SMART and SEXY

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The Evolutionary Origins and Biological Underpinnings of Cognitive Differences between the Sexes

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Some of the views and opinions in this book are highly controversial. In no way is the intention of this book meant to insinuate that any of the scientists cited agree with any stated opinions. They may or may not; I do not know. The amount of direct communication had with any of the people cited has been minimal and for the large majority there was no direct communication whatsoever. When there was direct communication, the full scope or thesis of the book was not explained. Anyone who reads this book and becomes upset at its content should not presume to blame the academics whose research was discussed. They had no part in its writing and this work does not claim to represent their opinions in any way.

Introduction

I originally thought of the idea of X-linked inheritance as an explanation for achievement differences between men and women while an undergraduate taking a class on the genetic causes of mental illness. We were discussing the greater incidence of mental disabilities in males than in females when I suddenly had a spark of inspiration. I immediately raised my hand to ask the obvious question, “Are there many genes expressed in the nervous system found on the X chromosome?” The professor responded that it was a well-established fact in neuroscience that a large and inordinate number of nervous system genes map to the X chromosome. From there everything else fell into place. If the X chromosome possesses a relatively large number of recessive intelligence boosting alleles, as well as recessive intelligence lowering genes, then pseudo-dominance of the X in males could easily explain the greater variability in the male intelligence distribution. To my knowledge, no other biological characteristic can explain this pattern.

Having never been discussed in my previous three years studying biological sciences, including several courses on genetics, I wondered if I had really come up with something brand new. Why had I never heard of this before? In a somewhat naïve fashion I went searching through the literature to see if I was really the first person to come up with this idea. Feeding my pride (and then suddenly stripping it away), a tiresomely long search eventually revealed some relevant papers, which then provided plenty of additional resources.

The very first reference to the idea appears to have been put forward by Dr. R. Lehrke in 1972 in a paper titled *Theory of X-linkage of Major Intellectual Traits*. He mainly based his hypothesis on the evidence of X-

linked mental retardation and the overall greater incidence of cognitive disorders among males. The initial response to his idea was very hostile, understandably given the profound implication that various equality based political ideologies would be flatly refuted by it. As time wore on more evidence was accumulated and there was gradual acceptance in specific disciplines. There were occasional papers which appeared on the topic between 1972 and 2000, but most of the published work seems to have been released after the year 2000. This is not surprising considering it was the human genome project, completed in 2003, which first made direct wide-spread verification of the idea possible. Most of these relevant papers will be cited during the course of this book. At this point, there have even been a few news articles in lay-person, science oriented magazines.

Of course, in retrospect, the idea is quite simple and obvious, and has probably been independently conceived by many, many scientists working in neuroscience, biology, genetics, and perhaps even psychometrics. I say independently conceived because there is surprisingly little discussion of the idea outside of a few groups in a few select fields and absolutely nothing that would connect cognitive skills to X linkage in undergraduate education. This often leaves it up to the discerning scientist to realize it on his own; or hear it through the grapevine. Although one paper hints that it might be a frequent topic of *quiet* speculation among geneticists,[1] I never personally found anyone besides myself discussing it in the biology labs that I worked in.

The dearth of discussion on this subject is likely caused by the tense political climate surrounding gender issues that can be expected to silence timid scientists worried about their careers. The result is that the idea is a tightly-held, open secret within specific disciplines of professional research and outside of education. Why should it be ignored or even suppressed? If intelligence really is X linked, it has widespread implications for whether or

not gender equality at the highest levels of achievement is actually attainable in any real and meaningful sense. Specifically, it strongly implies that gender parity at the top levels of achievement is literally impossible because the underlying biology will not support nearly as large of a frequency of highly intelligent females as it does males. If that isn't a taboo conclusion, then nothing is. In this work, I set out to have no regard for taboo. The idea that biology causes the majority of gender differences in intelligence will be discussed without any concern for liberal sensibilities. Objective truths exist and those truths do not care about prevailing popular sentiments. They exist and will continue to exist regardless of how popular utopian visions of society become. Some people, maybe most, who read this are likely to become offended by what is suggested. Consider this the only so-called "trigger warning." The faint of heart should turn back from these dark paths now.

The closest thing that science has (or should have) to something sacred is value placed on upholding truth and objectivity. In practice mistakes are made and sometimes objectivity is compromised, but the scientific community has a commitment to integrity that ensures progress towards uncompromised truth marches on, no matter how uncomfortable and inconvenient. Eventually mistakes and misunderstandings are corrected; though sometimes this process can take decades (see the recent reappraisal of the health risks of cholesterol).

At least that is the hope. Science, however, does not live in isolation. The tides of the wider world break upon the culture of the scientific community as much as any other. The politically motivated feminist movement in particular has had a profound effect on the interpretations made from research studies; most especially in psychology and sociology. Feminist ideology has also restricted the types of experiments that are allowed to be conducted in the first place, and has even more severely

restricted what sorts of interpretations are tolerated for a given set of data. In the quest to determine what role biology plays in gender differences in intelligence, the feminist dog (to put it nicely) has a large bone in the fight. Should biology turn out to play a large role in such differences, the whole feminist house of cards must, by necessity, come tumbling down. Suppressing such findings has thus become an existential imperative for the feminist movement.

What has happened to our culture has been the supplanting of truth with an excessive value placed on emotional sentiment and general psychological coddling that is collectively termed political correctness. The possibility that some individuals or specific groups may become upset or disheartened by particularly inconvenient or unflattering truths has become more important than a dispassionate and objective understanding of the world. This distinctively feminine "virtue" at times plays an important role in providing group cohesion from the level of individual families all the way up to nation states, but it has no place in the determination of the working of the natural world. Most especially (feminine) sentiment should not play any role in addressing the biggest questions in regards to the human condition. Excessive sentiment has (with notably few exceptions) all but corrupted the human "sciences" such as psychology and sociology, which often employ what can only be described as professional far-left activists whose politics take precedence over their "science." The belief in the *tabula rasa* in turn exerts a strong pressure on *actual* scientists in the biological disciplines, forcing them to be either less direct with their findings or to completely avoid engaging in research on certain subjects in the first place.

Culture sometimes acts as a pendulum, going from one extreme to the other, in the course of finding the objective reality of human nature. The hope is that on each swing the period is reduced and we stay closer to the

truth. The attitude towards women's intelligence has swung from a belief that all women were inferior to all men to a belief that there is a cultural bias and discrimination against woman if there is not absolute gender parity in all areas of intellectual pursuit. Some misandric female supremacists that are quite at home in the feminist movement go so far as to claim that women are superior to men despite ample evidence past and present to the contrary. The truth is much more nuanced. However, the unfortunate reality is that true equality of opportunity may not inevitably lead to equality of outcome if innate aptitudes and preferences are unequally distributed between genders. The major purpose of this book is to make an alternative, biologically informed theory of gender differences in intelligence accessible even to people without any background in biology or genetics, and to give it exposure outside of the narrow and isolated communities of scientists where it currently resides.

In a Nutshell

Humans are diploid organisms. Diploid organisms have two copies of each chromosome whereas a haploid only has one copy of each chromosome. Since genes are located on chromosomes, this results in two copies of every gene in diploids. The only exception to this in humans occurs with the X chromosome in men because they have only one copy. X-linked genes are always expressed as dominant in men, while recessive genes can be hidden in women because they have two copies. This leads to a disparity in how some genes are expressed in men vs. women.

Furthermore, many genes specifically expressed in the nervous system map to the X chromosome.[2] This creates the conditions necessary for disparities in the expression of genes relevant to intelligence to be different between men and women. The result is that rare combinations on the X chromosome, which can translate into both high and low intelligence as well as in neurological disorders, come to be expressed phenotypically in men much more commonly than women. Owing to the fact that various academic and professional fields have minimum intellectual prerequisites, and men have a somewhat better probability of expressing phenotypically a combination of genes conferring higher intelligence, there are more men born capable of filling those positions. This however does not mean that extraordinarily intelligent women are not born, just that they occur at a lower frequency. Exaggerating this phenomenon further, hormonal influences seem to magnify these differences in men, at least in fields requiring mathematics or visual-spatial ability.[3] However, it also appears that sex chromosomes can lead to sexually dimorphic development of the nervous system without specifically requiring sex hormones,[4] which may also contribute to disparities in ways currently unknown.

The evidence for these conclusions, and against others, will be set out first. Then, more speculatively, evolutionary hypotheses for why this pattern has emerged will be put forward. After that, differences between genders unrelated to intelligence will also be evaluated with regards to female suitability to occupations that do not have high intellectual demands. Finally, the consequences of current fertility patterns on Western civilization will be analyzed with the insights gained from the previous discussions to see what can be expected of human evolution in the future. The following is an outline of topics to be discussed in the order they will be discussed:

1) An overview of what most social scientists currently believe and why their beliefs and assertions must be taken with a grain of salt.
2) A brief discussion of genetics terminology used in this book which may not be familiar to the lay-person.
3) Evidence that IQ tests actually measure intelligence and that this is highly correlated with achievement.
4) Sex differences in intelligence test performance for general intelligence and for specific abilities.
5) The evidence that intelligence is genetically determined and highly heritable.
6) Indirect and direct evidence for X linkage of intelligence, as well as the possible influence of X inactivation on X linked intelligence.
7) Sexual dimorphism resulting from non-hormonal and hormonal sources.
8) How hormones, autism, and genius are related.

