rather the result of inappropriate educational and productive environments within which the high IQ person must strive to succeed. Consequently, remediation should focus on creating more appropriate environments.
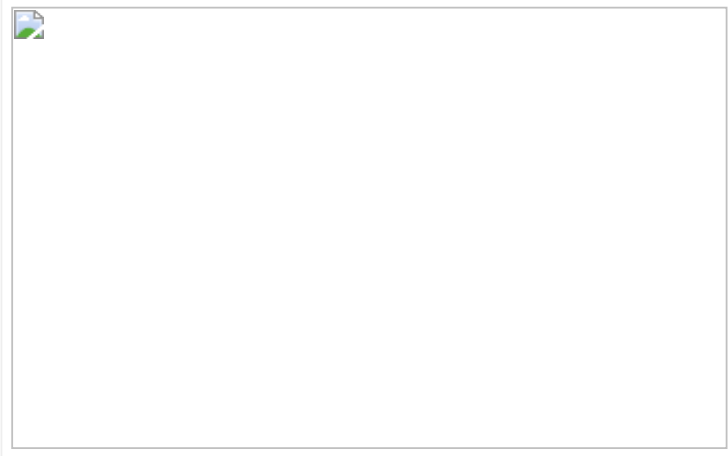
The Exclusion

In the popular culture, IQ has become a point of contention. Many people credulously accept that the eminent have very high IQs and that people of ordinary accomplishment have ordinary IQs. For example, it was widely reported that Garry Kasparov has an IQ of 190. In truth, his IQ is verified to be 135. Others, often based on Steven J. Gould's book, 'The Mismeasure of Man' subscribe to the assertion that IQ is a useless oversimplification that primarily measures how well a person takes IQ tests.

The science does not support either assertion. A very large body of scientific evidence shows that IQ tests measure a polygenetic trait, g, that exhibits moderate phenotypic variation. It is directly correlated, over most of its range, with positive life outcomes and inversely correlated with negative ones. It has also been shown to accurately measure what people mean when they use the words 'intelligent' or 'smart'.

However, because of the moderate r values of its correlates, IQ is primarily of value in understanding the characteristics and interactions of large populations. Save as a diagnostic tool for very high IQ individuals, it is not sufficiently predictive to be reliably used on an individual case basis. Furthermore, in adulthood, actual life outcomes are generally known and, consequently, a predictive tool is of limited value.

When IQ tests first came out, the various intellectual elites were willing, even eager, to take them. The results, however, while good, were not great, so today they generally are not so willing to have themselves tested. Still, while most of the evidence is old, the results are still very likely to be valid. The only significant recent work is that of Robert Hauser and it suggests that, if anything, the mean IQ of the intellectually elite professions has fallen. That, however, is almost surely an artifact of the methodology.

Over an extensive range of studies and with remarkable consistency, from Physicians to Professors to CEOs, the mean IQ of intellectually elite professions is about 125 and the standard deviationn is about 6.5. For example, Gibson and Light found that 148 members of the Cambridge University faculty had a mean IQ of

126 with a standard deviation of 6.3. The highest score was 139. J.D. Matarazzo and S.G. Goldstein found that the mean IQ of 80 medical students was 125 with a standard deviation of about 6.7. There was one outlier at 149, but the next highest score was 138. This means that 95% of people in intellectually elite professions have IQs between 112 and 138   99.98% have IQs between 99 and 151.

By dividing the distribution function of the elite professions' IQ by that of the general population, we can calculate the relative probability that a person of any given IQ will enter and remain in an intellectually elite profession. We find that the probability increases to about 133 and then begins to fall. By 140 it has fallen by about 1/3 and by 150 it has fallen by about 97%. In other words, for some reason, the 140s are really tough on one's prospects for joining an intellectually elite profession. It seems that people with IQs over 140 are being systematically, and likely inappropriately, excluded. With the conservative assumption that, absent the exclusionary processes, IQs above 133 neither help nor hinder the achievement of elite profession membership, the excluded population is distributed as shown above. If we assume that the positive correlation seen below 133 IQ continues above 133, the excluded population would be larger and the exclusion more complete.