9) Using all the data previously outlined to understand sexual dimorphisms in the distribution of cognitive abilities observed in intelligence tests and in professional outcomes.

10) Discussion of the evolution of the X chromosome, how it relates to wealth, intelligence and fertility and how intelligence appears to be a sexually antagonistic trait.

11) How female hypergamy, a form of sexual selection, and its corollaries likely led to the rapid evolution of human intelligence.

12) Differences in work time-preferences between gender and the tendency for women to opt out of employment.

13) The divergent fiscal consequences on state finances between genders.

14) Strength and other physical differences and their relevance to female suitability to physically demanding lines of work.

15) The dire consequences of feminism to our society and the structural changes necessary to make Western civilization endure.

The Discrimination Hypothesis: The "Politically Correct" View

When it comes to gender "issues", our public policies and cultural self-concept for the last 60 or so years have largely been based on the assumption that there should be gender parity at each intellectual and professional level because men and women are identical in terms of cognitive abilities and preferences. If at each level of intellectual ability there are equal numbers of men and women, so the hypothesis goes, then there should be a corresponding parity in every occupation regardless of how intellectually demanding that profession happens to be. That the ratio of men to women in some fields is not 1:1 is assumed to be an unambiguous reflection of discrimination, past and present, and overcoming that discrimination requires substantial social engineering on the part of the government and of education systems. If true, policies such as affirmative action are justified because they directly address and rectify the problems that exist under the discrimination hypothesis.

However, though discrimination may have historically played a role in explaining some outcome differences, it is increasingly doubtful that it continues to play the major role in a modern climate that is remarkably dedicated to increasing gender equality to the point that, incredibly, we are now even beginning to include women in combat roles in the military regardless of their suitability. In previous eras some women of talent and ability may have been unjustly denied the opportunity to reach their full potential, yet even in the alleged heydays of gender discrimination there are historical examples of influential and successful women. By itself, this casts doubt on the current presumption of historical totalitarian oppression of

women. It clearly wasn't *total* in scope if even some women were able to achieve at high levels.

A central tenet of the discrimination hypothesis, and probably the most important one, is the ubiquitous presence of stereotypes in our culture and the harm they can possibly cause. In the most common discourse on stereotypes, it is implied that all stereotypes are fundamentally flawed and inaccurate ways to understand various groups of people. Thus, stereotypes can't be used by individuals under any circumstances since they offer no predictive benefits to the individuals who employ them. Certainly this is true of some stereotypes. But is it true of all?

It helps to understand the originating purpose of stereotypical thinking. Stereotypes are a subset of human shorthand thinking. For a more general example, consider the function of a door knob. Even for a person intimately aware of a doorknobs mechanical functioning, it would be a waste to allocate full mental resources to contemplating the exact mechanism by which doorknobs work every time a handle is turned. As such, most of the time when a doorknob is turned, the understanding of its function exists in the psyche in a truncated and shorthand form. Turn the knob and the door opens. This process is very useful for helping us through our days when it is not possible to fully consider in the minutest of detail the function of every object and process we come across. In fact, it would be quite impossible to function with any speed or efficiency if such heavy consideration was applied at every possible opportunity.

Though these shortcuts do not fully consider the working of the natural world, they must possess the quality of at least being partially accurate in order to serve any utility. After all, most of the time when you make this shortcut consideration of a doorknob, you are right. If you were faced with a situation that violates your reasoning (the doorknob breaks and no longer turns) you can then set aside this shortcut and consider more intimately the

construction and function of this broken tool. But other than this instance, the shorthand reasoning is both adequate and useful.

Stereotypes are a subset of this mental maneuvering. They enable us to quickly make decisions when time is limited and when allocating full mental resources can't be done, or when there is insufficient information and more can't be easily ascertained to draw conclusions on an individual instance. If, when considering a population, you know that a stereotype will be accurate more than 50 % of the time then it constitutes an effective shorthand. You will be right more often than wrong when you implement it. Alternatively, if the stereotype is accurate substantially less than 50 % of the time, but the consequences of not applying it are substantially negative in the minority of cases where it is true, and of little consequence when inaccurate, then that would also make the stereotype an effective shorthand; it is protective against negative consequences and has little cost otherwise. John Derbyshire's article "*The Talk: the non-black version"*[5] is an effective argument for this usage of stereotypes along this line of reasoning. As such, stereotypes can result in mistakes being made, but that does not mean that they aren't useful or justified in some circumstances.

Since there are many different stereotypes conceived by many different origins, there will be variability in their quality. As such, I take it to be true that some stereotypes are very inaccurate while others are very accurate, and there is a complete distribution ranging in between. I also take it to be true that the value of a stereotype isn't determined by its accuracy alone. The nature and degree of potential consequences can make even relatively inaccurate stereotypes valuable.

By this reasoning, the idea that some stereotypes can be very inaccurate and should thus be discarded is unwarranted. To discard them out of hand without careful consideration is akin to throwing out the baby with the bath water. It suggests that people do not possess the ability to evaluate their

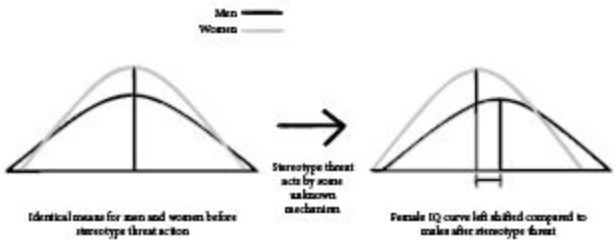
shorthand reasoning to verify how useful they are in individual circumstances and make exceptions where appropriate. In the book *Stereotype Accuracy: Toward Appreciating Group Differences*[6] the accuracy of stereotypical thinking and the tendency for humans to adhere to them when presented evidence to the contrary in specific instances is explored through the available academic literature. Contrary to popular belief, stereotypes tend to be fairly accurate and the average human tends to readily throw them out as soon as they have personalized information for specific cases.

Anxiety caused by widespread stereotypes which portray certain groups in a negative light, such as with women and mathematics, is said to play a significant role in influencing outcome differences. This stereotype anxiety which allegedly reduces the performance of the affected groups, especially in tests, is referred to as "stereotype threat" in the fields of psychology that study it. Stereotypes, asserted to be all pervasive throughout society, thus are always at work in unspecified ways and have large effects. This unfalsifiable ether is supposed to depress the scores of females in tests since society has historically held that women were not as intelligent as men; especially in math and science. Stereotype threat proponents argue that knowledge of this history, the ubiquitous presence of stereotypes in culture, and the manner in which questions are designed and phrased leads to lower test scores for women in a sort of self-fulfilling prophecy. The question is: does empirical data support stereotype threat?

It is important to consider who should be affected by stereotype threat and other types of discrimination and what kind of pattern in the distribution of scores should result if it was having a widespread impact. Discrimination of this type is assumed to be both universal and omnipresent. It is supposed to be present in both the society at large, within the mind of the test taker, and in the test being taken. If it is universally

present then it should have a universal effect. It should affect women equally at all levels of test taking proficiency and should result in a uniform downward shift of the score distribution compared to men.

Hypothetical Male and Female IQ Distributions Before and After Stereotype Threat



If it does not act in this way, then explanations must be invented and rationalized for why women at different levels of test taking ability react inconsistently to stereotype threat. The more disagreements from this trend, the more explanations that must contrived, and the more parsimony is lost (which generally means a theory is weaker). The difference in average IQ between men and women at least suggests that this might be happening, but the 3–5 IQ point advantage of men generally reported is a relatively small difference and mainly suggests that whatever universal influences do exist, their importance must be relatively minor.

However, the discrimination theory is not the only possible explanation for this overall shift. The difference could just as easily, in fact probably much more easily, be explained by biological differences in brain development caused by gender specific hormonal influences. Most especially in this regard is the fact that males in general grow to be larger, which translates into larger brain sizes on average. For reasons that should be obvious, larger brain size correlates with higher IQ.

The discrimination and biological differences above have one thing in common: they are universal and thus are not good explanations for greater

male variance. A consistent universal trait should have a consistent universal effect for all levels of ability as shown in the figure above, and the only consistent universal difference in mean IQ scores are small. Assuming stereotype threat is real, it is not inconceivable that of the small differences that do exist, stereotype threat only makes a small contribution in comparison to other factors such as biological development. In such a case, the individual contribution of stereotype threat would be vanishingly small and would approximate complete irrelevance. At best, it is something that exists and has only a very small effect[7] and at worst it is an example of publication bias amongst journals, where positive results that support politically progressive ideas (like discrimination against women) are overwhelmingly published relative to studies that don't confirm progressive beliefs or which might positively refute progressive beliefs.[8]

Saying that the academic community has a large progressive bias is a very strong claim, however, and such an extraordinary claim requires extraordinary evidence. So what is known about the "scientists" who publish "research" in politically charged areas? Diederick Stapel was previously a highly regarded and influential Dutch social psychologist who did a lot of work on stereotype threat until it came to light that he "routinely falsified data and made up entire experiments." Another example of his politically biased work was a "scientific" article which sanctimoniously claimed to find that meat eaters were more selfish and less agreeable than vegans. Unfortunately, it is impossible to be surprised by outspoken priggishness from vegans and their sympathizers.