Grady Towers, in his article, 'The Empty Promise' concludes that IQs over 140 add nothing to the academic or career performance of the individual. However, the result herein described is a stronger statement in that it actually appears to support an inverse correlation. It is not an entirely new revelation. Robert Sternberg and others have mentioned an inverse correlation by observing the absence of very high IQ individuals in intellectual settings. However, the observation has not led to any deep investigation.

Typically, it is mentioned with an implication that very high IQ people routinely possess some compensating negative trait that eliminates their intellectual advantage. An example is the assertion that very high IQ people lack 'common sense'. Dressed up, this is Sternberg's hypothesis. Another explanation is that decreasing 'emotional intelligence' nullifies the advantage of higher IQ. Little research has actually been done on the exclusion and what little that has does not support either of these explanations. Linda Gottfredson has argued energentically against the Sternberg model.

While increasing IQ, especially over 140, is inversely correlated with elite membership, 140-150 IQ is also characteristic of eminence (Nobelists, Fields Medalists, etc.). While there are a number of anecdotal and inferential citations, the most definitive study was that of Dr. Anne Roe (1952) in which she gave 64 of America's (U.S. born) most eminent scientists an IQ test that ETS had created for that purpose. As best as can be determined (there were methodological problems) the test rendered a 15 point ratio IQ and the average IQ of the group was 152. This corresponds to a modern deviation IQ of 144 which agrees with the anecdotal and inferential evidence.

	Low.	Median	High
Verbal	121	166	177
Spatial	123	137	164
Math	128	154	194
Averages	124	152	178

What this suggests is that while an IQ over 140 will decrease the probability of entrance into an elite profession, if the impediment can be overcome, performance within the elite is likely to be superior. Of the 64, the highest D15IQ was 158, which is close to the statistically expected highest IQ of any scientist. In other words, by 160 D15IQ, the exclusion is nearly complete and by this study of the most eminent, the statistical prediction is corroborated. However, in total, this higher IQ characteristic of eminence strongly supports the conclusion that the exclusion is inappropriate and if these extremely high IQ individuals were allowed to work on the hardest problems, the result would be eminence.

As will be discussed later, Mathematics and Theoretical Physics contain many problems that are difficult to solve but relatively easy to verify. As such, they may be exceptions to this exclusion. The reason that the Roe study doesn't reflect this is because the Physicists and Mathematicians were not given the math portion which we can assume lowered their average score.

So, if your IQ is 140 something, the above should serve as a warning that you may be facing related career challenges. If your IQ is over 150, it is a clarion call; without direct intervention, your career prospects are very poor. If you are the parent of a child with a D15IQ over 150, immediate and dramatic action is required. At present, realistic options for individual remediation are severely limited.

To provide perspective for readers, one in 261 people have IQs over 140 and one in 2,331 have IQs over 150. While the high IQ exclusion does not directly affect a large percentage of the population, the people it does affect, it affects profoundly. Because of the large population of western civiliztion, the absolute number in this group is not small. There are approximately 6.5 million people with an IQ over 140 and 729,000 people with an IQ over 150.

Why is This Happening?

Because of the dearth of objective evidence, the cause of the exclusion cannot be determined directly. Garth Zietsman has said, referring to people with D15IQs over 152, 'A common experience with people in this category or higher is that they are not wanted - the masses (including the professional classes) find them an affront of some sort.' While true, it is more likely a symptom than a cause of the exclusion. We need to understand why they are an affront.

From a theoretical standpoint, democratic meritocracies should evolve five IQ defined 'castes', The Leaders, The Advisors, The

Followers, The Clueless and The Excluded. These castes are natural in that they are the result of how people of different intellectual abilities relate to one another. This is based on research done by Leta Hollingworth in the 1930's and the more recent work of D.K. Simonton.

Before we begin, we need to digress for a moment into a discussion of deviation and ratio IQs. Because few people understand the difference, there has been significant confusion over the meaning of various IQ scores. IQ was originally designed for children and was defined as ((mental age)/(chronological age))X100. In other words, an eight year old with a 150 IQ scored about the same as the average twelve year old.

It was found very quickly that there were far more very high IQ children than what the standard, Gaussian distribution predicts. So, today, IQ tests have their raw scores adjusted to force the results to fit a standard bell curve distribution and are referred to as deviation IQs. While this practice has benefits, it tends to depress the IQs of the very highest scorers and, thereby, understate the intellectual distance between them and more normal IQs. For example, a person with a 170 IQ today would have a 200 IQ in the ratio IQ era.

Leta Hollingworth studied profoundly gifted children. She reported them as having IQs of 180+, which was a R16 score. As such, on today's tests this equates to 159+. Her conclusion was that when IQ differences are greater than 30 points, leader/follower relationships will break down or will not form. It establishes an absolute limit to the intellectual gulf between leader and followers. She also concluded that there was an D15IQ 'sweet spot' of best outcomes from 123 to 144.

We have no reason to conclude that this upper limit on IQ differences changes in adulthood and, consequently, an elite with a mean R16IQ of 128 will have no leaders with R16IQs over 158 (149 D15IQ). This is consistent with the conclusion that there are no appropriate roles for >150 D15IQs and approximately corroborates Hollingworth's 'sweet spot'.

Much more recently, D.K. Simonton found that persuasiveness is at its maximum when the IQ differential between speaker and audience is about 20 points. While he has not studied this effect among those with very high IQs, it is assumed that it follows ratio IQs at the high end. This has been corroborated with empirical studies of manager and leader success, which peaks between a 1.0 and 1.2 standard deviation differential.

We are going to use ratio IQs to perform our calculations, as they are probably a more accurate measure of intellectual distance at the high end. However, for clarity, we will restate our answers to the modern standard of 15 point deviation IQs.

We already know that elites have an average IQ of about 125 (R16 128) which implies that the audience that is to be convinced by the elites has a mean R16IQ of 108 (D15IQ is about the same under 120 IQ). People with R16IQs below 98, after Hollingworth, are not effective followers and in a modern meritocracy are essentially disenfranchised and in the public discourse, essentially 'The Clueless'. It means that the 'The Followers' in the public discourse have a R16IQ mode of 108 R16IQ and 'The Leaders' have a R16IQ mode of 128 (125 D15IQ). These calculations provide us with a theoretical understanding of why the intellectually elite professions so consistently have mean D15IQs of 125.

In free markets people choose to whom they listen. In other words, in audiences dominated by high school graduates, who average around 105 IQ, the successful leaders will have an average IQ of 105+20=125. Speakers with R16IQs over 105+30=135 (D15IQ130) will be cancelled from radio, fired from TV and print or not elected because they confuse rather than enlighten their audience. A college educated audience (115 IQ) will be most convinced by a R16IQ of 115+20=135 and confused by a 115+30=145 R16IQ (140 D15IQ).

Effective leaders recognize that they need the counsel of those smarter than themselves. They will be most convinced by advisors with R16IQs of 128+20=148 (D15IQ 139). We also see that the compressed standard deviation is predicted as a result of persuasive needs of the overall organizational structure. A Leader

needs to be persuasive within the community of Leaders which limits the R16IQ to 128+20=148 which is the same as the mode for Advisors. However, the 148 R16IQ Leader becomes incomprehensible to most Followers, which limits their effectiveness and encourages them to become an Advisor. Because Leaders become ineffective above an R16IQ of 148, Advisors won't find clients if their R16IQ is over 148+20=168=155 D15IQ.

So we see that these parameters of maximum persuasiveness of 20 R16 points and maximum leader/follower differential of 30 R16 points, create a natural trifurcation of enfranchised people into 'The Advisors' (128-168 R16IQ; 125-155 D15IQ), Leaders (115-141 R16IQ; 112-138 D15IQ) and Followers (98-128 R16IQ; 98-125 D15IQ) 'The Clueless' with D15 IQs below 98 are effectively lost to the process. They cannot really understand the public discourse and will often not follow discussions in productive environments.