Thanks to this media attention, Stapel is now the most notorious charlatan in the field of social psychology, which is saying a lot for what appears to be a regularly fraudulent and pseudo-scientific discipline. Social Psychologists as a group do not make the data they collect available for outside review two thirds of the time. This stinginess with data is actually

against the ethical rules established by social psychologists themselves and suggests that there are likely many more Stapels out there who simply haven't been caught. A survey by the Harvard business school found that 70 % of social psychologists admitted to cutting corners in reporting data, 30 % reporting unexpected findings as if they were expected from the start, and 1 % admitted to falsifying data.

Another meta-analysis of papers published in high-tier psychology journals found that 50 % of papers surveyed contained at least one statistical error and 15 % contained an error so severe that the conclusions drawn would have had to have been reversed.[9, 10] A meta-analysis which looked at whether or not positive results from stereotype threat studies could be replicated found that almost half could not, and that a further 25 % were confounded by methodological issues.[11] Methodological issues, especially in determining statistical validity, have even been used by one Social Psychologist to publish in a major, respected journal that he had proven the existence of psychic ability. His finding used standard statistical practices in psychology and resulted in heavy criticism by professional statisticians of both the specific paper and the psychology community generally.[12]

This high publicity criticism led to a fair degree of soul searching among the psychological community, prompting some researchers to undertake the task of evaluating how widespread these problems are. One analysis reviewed articles from the last 100 years in the top 100 journals based on the impact factor; a measure of the level of influence a paper or journal has on the field. It found that in that time, for the highest impact journals, only 1 % of all research findings in psychology had ever been replicated. Of that 1 %, only 14 % were in fact direct replications. The rest tested similar hypotheses under different conditions. However, successful replications themselves have to be received critically. Half of the 1 % of

replications had authors from the original study; this is troubling because the presence of the previous author greatly impacts the chance of positive replication and implies bias might be playing a role. 92 % of replication studies with an author from the original paper confirm the original result, while only 65 % of replications by independent researchers confirm the original finding.[13]

Problematic methodology isn't the only issue in psychology. Ideological bias is rampant in the humanities generally, but especially in social psychology; both among individual researchers and among the journals publishing papers. Beyond the lack of objective critical evaluation of papers, the field itself is essentially an ideological and political echo-chamber that is considerably more left-wing politically than the general population. 80 % of social psychologists identify as liberal, while only 3 out of 1000 identify as conservative. Contrast this with the general population which is 40 % conservative and only 20 % liberal; the remainder being moderate or apolitical. Looking through all social sciences, the ratio of liberals to conservatives varies from 8:1 to 30:1.[14] Were these sorts of numbers occurring with an ideologically designated protected class, these same social psychologists would be the first to use it as incontrovertible proof of discrimination.[15, 16]

Considering what is now known about the biological origins of cognition and intelligence (discussed in more detail in future sections), it is generally difficult to take claims of discrimination seriously when underrepresented groups also display relatively lower intelligence profiles. However, in this case there is no reason to think that conservatives as a group have an intellectual profile below the general population. Social conservatives tend to be a little lower in intelligence relative to liberals, but free-market conservatives (libertarians) tend to be smarter than liberals. Being very partisan, either liberal or conservative, tends to be associated

with high IQ as well.[17] Increased income levels, which are a proxy for IQ, also move people right ideologically.[18] In other words, there is nothing that biologically determined intelligence can do to explain the lack of conservatives, and even moderates, in the humanities.[19]

In a survey of social psychologists, it was found that conservative respondents feared negative consequences from revealing their political affiliation and that they were right to do so as liberal respondents expressed willingness to discriminate against conservatives in approving papers, grant proposals, and hiring decisions.[20] The more liberal a social psychologist is or the more consequential the decision would be for the conservative, the more willing liberal social psychologists are to discriminate.

The willingness to discriminate against (or for) articles and proposals for ideological reasons has also been empirically confirmed in several instances as well. In one study, reviewers were sent a manuscript which purported to show the mental health of a group of leftist political activists compared to a control group. Reviewers who were sent a version which showed that the activists had better mental health consistently felt that the paper was more publishable and even felt that the statistics were more adequate even though the data and statistics for each version were identical.[21] In another case, a research proposal which either wanted to study discrimination or reverse-discrimination (a euphemism for discrimination against whites) was sent to 150 review boards.[22] The proposal on discrimination was approved twice as often as the proposal on reverse-discrimination. In a third example, psychologists were sent papers which either concluded that affirmative action for blacks was beneficial or harmful and also papers which either concluded that homosexual relationships were equally or less healthy than heterosexual relationships. Liberal psychologists were much more likely to believe that articles with

liberal conclusions were truer and had less author bias than articles with conservative conclusions. Relatively conservative psychologists viewed the results of articles virtually identically regardless of conclusion. In other words, researcher bias was extremely asymmetrical with liberal "scientists" being much more biased. When the authors of this study tried to get this finding published, they were unable to do so until they took out all reference to asymmetrical bias among liberals. Though the data was unchanged, the final version required detailed evaluation of the data to actually see the obvious and important conclusion.[23] In college admissions, it was found that reviewers would attach greater value to whichever criteria (grades vs. test scores) that would allow them to pick the candidates which agreed with their partisan politics.[24] Lastly, controlling for research productivity and academic achievement, another study found that conservative researchers were working at lower quality institutions relative to equivalent liberal colleagues than would be expected. The irony that a group which commonly publishes on the asserted negative consequences of discrimination would then prove to itself be extraordinarily discriminatory is stunning.

This ideological imbalance in the social sciences has not always been present, and the shift towards liberal dominance isn't limited to the social sciences. Research suggests that the process of eliminating conservatives has been going on since approximately the 1960s, when there was much more political diversity. It seems that leftists who attained authority after the Cultural Revolution progressively used their influence within the academic bureaucracy to incrementally increase liberal hegemony in those fields.[25] This trend continues to this day, with approximately 10 % of faculty identifying as conservative, but only 2 % of graduate students and post-docs. As unreliable as the social sciences are today, we can probably

expect it to be less reliable in the future; at least when politically "sensitive" topics are under scrutiny.[19]

Moving in the controversial direction of studying gender differences in intelligence, no doubt, would thus be professionally untenable for a Psychologist even if they wanted to. The former president of Harvard, Lawrence Summers, was on the receiving end of a great deal of hatred for just suggesting the possibility that men and women might have innate aptitude differences even though such ideas are robustly supported empirically. The entire world revealed their spite for truth in its response to his honest inquiry, which ultimately forced him to resign from Harvard and later prevented him from being appointed chairmen of the Federal Reserve despite being the better candidate. Nancy Hopkins, a "biologist" who no doubt achieved her position through affirmative action rather than raw skill, notably allowed her emotions to overwhelm her during his talk and walked out. She bleated "I felt I was going to be sick. My heart was pounding and my breath was shallow." Her excessive sentiments are notable as a female stereotype which in this case has the ring of truth. If she hadn't walked out she "would have either blacked out or thrown up,"[26] she quaveringly mused. All this is strangely reminiscent of the emotional fainting trope in older movies. That she has the audacity to claim to be a biologist is astounding.

The Larry Summers case and its attendant negative Nancy demonstrates that while the social "sciences" have been the most afflicted by entryism conducted by leftist ideologues, other branches of science and academia are hardly immune. Biology is certainly one of the more difficult branches to do this in because it grapples with problems and finds evidence that intrinsically work against egalitarianism; one of the biggest sacred cows of the left. Biological variation, which must include individuals with less fitness, is an indispensable and indisputable part of the theory of natural selection. Yet, that does not prevent the political ideologues from trying to

enter and suppress the application of the idea of natural selection and genetic variation to the human condition without some measure of success.

The most famous example is that of Lysenko; for whom the term Lysenkoism is coined and who headed agricultural genetics in the Soviet Union. Like others on the left, he believed that offspring could inherit characteristics acquired by their parents during their lifetime despite it being well known that this is not how reality actually functions. In reality, characteristics are determined by genetics from birth and are more or less randomly distributed. Traits increase in frequency as the better adapted produce more fit offspring more often. Little to no increased fitness arises outside of genetic influence, and that which does can't be the object of natural selection or pass to future generations. Those who dared disagree with Lysenko in favor of reality were sent to gulags in Siberia. There is little doubt that if given the opportunity and power many modern leftists, like negative Nancy Hopkins, would engage in similar behavior. They certainly don't hesitate to get competent and honest university presidents fired; which was an American version of being sent to Siberia.

Other American examples of Lysenkoism are fairly salient in biology as well. Recently, the University of Wisconsin-Madison created the first "feminist biology" Post-doctorate program.[27] The idea that political feminism will somehow help find rather than completely distort and misconstrue biological truths is absurd. In Joseph Bottum's book, *An Anxious age: The Post-Protestant Ethic and the Spirit of America* he makes a quip that is equally applicable here. In it he says, "In any phrase the word social should be read as meaning basically not. Social scientist, for example, more or less equals not a scientist." "Social Justice," too, is more accurately read as "not justice." This could be expanded to any profession which has the forename "feminist." A "feminist" biologist or a "feminist"

programmer is more accurately read as “not a biologist” or “not a programmer.”

In another example among many like that of Dr. Summers, Danish Professor Helmuth Nyborg was temporarily suspended from his position due to his publication of robustly demonstrated mean IQ differences between genders.[28] A culturally Marxist kangaroo court reminiscent of Lysenko was convened and an attempt to fire him was made. Finding no justification for such an outrageous reprisal, the case was dropped. In a later paper, he explored the effect on the average IQ of Denmark given fertility differentials between native Danes and low IQ immigrants allowed in through mass immigration policies. This time the kangaroo court, populated by rival academics that passionately disliked him personally, was successful in ousting him.[29, 30] An international team of scientists not subject to local Danish academic politics was convened by prominent publisher Elsevier to re-evaluate the case. They vindicated Dr. Nyborg of all the charges against him and he is proceeding with a lawsuit against the Danish University and the committee for their corruption and dishonesty.

In the last example I will provide here, though there are plenty more (see Philipe Rushton, Hans Eysenck, Arthur Jensen, Cyril Burt, Raymond Cattell, Chris Brand, Thomas Bouchard, Bob Gordon, and Linda Gottfried) a researcher at the University of Texas published a paper which demonstrated that children of heterosexual couples do better than those of same sex couples.[31, 32] The paper was notable compared to previous studies in that it had a larger population and it was nationally representative; both positive factors which made the paper more reliable than previous research. The paper provoked 201 “scholars” to sign a letter to the journal condemning them for publishing it. The former department chair whined that she was “furious” with her former colleague for publishing the article. Many “Colleagues” published bitter diatribes on internet forums and blogs

that questioned the integrity of the author and the editors at the journal. In a paper describing the outrageous behavior of the self-proclaimed "scientific" community the author found:

> The temptation … to advance a political agenda is too often indulged in sociology, especially by activist faculty in certain fields, like marriage, family, sex, and gender … Research programs that advance narrow agendas compatible with particular ideologies are privileged … the influence of progressive orthodoxy in sociology is evident in decisions made by graduate students, junior faculty, and even senior faculty about what, why, and how to research, publish, and teach … The result is predictable: Play it politically safe, avoid controversial questions, publish the right conclusions…
>
> [Compared to conservative sociologists] Politically-correct sociologists enjoy certain privileges in a very politically conscious and liberal discipline. They can, for example, "paint caricature-like pictures based on the most extreme and irrational beliefs of those who differ from them ideologically without feeling any penalty for doing so," and "can systematically misinterpret, misrepresent, or ignore research in such a manner as to sustain [their] political views and be confident that such misinterpretations … are unlikely to be recognized by [their] colleagues" [Social science researchers believe] "that social science should be an instrument for social change and thus should promote the 'correct' values and ideological positions"[14]

With this sort of cultural climate, exploring gender differences, or even just acknowledging that such differences exist is extremely difficult for professional scientists to do today. The pattern of ideologically driven academics significantly undermines the ability of an objective outsider to trust the conclusions coming out of certain fields, especially when it is related to such a politically charged subject as gender (and race) differences in test scores. It is quite clear that the overwhelming majority of researchers working on this topic pursue a politically desired outcome of these studies. The great potential for this systemic Lysenkoism to motivate the production of inaccurate results and interpretations contrary to reality can't be overestimated. The objectivity of the field in concluding stereotype threat is a real and large effect phenomenon in particular is highly questionable.

Calling cynical skepticism of the social sciences “anti-intellectual,” a common criticism directed towards conservative thinkers, is only accurate in the sense that these “scientists” have redefined the word “intellectual” to describe their political ideology and therefore themselves. It is quite conceivable that the modern attitudes described as “anti-science” attributed to conservatives are fundamentally merely a non-inevitable reaction to what can only be described as pseudo-science being published by leftist activists in academia; with stereotype threat being just one example of this peer-reviewed pseudo-science.[19]

Certainly in some cases there are conservatives that legitimately hold anti-scientific views, such as in the case of evolution generally. But when it comes to evolution of the human species specifically, many liberals are just as anti-scientific as the most hardcore creationist. The main difference is that the left, being dominant in state institutions and having ample government funding, has the power to enforce idealism contrary to reality while most conservatives do not have symmetric influence. This asymmetry in power makes the leftist anti-reality beliefs of far greater concern and consequence than the equivalent conservative anti-reality beliefs.

For the average person, it isn’t so hard to notice some of the more egregious examples of leftist pseudo-science. Since most people do not have the time or energy to independently evaluate every pronouncement from every field coming out of the scientific community, it is more efficient (and natural) to use a quick short-hand, or stereotype, to extrapolate from a more narrow range of data for which they do have time and interest to look into. If their interest happens to be in an area replete with pseudo-science, and that’s likely because politically controversial areas are both the most likely to be interesting and to contain pseudo-science, then they have found themselves an extraordinary indicator of dishonesty which they then extrapolate from.

As a consequence of general distrust, society is more likely to develop unreasonable movements like that against vaccinations. It is not reasonable for the scientific community to expect the average person to evaluate every single scientific finding themselves. They have real lives that do not, and should not, have to deal with academic politics. Therefore, scientists need to do a better job rooting out bias, and especially liberal bias, in their fields so the public can actually trust what they say. If academics want to be trusted, they first must be trustworthy because trust, for institutions as much as individuals, must be earned.

I don't mean to be misinterpreted when I point out these biases in scientific research. To their credit, the main people who have identified and raised alarm about the bias against non-liberals in academic papers have themselves been liberal social psychologists such as Jonathon Haidt. In fields that are outside of the social sciences or on the periphery, real bravery is often demonstrated in their defiance of orthodoxy. Perhaps my favorite treatment of Cultural Marxism came from a paper which starts by stating "putting aside political correctness" and then continues on to discuss multiple heretical topics and never references it again. Political correctness is mentioned only long enough to dismiss it as the irrational and fallacious sentiment that it is. This is a hopeful sign, but it must be noted that no serious efforts to actively alleviate the problem within the social sciences beyond talking about it have so far been undertaken.

I have a great respect for science generally and see it as the best method so far developed by humans to separate truth from fiction, at least when the core principles of scientific philosophy are actually followed. But the scientific establishment is still a human institution and therefore fallible. The community at times moves unacceptably far away from its core principles and this usually happens when research topics might have strong implications for an over-arching political ideology. The Lysenkoist effect of

an overwhelmingly liberal character is just one problem. Another is that senior research scientists often spend as much or more time begging for money than they do actually trying to discover truth. Whether or not they actually get money is often dependent on how much they publish which creates an incentive to publish even if the research isn't very good. Conforming to the political biases of other researchers thus constitutes a quick way to look better with lower quality research.

From the state of academia, it can be taken that the discrimination hypothesis has a great deal of influence on our current culture and the determination of public policy through the publication of questionable research. If the discrimination hypothesis is only partially true or largely wrong in the present, then social policies based on it are likely to be largely ineffectual and possibly harmful. Intelligence researcher Dr. Wendy Johnson has stated the importance of this possibility with reference to X linked intelligence succinctly,

> Values create the emotionally charged climates pervading discussions of sex differences, making it difficult to evaluate scientific data objectively. Values are extremely important and appropriately form the basis of many actions and social contracts. But the laws of nature are not responsible to us or to our values and may not conform to them. It is important to understand the laws of nature as completely as possible within our circumstances in order to actualize our values as we intend. We can only develop coherent and realistic actions and social policies that will actualize our values if we understand the laws of nature as they exist.[1]

Useful Genetics Terminology

It is anticipated that many people who read this will not have any formal training in biology or genetics. The following is a brief lesson in terminology and the definitions of biological jargon which will be used later in this book. Any terms I may use and neglected to address here should be relatively easy to find in online educational sites.

A Gene vs. an Allele

The basic unit of heredity is the gene. A gene refers to a section of DNA (**D**eoxyribo**N**ucleic **A**cid) that codes for a particular protein and is at a specific location, or locus, on a longer DNA molecule. The DNA code at a gene location can vary from one person to another or, because humans are diploid, even from one gene copy to another on duplicate chromosomes in a single person. Common specific variations are referred to as alleles. Alleles specifically can also be thought of as words with slightly different spellings, similarly to color in American English and colour in British English. Alleles that are "spelled" only slightly differently could be expected to have similar "meanings" in terms of phenotypes. If the spelling is sufficiently different, then one allele might take on a completely different meaning; that is, cause a noticeably different phenotype.