People with D15IQs over 150 are effectively 'The Excluded', routinely finding their thoughts to be unconvincing in the public discourse and in productive environments. If placed in a leadership position, they will not succeed.

So, while Sternberg et alia search for personal flaws to explain professional and social failings for people with D15IQs>150, the simple fact is that it is an artifact of a culture that fails to provide them with audience or followers. They are not a natural fit as advisors because the leaders are not persuaded and often won't even understand the advice.

Inappropriate Educational Options
The exclusion really begins in primary school with the failure of the educational process to provide an appropriate learning environment. The grading process, which should be a reliable assessment of knowledge learned and skills acquired, becomes nothing more than a measure of the child's willingness to bend to the will of the teachers' demand that he or she acquiesce to a profoundly inappropriate curriculum and learning process.

Leta Hollingworth noted that, if mainstreamed, children with

R16IQs over 150 (D15IQ 141) check out and do not excel. Miraca Gross has done a long-term longitudinal study of 60, 160+ D15IQ Australian children. 17 of the children were radically accelerated, 10 were accelerated one or two years and the remaining 33 were mainstreamed. The results were astonishing with every radically accelerated student reported as educationally and professionally successful and emotionally and socially satisfied. The group that was not accelerated she characterizes as follows: 'With few exceptions, they have very jaded views of their education. Two dropped out of high school and a number have dropped out of university. Several more have had ongoing difficulties at university, not because of a lack of ability but because they have found it difficult to commit to undergraduate study that is less than stimulating'. These children have IQs similar to Leonardo da Vinci, Galileo, etc., so the loss from unrealized potential is enormous.

Gross also did a wonderful comparative case study of a 133 D15IQ girl who had great educational success and a 169 D15IQ boy who was completely destroyed by an uncaring school system. It provides some enlightening examples of precisely how the educational system thwarts children in the 140+ D15IQ range.

The problem stems from the misconception among educators that the intellectual gulf between moderately and highly gifted children is not that great. In fact, depending upon the conceptual content, Professor Gross suggests that the exceptionally gifted children and above may learn 4-5 times faster than the midrange students. Therefore, a reasonable, in fact conservative, expectation of educational progress is the ratio of the highly gifted student's ratio IQ and the ratio IQ for which the curriculum is normed.

So, a 150 D15IQ child would be expected to progress through a K-12 public school curriculum geared to the 100 IQ student in 12/1.6=7.5 years. They would graduate from high school at 13. Some children may be physically and emotionally prepared for full time school a year early and would finish high school at 12. When we hear about a child who finishes high school at 12 or 13, we think of a 'one in a million' prodigy and we suspect that the child was pushed to his or her detriment. Yet, with an enabling educational environment, it is actually a reasonable expectation for about one in 200 children.

The true 'one in a million' child is doing college level learning at 7 or 8.

These children can be expected to complete their six years of college, which is geared to a 120 IQ, in about 6/(160/120)=4.5 years. So, we would expect the 150 D15IQ person to receive their first advanced degree at age 17 or 18 if the educational system didn't actively retard them. This will provide them with another five or six years of education, during which they can acquire another four advanced degrees or equivalent.

It is often stated that gifted children become bored in mainstream classes. However, that is too passive a description. Often they are frustrated and even angered by the slow pace. Garth Zietsman states that people with IQs over 124 'don't require assistance to learn. They can find the information and master the methods themselves'. It is probably the case that for most 140+ D15IQ people, autodidactic or self paced learning is preferred. It is also likely that they prefer the polymathic 'question first' approach to learning, as well.

Because of all the above, many, perhaps most, 150+ D15IQ children reach college age with a bad grade transcript and even worse attitude. Even if they manage to perform near their potential in their educational careers, it will likely not matter since adult society is not structured for them, anyway.