In another helpful analogy discerning between genes and alleles, a gene should be thought of like an address, and an allele should be thought of like the physical house you find at that address. There might be several different designs of house that could be put at a specific address, but there is only one address.

The Central Dogma of Biology

Genetic information is encoded on DNA in the form of individual genes. These genes are transcribed onto RNA (**R**ibo**N**ucleic **A**cid) molecules, which are very similar in structure to DNA but are shorter and more mobile. RNA moves the information to other parts of cells where it can be translated into proteins by specialized structures called ribosomes. The sequence of the protein is ultimately determined by the sequence in the DNA. Information movement always moves in the direction of DNA to RNA to Protein, with only a small number of exceptions that aren't relevant to this book.

Proteins

Proteins are made up of long sequences of individual amino acid molecules connected end to end. There are twenty normally occurring amino acids which form protein chains. Protein sequence length can vary from only a few amino acids to the 10s of thousands. One of the largest known proteins, titan, is almost 35,000 amino acids long.

The number of possible combinations of an amino acid sequence can be calculated with the following equation:

$$C = 20^n$$

Where C is the number of combinations, n is the length of the sequence, and 20 is the number of interchangeable amino acids. For a protein of the most common length, ~350 amino acids, the number of possible combinations is:

$$C = 20^{350} = 2.29 \cdot 10^{455}$$

To put this number in perspective, there have been $4.32 \cdot 10^{17}$ seconds since the beginning of the universe 13.7 billion years ago, and it is estimated that there are 10^{24} stars present in the known universe.

With so many possible combinations, it is understandable how proteins can serve such a multitude of diverse tasks within organisms. Some of these functions include structure, catalyzing reactions, transport, recognizing stimuli, and more. Ultimately, it is the macroscopic effects of these proteins that result in observable phenotypes such as eye color, height, personality, and intelligence.

Dominant vs. Recessive Alleles

Alleles are distinguished as dominant or recessive based on their interaction with different alleles appearing in the same organism on duplicate chromosomes. If the physical expression of an allele happens regardless of what other allele is present, this allele is dominant. If the physical expression of an allele can be hidden by the presence of another allele, then it is recessive.

A common example of a phenotype controlled by a single gene is hair color. Alleles that code for brown hair are dominant and alleles that code for blond hair are recessive. Dominant alleles are usually referred to by a capital letter, while recessive alleles are given a lower case letter. In our example, let's assign brown hair a capital B, and blond hair a lower-case b. When a person has two of the same allele on both chromosomes, they also have the associated phenotype. Two brown alleles, BB, give brown hair and two blond alleles, bb, yield blond hair. These two states are known as homozygous dominant and homozygous recessive respectively. When a person has one of each allele, Bb, they are heterozygous and will have brown hair. The person would have the same hair color as the person who has two brown hair alleles. This pattern of phenotype expression is the reason why the brown allele is referred to as dominant and why the blond allele is referred to as recessive. The brown phenotype dominates the blond when both alleles are present. In other words, when the dominant brown

allele is present with the recessive blond, it completely hides the blond phenotype.

Chromosomes

A chromosome is a structure within cells that organizes a single long strand of DNA that has many genes. In humans, every normal person has 46 chromosomes; 2 copies each of 22 autosomes and 2 sex chromosomes. Any organism with two copies of each chromosome is called diploid.

For sex chromosomes, women have two X chromosomes, while men have one X and one Y chromosome. As a result, every person has two copies of every gene with the only (normal) exception being that men only have one copy of the genes on the X chromosome. Continuing the analogy from above, a chromosome might be thought of as a single long street that contains many addresses (genes). Since there are two chromosomes, it is like there are two identical streets from two parallel universes where everything is almost identical but there are occasionally different houses built at the same address in each universe.

It should be noted that XY sex determination is not universal to all animals. It evolved in an early mammalian ancestor and is present in almost all mammals. Some insects have an independently evolved XY sex determination system which is directly comparable to the mammalian system but is unrelated. Other creatures, such as birds, have a ZW sex determination system where males are ZZ and females are ZW.

Genotype vs. Phenotype

If we consider a single gene location, or locus, the identity of the two alleles on each chromosome pair considered together give the genotype. A person can have two of the same allele or two different alleles. There might be more than two alleles present in a whole population of organisms, but a normal individual will only ever have two of those because they only have a

single pair of each chromosome. Both alleles an individual carries are translated into proteins and result in outwardly observable features, or phenotypes.

Haplotype

A haplotype refers to the specific alleles at every gene locus when a single chromosome or single set of chromosomes is considered in isolation from duplicates; i.e., the actual houses on the street in only one parallel universe. Say for example that I had a chromosome with three genes a, b, and c and each gene could have one of two alleles. Gene a, gene b, and gene c could have X or x, Y or y, and Z or z respectively. With these three genes and six alleles a number of combinations would be possible and each individual combination would be a specific haplotype. For example, if you had a chromosome with X, y, z that would be one possible haplotype. If you had another chromosome with X, Y, z, that would be separate haplotype. The number of possible haplotypes is equivalent to the total number of possible combinations of alleles. The potential number of haplotypes increases with the number of genes, and the number of alleles that can inhabit those gene locations.

Meiosis and Recombination

In the formation of gametes (eggs and sperm), cells go through the process of meiosis. Diploid[1] precursor cells divide until haploid cells are formed. Haploid in this context just means a cell which contains one copy of each chromosome instead of two.

Sperm and eggs must be haploid so that when they fuse the new organism does not have extra chromosomes. Down's syndrome is an example of what can go wrong when extra chromosomes are present. During the meiotic process, DNA is exchanged between homologous chromosomes (duplicates) which results in the transfer of alleles between

parallel chromosomes. This biological process results in the randomization of alleles on individual chromosomes and increases the uniqueness of an offspring relative to its parents. In other words, the haplotypes of individual chromosomes will not be the same as either parent. The one exception is that women inherit the X chromosome from their father mostly unaltered[2] since he only has one X. This randomization creates chromosomes with novel haplotypes that are passed on to offspring.

Other Types of Inheritance Patterns

In incomplete dominance the two alleles would work together to make an intermediate phenotype. For example, a homozygous red flower, rr, mated with a homozygous white flower, ww, would produce pink flowers, wr.

In co-dominance, both traits are expressed fully and neither is hidden. The AB blood type is an example of co-dominance with A and B both referring to alleles. Blood type itself refers to glycoproteins expressed on the surface of red blood cells. Co-dominance in this case just means that the A glycoprotein is expressed equally with the B glycoprotein without interference between the two alleles.

Dividing inheritance patterns into categories is helpful, and there are plenty of examples which follow one or the other in a very strict sense, but for many genes the dividing line can be more ambiguous. A specific gene may approximate one of the strict categories rather than being exactly like them. In other words, there is such a thing as partial dominance and partial recessivity where genes only partially fulfill their namesake but is similar enough to the strict case that the same terms can be used. Incomplete dominance is an example where the dominant character is exactly balanced 50 / 50. If it were not completely balanced, say the red allele was 80 % dominant, you would expect to see a red flower that was only somewhat lighter than the homozygous red flower. Conceptually, this level of detail will not be needed for this book, but it is useful to know that the

phenomenon of gene dominance can be more nuanced than the strict categories described.

Pseudo-dominance

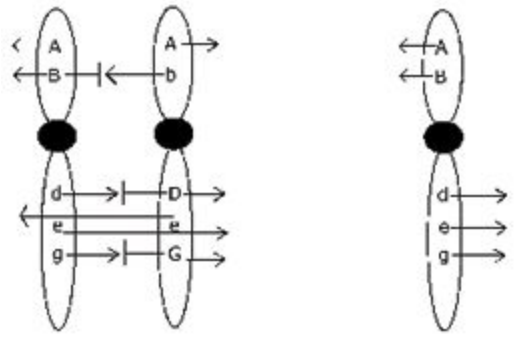
All of the genes on the 22 autosomes generally have interactions like the inheritance patterns listed above. However, the sex chromosomes are exceptional. Men have one X chromosome and one Y. The Y chromosome evolved from a much larger ancestor chromosome in early mammals and initially would have been identical in length and gene content to the ancestral X chromosome. Both were originally autosomal and did not play a role in sex determination. After acquiring sex determining genes, the Y chromosome has progressively lost other genes and become shorter to an extent that only a handful of genes are shared between the two chromosomes today. That is, there are only a very small number of genes on the already heavily truncated Y which still recombine with genes on the X and not all Y genes recombine with the X.

The reduction of the Y means the vast majority of genes on the X chromosome have no analog on the Y. For these genes, regardless of a recessive character of an allele on the X chromosome, it will be expressed in males as if it were dominant because only one copy of each gene on the X chromosome is present in men. This phenomenon is known as pseudo-dominance. X linked genes that might otherwise be covered up completely or incompletely expressed in females appear dominant in males. Notable cases of this phenomenon include red-green color blindness and hemophilia which occur much more commonly in men. These same issues occasionally occur in women as well, but only when they are unlucky enough to inherit two faulty copies of the gene. This pattern is due to the much lower chance a woman will inherit two copies of the relevant recessive gene at the same time. The implication is that recessive genes on the X chromosome that are often masked in females will be more commonly expressed in males.

The Hardy-Weinberg equation is a formula which allows the analysis of genetic frequencies in populations and takes the form:

$p^2 + 2pq + q^2 = 1$.

p and *q* represent alleles for one gene locus present in a diploid organism. p^2 represents the frequency of homozygous dominant individuals (*pp*), q^2 represents the frequency of homozygous recessive individuals (*qq*), and 2*pq* represents the frequency of heterozygous individuals (*pq*). These three quantities must add up to 1 (i.e., 100 %) of the population. For genes on an X chromosome in males the expression is simplified to $p + q = 1$ because they only have one copy and they are either *q* or *p*. Another way to say this is that the overall frequency of a given allele on the X in males will be expressed as phenotype at its actual frequency in the population. As a quantitative example, consider a population which has an X linked recessive gene with a frequency of 10 % ($q = .1$). This indicates that 10 % of the males in the population will exhibit the trait, but only 1 % of females will:



Above is a conceptual diagram of chromosomes and alleles. Genes are represented by letters and with two chromosomes there are two copies of each gene, creating slots for two alleles; Two a's, two b's, etc. Dominant alleles are indicated by capital letters and recessive alleles are indicated by lower case letters. On the left is a diagram of how autosomes normally function. Dominant alleles are expressed, indicated by an unblocked arrow, regardless of what alleles are present on the mirror chromosome.

Recessive alleles must go “through” the allele present on the mirror chromosome to be expressed. The presence of a dominant allele prevents the phenotype of the recessive allele, indicated by a vertical blocking line. When two recessive alleles are present, there is no block and the trait is expressed. X chromosomes in females, with some caveats explained later, demonstrate a functionally similar pattern of expression as autosomes. On the right is an example of a single X chromosome as exists in males. Since there is only one copy of each gene, it is not possible to block the recessive alleles’ phenotypes.

$q \cdot q = .1 \cdot .1 = .01 = 1\ \%$

This leads to greater variation in the male than the female population. Whenever a trait more commonly appears in males than females, it is reasonable to suspect that the gene(s) responsible lay on the X chromosome and is/are recessive.

The shortening of the Y chromosome, in addition to multiple examples of convergent evolution to an XY system and an inverted ZW system in different species, implies that there is positive selection pressure for this type of sex determination and that the pseudo-dominance which results from it confers an evolutionary advantage. As will be argued later, this advantage is likely to facilitate an increased rate of evolution of behaviors, instincts, and cognition.

Superhaplotype

Different X chromosome haplotypes could result in cognitive abilities across the spectrum of human intelligence. For convenience in this discussion, a superhaplotype refers to unique complement of alleles present on the X chromosome which collectively confer significant cognitive advantages to the person who possesses it.[33] It is likely that more than one unique haplotype could qualify for this definition. If most intelligence boosting alleles are recessive, then the benefits that can be conferred by a superhaplotype would be almost exclusively found in males.

The female equivalent would be a supergenotype since they have two X chromosomes. If intelligence alleles are to any large extent recessive, then the frequency of appearance of supergenotypes can be expected to much lower based on the probabilistic treatment of the simplest case given earlier using the Hardy-Weinberg theorem. In fact, the larger the number of genes with unfixed recessive alleles involved, the greater the divergence between the frequencies of superhaplotypes vs. supergenotypes. With one locus the difference in the probability of occurrence was 9 %. With two loci with recessive genes each at a .1 frequency you have for males

$q_1 \cdot q_2 = .1 \cdot .1 = .01 = 1\ \%$

In the case of females you have:

$(q_1 \cdot q_1) \cdot (q_2 \cdot q_2) = (.1 \cdot .1) \cdot (.1 \cdot .1) = .0001 = .01\ \%$

The difference between males and females is 99 %. The difference in the probability of a superhaplotype vs. a supergenotype occurring thus increases dramatically as additional recessive X linked intelligence genes get factored in.

Fixation

In biology, this refers to a point where a species goes from having multiple alleles at a specific locus to only having one allele for that locus. This could happen by random chance due to low population numbers or it could happen because one allele confers greater fitness than the others. Once an allele displaces all others and it is the sole allele at that locus in all individuals, it is said to have reached fixation, or that it has been fixed in the population. The word can also be used to describe converting inorganic carbon or nitrogen to biologically useful forms, but this sense of the word is not used in this book.

[1] A diploid precursor cell actually duplicates chromosomes to become tetroid before undergoing two rounds of division to become haploid.

[2] There is a pseudo-autosomal region of the Y which recombines with the X. However, this region is quite small relative to the overall X so the actual amount of randomization of the paternal X is minimal and only for select genes.

Do IQ Tests Reliably Measure Intelligence, and Do They Correlate with Achievement?

IQ testing and research has been around for over 100 years; the US army in particular has been employing them on a large-scale since at least WWI.[34, 35, 36] Though it is often a controversial issue, the fact remains that more than any other psychological trait studied, IQ scores contain a remarkable amount of predictive power with regards to life-time outcomes. Moreover, since the findings are typically diametrically opposed to the egalitarian ideal rampant among liberal social "scientists," it is unlikely that bias makes the findings invalid. Disliked results surviving massive bias against them can logically be assumed to be profoundly robust.

One of the most surprising aspects of intelligence that early researchers encountered was that performance on a wide variety of divergent tasks were positively correlated with each other. In other words, if you did well on one type of task, it was very likely you would do well on any task you were given including ones that were nothing like the original subject matter. This is the origin of Spearman's g or general intelligence. By determining a person's g on a few tasks, you can predict how he or she will perform on a variety of others and remarkably how well they would do in terms of lifetime achievement.[35, 37] This is why testing has proven so valuable for college admissions; you can accurately guess how someone will do in college courses on diverse subjects based on results of a rather narrowly defined test. Tests such as the SAT are highly g loaded, and thus provide a reasonable estimate of intelligence.[38, 39] Moreover, it has also been shown that multiple test batteries are highly correlated with each other, which demonstrates performance on one battery will predict performance on

others.[35, 37] This finding has withstood 100 years of robust research and a greater amount of heavy criticism, thanks to political correctness, than virtually any other scientific finding.[35]

Intelligence tests have been criticized with the assertion that the g factor cannot reliably predict lifetime achievement. Books such as "*The Bell Curve*" by Charles Murray explain that past and present research has pretty clearly demonstrated that IQ tests such as the SAT do have predictive validity. If you score in the top half of the SAT, you will very likely be among the top half of college students in terms of GPA both in the 1st year and after 4 years of college.[40, 41] High intelligence, as demonstrated by tests, also translate into greater achievement in the world of work with greater advancement in careers and better job performance.[42] A meta-analysis of intelligence studies found that General mental ability is predictive of success in education and work based on over 85 years of research.[43] In other words, intelligence has been robustly confirmed to be an important and real construct.

Given the irrefutability of this data, another more nuanced criticism was created which claimed that intelligence tests fail to distinguish between individuals scoring differently in the upper ranges of ability. In other words, beyond a certain threshold, more IQ points don't matter and can't be used to predict corresponding greater achievement. In essence, critics claimed that intelligence suffers from a law of diminishing returns. However, recent research suggests that tests with sufficiently high ceilings actually do differentiate between individuals scoring at the far right of the bell curve. Two studies based on precocious individuals identified at a young age found:

> Precocious manifestations of abilities foreshadow the emergence of exceptional achievement and creativity in the world of work; when paired with preferences, they also predict the qualitative nature of these accomplishments … Without question, early SAT

> assessments measure much more than book learning potential and predictive validity for first-year college grades.[44]
>
> When sample sizes are sufficient to establish statistical confidence and criteria with high ceilings are employed, measures that validly assess individual differences within the top 1 % of ability reveal important outcome differences between the able and the exceptionally able (even on outcomes that are exceedingly rare).[45]

Both of these studies focus on several groups of intellectually elite individuals identified at different times starting in the early 1970s. What was found was that 1 / 3 of the total range of human intellectual ability is found in the top 1 % of cognitively exceptional people. The up to 200 point differences between the very able and the exceptionally able manifest in differences in income, patents earned, tenure-track positions at top ranked universities, and in the number of peer reviewed papers; all favoring the exceptionally able. In other words, the top of the top 1 % achieved more in terms of objective measures than the bottom of the top 1 %.