Social Isolation

What applies to productive environments also applies to social environments and even personal relationships. Theoretically, after Hollingworth, a person's social relationships should be limited to people with R16IQs within 30 points of their own. For the 100 IQ person, this will include about 94% of the population and consequently it is not an issue. However, for the 150 R16IQ (140 D15IQ), social relationships are limited to 120-180 R16IQ people which represents just a little over 10% of the population. The 165 R16IQ (150D15IQ) person will be limited to people with 135+ R16IQs (130 D15IQ). This comprises just 2% of the population.   By 182 R16IQ (160 D15IQ) the problem becomes

critical with social relationships limited to those with R16IQs over 152 (142 D15IQ) which comprises just 0.25% of the population.

The +/- 30 R16IQ range of Leta Hollingworth is also a good estimated limit on lasting social relationships. However, they are not equal relationships but rather will necessarily have a strong leader/follower quality to them. Also, the degree of mutual understanding will almost surely be insuffient to reach and sustain emotional intimacy. Relationships based upon approximate intellectual parity probably cannot have more than 0.75 standard deviation (~12 points). For the 140 D15IQ person, the limit for intellectual parity relationships is about 128, or about 2.5% of the population. For the Hollingsworth children, 180 R16IQ (159 D15IQ), the limit for an intellectual parity relationship is a hopeless 168+ R16IQ or 152+ D15IQ. This is only 0.0263% of the population.

Members of high IQ societies, especially those that require D15IQs above 145, often comment that around this IQ, qualitatively different thinking emerges. By this they mean that the 145+ D15IQ person doesn't just do the same things, intellectually, as a lower IQ person, just faster and more accurately, but actually engages in fundamentally different intellectual processes. David Wechsler, D. K. Simonton, et alia, have observed the same thing.

Since intimate social relationships are predicated upon mutual understanding, this draws a kind of 'line in the sand' at 140-150 D15IQ that appears to separate humans into two distinct groups. This may truncate the 30 point limit for those between 150 and 160 D15IQ people. Even when 150+ D15IQ people learn to function in the mainstream society, they will always be considered, and will feel, in some way 'different'. Grady Towers explored this in depth in his article, 'The Outsiders'. This is of mild interest to the group within which the 150+ D15IQ person is embedded but it is moderately to profoundly important to the high IQ individual who will feel an often profound sense of isolation.

It has often been observed that 150+ D15IQ people are loners. Also, Loius Termann found that children at this IQ level were emotionally maladjusted in about 40% of the cases. However from

the above one cannot help but wonder if this results from the children being constantly thrust into 'no-win' social situations and never given the opportunity to hone their social skills among their intellectual peers.

Assortative mating, in humans includes a strong tendency to choose a spouse who is in the same IQ range. At a maximum, IQ difference cannot exceed Hollingworth's 30 points and preferentially should be within Simonton's 20 points. For the 100 IQ person 80-120 IQ contains about 80% of the population and not much thought about intelligence is neccesary when choosing a mate. However, the 150 D15IQ percent will find that less than 0.4% of prospective mates are in the proper intellectual range. Because of this, IQ becomes a significant limitation on mate selection.

These factors probably explain the positive correlation between higher IQ and emotional maladjustment found by Terman, et alia. It is not an inherent trait of high intelligence but rather a consequence of extreme social isolation.

Conclusion
As D15IQ increases above 140, people become progressively more excluded from educational, productive and social opportunities until by 160 D15IQ the exclusion is nearly complete.

Individuals with D15IQs of more than 160 are rare, comprising just 0.0032% of the population. They possess at least one trait in common with many of the greatest minds in history. Yet only a vanishingly small percentage will find a proper environment within which they may thrive intellectually, socially and productively.

This is harmful for the individuals but it is also an unfortunate circumstance for society as well. What if intellectual giants like Einstein, da Vinci, J.S. Mill, etc. were ten times more common? Almost certainly progress would be much greater. It is because of this that the exclusion should be of significant concern to everyone.

The Polymathic Institute and Polymathica
Many people with D15IQs between 140 and 150 and nearly all people with IQs over 150 face enormous challenges and require new social and productive environments if they are to reach their potential. The Polymathic Institute promotes polymathic research, education, careers and lifestyles

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