Three cohorts were identified at young ages and were chosen to be progressively more selective in ability, though all three were in the top 1 % range. Controlling for a particular degree and background so that the only difference was relative IQ did not diminish this effect.[46] Men in the three cohorts scored on average 530, 567, and 729 on the SAT M at a young age. Those same three cohorts had earned a PhD by age 33 at a rate of 25 %, 33 %, and 50 % compared to only 1 % of people who earn PhDs in the general population. Women in the top ranges demonstrated a similar trend. According to the authors of this study, “That a 2-hr test can identify 12 year-olds who will earn this ultimate educational credential at 50 times base-rate is remarkable”[45] considering that other scientists such as epidemiologists take notice even when the base-rate only doubles. Empirical evidence clearly demonstrates that IQ tests are measuring something substantial and that there is no ability threshold where more

ability doesn't help; there isn't a law of diminishing returns when it comes to human intelligence.

Though this section and the one on stereotype threat briefly overviews the objections against IQ testing and cites some work that demonstrates its effectiveness, if you still have doubts I recommend you read Arthur Jensen's *Bias in Mental Testing* which systematically and comprehensively goes over the various objections to IQ testing and debunks them. For a general overview of mental testing, see the same author's other book *The g Factor.*

Gender Differences in General Intelligence

When comparing gender differences in testing outcomes, two important patterns emerge which are likely explained by two separate biological mechanisms. The first pattern is the much greater male variability in scores in virtually every test regardless of the specific ability being evaluated. Males outnumber females by a large and significant amount among both the highest and lowest scorers on the vast majority of tests. Not normally included among the lowest test scorers are those who suffer from various forms of mental retardation who also include an overwhelming number of males relative to females. Greater male variance in intelligence has been noted ever since IQ tests were first developed and has been confirmed in virtually all subsequent studies up to the present day. One somewhat early example was a study done on children in 1945. Using the most conservative estimate of greater male variance allowed by the data (13 %), the researchers found that among the brightest and dullest 1 % there were 144 boys for every 100 girls; for the brightest and dullest 0.1 % there were 186 boys for every 100 girls.[47] It is this pattern which is best explained by X linked recessive genes being responsible for intelligence.[47] The second pattern, probably mediated by hormonal influences,[47] is that there is a small mean difference on general intelligence tests and large mean differences on specific subtests of distinct abilities between males and females. On some sub-g abilities males excel and on others females excel.

The average IQ scores of men and women are almost the same with men only having a slight advantage of between 3–5 IQ points.[48, 49, 50, 51, 52, 53] However, tests which cover a wider variety of items (i.e., common knowledge and spatial reasoning), rather than over-emphasizing verbal reasoning as the most common tests do, have found up to a an 8–9 point

advantage for men.[54] How pro-verbal bias is implemented in most common intelligence tests will be discussed in more detail in a later section. In any event, the bias against men which facilitates equal means in the tests doesn't hide the overall trend of greater variance in males. Even if the most commonly reported findings are taken at face value without assuming bias, a roughly equivalent average between males and females would not be inconsistent with an X linked pattern of inheritance for intelligence.

The Armed Services Vocational Aptitude Battery (ASVAB) and the Armed Forces Qualification Test (AFQT) are tests issued by the United States military to help in determining what assignments to give new recruits based on their intellectual aptitude. Since large numbers of individuals are given this test every year, it provides a convenient cohort to compare brothers and sisters with the same parents who both entered the Armed Forces.[55] The advantage of comparing siblings is that it offers enhanced control of the variables for socioeconomic status, environment, and genetics. These sibling pairs should have similar backgrounds for all three variables and should mainly differ in ways representative of pure gender differences. What was found when comparing siblings on the ASVAB and the AFQT was that brothers had significantly greater variance on all sub-tests except numerical operations and coding speed. In the total sample, the top 50 scores were comprised of 33 males and 17 females which is a ratio of about 2:1. Males also demonstrated a small mean advantage. On the next page you can see a table of male and females scores compared. The standard deviation (SD), a measure of the variation in the sample, can be seen for both males and females with males showing a greater standard deviation for most sub-tests, sometimes by a very large margin. A larger standard deviation indicates that individual scores tend to vary from the mean by a larger degree.

Brother-Sister Standard Deviations on Military Cognitive Tests Compared

ASVAB1	Science	5.7	4.8	1.19
ASVAB2	Arithmetic	7.5	6.7	1.12
ASVAB3	Word Knowledge	9	8.2	1.1
ASVAB4	Paragraph Comprehension	3.9	3.6	1.08
ASVAB5	Numerical Operations	11.5	11.5	1
ASVAB6	Coding Speed	15.8	16.8	0.94
ASVAB7	Auto and Shop Information	5.9	3.7	1.59
ASVAB8	Mathematics Knowledge	6.5	6.1	1.07
ASVAB9	Mechanical Comprehension	5.8	4.1	1.41
ASVAB10	Electronics Information	4.7	3.4	1.38
ASVAB-g	General Intelligence (g) Estimate	3.2	2.8	1.16
AFQT-g	General Intelligence (g) Estimate	6.7	6	1.11

Data from Deary, Ian J.; Irwing, Paul; Der, Geoff; Bates, Timothy C. (2007) Brother-Sister Differences in the g Factor in Intelligence: Analysis of Full, Opposite-Sex Siblings from the NLSY1979 *Intelligence.* v35 n5 pp. 451–456.

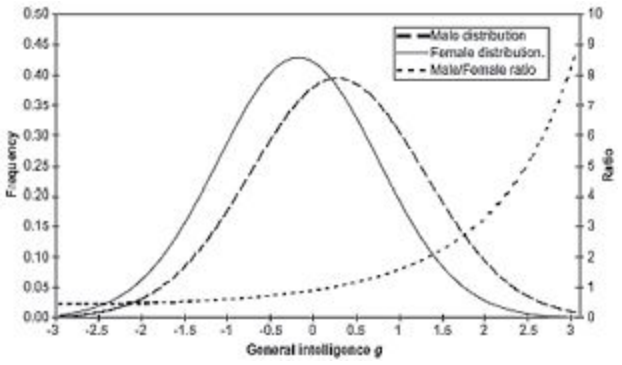
The trade-off made with the above data is that it is a very unrepresentative sample of the general population since it is exclusively from siblings who both chose to join the military. However, increased male variability is also confirmed with larger and much more representative samples.[56] One particularly thorough investigation looked at a large variety of different

tests and found that the overwhelming majority of tests demonstrate greater male variability, even on tests on which women are stronger on average.[57]

Of particular note is that as you consider progressively higher percentiles of performance on tests of numerical or spatial reasoning, you find a pattern of exponential increase in the ratio of boys to girls. In these large and nationally representative samples (US), the ratio of men to women in the top 5 % was 5:1 and 7:1 in the top 1 %. On some specific subtests related to science and vocational aptitude, the sex ratio above 3 % or 1 % (depending on the test) became infinite because no girls scored at that level.[57] The gender differences at the average and at the margins had stayed stable over the 32 year period preceding the 1995 study.[57] More recent SAT mathematics scores, discussed in greater detail later, still show the same pattern. Increased male variability was found in abilities with relative large mean disparities that favor females (writing and verbal ability) in addition to abilities with male mean advantages such as in science and stereotypically male vocational skills. For male-advantaged spatial ability, males had 27 % greater variability.[58] Military research in particular has found that the scores on these tests have a very large predictive validity for obvious occupations (i.e. mechanics), which implies that rather than being biased the findings are demonstrating innate and important sex differences.[55] On the next two pages is a table with data from the nationally representative study just mentioned which lists gender differences in variability.

Occasionally some studies have come out which try to demonstrate a female advantage in general IQ at the mean. However, a meta-analysis of test battery studies found that in the few cases where a female advantage was identified, it was an artifact of test bias favoring females (i.e., disproportionately more verbal items relative to numeric or mechanical). In other words, the finding was a result of methodological issues rather than a

true difference. Studies meeting minimum standards of quality and control indicate a consistent male advantage in g.[52] From this study, a convenient graph (p) which super-imposes the male and female intelligence distributions demonstrates the effect these two distributions have at contributing to the most cognitively able population.



"Total sample male and female general intelligence g (HFA/S-L) distributions and male-female ratio as a function of male g=.23 (SD = 1.03) and female g = -.23 (SD=.93) N_{males} = 90 (mean age 13.0, SD = 3.54) and $N_{females}$ = 91 (mean age 12.8, SD = 3.6)."

Graph used with permission of creator. Nyborg, H. (2005) Sex related differences in general intelligence g, brain size, and social status. *Personality and Individual Differences*. Volume 39, Issue 3, August 2005, Pages 497–509.

What this chart shows is that greater male variance and a slight mean advantage combine to provide many more males in the upper ranges of intelligence compared to females. In fact, as you go right towards greater intellectual ability, the number of males relative to females grows exponentially.

Mean and Variance Differences Between Gender By Test and Subject Area

Project Talent	-0.15	1.16	1.71	0.90	1.00
NLS-72	-0.05	1.03	1.15	0.94	.81*
NLSY	-0.18	1.16	1.50	0.83	No Data
HS&B	0.002	1.10	1.07	1.03	1.06
NELS:88	-0.09	1.16	1.75	0.80	0.83
Project Talent	0.25	1.05	0.89	1.57	1.5
NLS-72	-0.06	1.00	1.02	0.89	0.87
NLSY	-0.03	1.08	1.20	0.87	No Data
HS&B	0.07	1.05	0.84	1.06	1.06
Project Talent	0.12	1.20	1.00	1.33	1.5
NLS-72	0.24	1.05	0.72	1.76	2.34*
NLSY: Arithmetic Reasoning	0.26	1.25	1.84	1.90	2.20
NLSY: Mathematics Knowledge	0.08	1.19	0.99	1.70	1.90
HS&B	0.22	1.16	0.77	1.67	2.06
NELS:88	0.03	1.06	0.97	1.34	1.64
Project Talent: Table Reading	No Data	No Data	2.17	0.82	1.00
Project Talent: Clerical Checking	No Data	No Data	1.79	0.73	0.81
Project Talent: Object Inspection	No Data	No Data	1.50	1.00	1.00
NLS-72	-0.23	1.04	1.54	0.70	0.69

NLSY: Coding Speed	-0.43	0.98	1.60	0.41	0.38
NLSY: Numerical Operations	-0.23	1.08	1.50	0.69	0.67
HS&B	-0.21	1.15	1.49	0.73	0.79
Project Talent: Physical Science	0.5	1.28	0.57	2.83	7.00
Project Talent: Biological Science	0.29	1.15	0.78	2.00	No Data
NLSY	0.38	1.42	0.92	3.40	7.2
NELS:88	0.11	1.14	0.87	2.04	2.5
Project Talent	0.31	1.26	0.89	2.29	3.5
NELS:88	0.04	1.14	1.23	1.59	1.74
Project Talent	0.04	1.04	1.00	1.09	1.00
NLS-72	-0.22	1.15	1.49	0.74	0.67
Project Talent	-0.32	0.82	1.56	0.50	0.43
NLS-72	-0.26	1.01	1.44	0.70	0.69
HS&B	-0.18	1.14	1.23	No Data	No Data
Project Talent	0.13	1.27	0.82	1.86	2.33
HS&B	0.25	1.27	0.79	1.90	2.39
Project Talent	0.83	1.45	0.36	8.50	11.00
NLSY	0.72	1.74	0.60	8.00	10.90

Project Talent	1.22	2.72	0.44	15.20	∞
NLSY	0.72	1.56	0.62	8.00	9.90
NLSY	1.02	2.34	0.44	66.3	464.00

Mean differences are in Standard Deviations (SD) of the entire population. Positive values indicate a higher male mean; negative values indicate a higher female mean. Extreme scores in the tail regions are expressed as the ratio of the number of males divided by the number of females scoring in those ranges. The ranges are the bottom 10 %, the top 10 %, and the top 5 %.

NLS-72: National Longitudinal Study of the high school class of 1972

NLSY: National Longitudinal Study of Youth

HS&B: High School and Beyond, 1980: A Longitudinal Survey of Students in the United States

NELS 88: The National Educational Longitudinal Study of the Eighth Grade Class of 1988

* The top 97 % rather than top 95 %

∞ No women scored at this level, which makes the denominator zero.

Data from Hedges, L.V., Nowell, A. (1995) Sex differences in mental test scores, variability, and numbers of high-scoring individuals. *Science*. Vol. 269 No. 5220, 41–45.

Specific Ability Differences between Genders

Focusing on general intelligence exclusively misses part of the picture, however. Though there is only one g,[37, 59, 60] there are also sub-g abilities which must be considered. Statistical techniques that isolate the relevant skills from g largely remove the predictive validity of tests in terms of outcomes,[59, 61] which means that these sub-g abilities do not invalidate the concept of general intelligence. However, they can predict the nature of proficiencies and interests as well as leave room for individuals with similar IQs to possess individualized intellectual profiles. The sub-g abilities can roughly be divided into verbal reasoning, numerical reasoning, and spatial/mechanical reasoning. Along these dimensions a large sex differentiated pattern appears which has been well documented since the beginning of IQ tests almost 100 years ago.[62] Women tend to outperform men on tests of verbal reasoning while men have an advantage in both numerical and spatial reasoning.[60]

The relationship between g and the sub-g abilities can be understood through an analogy provided in a paper by intelligence researchers Wendy Johnson and Thomas Bouchard.[59] Consider a tool user with a certain level of proficiency (his or her g) with access a variety of “tools” that are more or less suited to different tasks. When presented a task, the user must choose

from the tools they possess to accomplish the task. Men and women are essentially given different tools or at least have a different set of preferred tools. As such, each gender tends to use a different tool set when working on the same task. How this relates to specific brain organization will be discussed in more detail in a later section. A competent tool user (high general intelligence) can effectively use even poorly selected tools to successfully solve problems. An incompetent user is unable to use even the best designed tools to solve complex tasks. Sex differences in mental reasoning lie significantly within these residual abilities (the toolbox) and a person's general intelligence can mask these differences to an extent. Residual abilities may not predict total life outcome like g, but when combined with g they can predict specific choices such as careers, interests and skills. In other words, people with high g intuitively understand what types of tasks they are better at and gravitate to activities which make use of them.

Verbal, numerical, and spatial sub-abilities are all positively correlated with g. The more general intelligence a person has, the better they do on all those tasks. However, individuals often display a greater relative talent in a single ability relative to the others (i.e., they have ability peaks).[34] There is also some evidence that if the influence of general intelligence is statistically removed then verbal and spatial ability are negatively correlated;[59] this implies that there is some sort of trade off in organizing the brain to be better at one task or the other. Focusing on one ability necessitates reducing competence in the other. Relative to average students, gifted (highly intelligent) students especially tend to demonstrate uneven ability profiles where one ability is favored over the others.[34]

Numerical and spatial reasoning are especially important to pursuit of STEM fields and in this area there has been demonstrated substantial sex differentiation. Late adolescent males demonstrate a 6.4 point mean

advantage in numerical ability and a 13 point mean advantage in spatial/mechanical ability. This is about a half and a full standard deviation respectively.[54, 58, 63, 64] A standard deviation difference in spatial aptitude is massive. In addition, the mean differences between males and females in these sub-abilities grow as they age. Since the oldest group tested in the cited study had not reached adulthood and because brain development doesn't finish until the mid-twenties, it could be expected that these differences are even larger in adults when gender differences in brain structure fully manifest.

In another study, a battery of tests of specific abilities such as verbal, numerical, and spatial was given to a large group that included both males and females. 21 of the tests found average gender differences with effect sizes in excess of .5 standard deviations, and 2 exceeded a full standard deviation. 12 of the tests demonstrated a male advantage and 9 demonstrated a female advantage. The average effect size on tests favoring males was .64 standard deviations on average and for tests favoring females the average was .61 standard deviations.[59] The tests which advantaged one sex or the other were consistent with previous research. Females did better on more verbally focused tests and males did better on more visuospatial focused tests.

Taking into account sub-g ability differences incrementally adds greater validity to the predictive qualities of general IQ and allows for predicting a student's future major choice and occupational field.[65] Women, who tend to favor verbal reasoning can be expected to go into biology, medicine and non-stem fields with low mathematics focus while the innate advantages males have in spatial and numerical reasoning (especially when combined with greater male variability) translate into preference for the harder, more mathematically intense sciences. The difference accounts for the large over-representation of males in STEM fields and especially in the attainment of

inorganic science and engineering degrees.[35] The greater incidence of males in STEM fields can additionally be a contributing factor beyond higher variability to the greater awarding of patents to males than females (17.8 % vs. 4.3 %) among the most gifted people (top 1 % IQ).[35]

Intelligence and Personality are Genetically Determined Characteristics

In *The Origin of Species,* Charles Darwin spends a considerable amount of effort going over the various domesticated animals and the types of traits that humans had artificially selected for in the lead up to his theory of natural selection. Among the most interesting of those animals he discussed was the tumbler pigeon. True to its name, its defining characteristic was that it flies to a certain height and then seemingly loses control. The bird tumbles down for some distance before righting itself just to repeat the behavior again. This complex behavior is particular only to one specific, artificially selected strain of pigeons bred for this trait. From the very first elaboration on evolution it was clear that there can be no other conclusion than that even very complex behaviors can have strictly genetic causes.

In a classic and (now) well known experiment, Russian scientist Dimetry Balyaev bred wild foxes and selected the foxes that were observed to be the tamest.[66] After a remarkably short number of generations he had a population of foxes that were not only tame, but started expressing traits common in other domesticated animals such as droopy ears and patches of white fur. The appearance of domesticated traits in previously undomesticated animals implies that those traits are either inherited together with tameness genes or are a direct consequence of those genes. In another replication of this experiment, a single strain of lab mice was bred into two distinct populations. One was selected for wildness and savageness while the other was bred for tameness. When members of the two strains were crossed together, it was shown that savageness was the dominant trait.[67] Both of these experiments provide strong empirical evidence that complex

personality traits are just as genetically determined as height or other physical traits.

Personality and disposition have also been shown to have a similar level of heritability in humans.[68] In a landmark study on the heritability of personality, Thomas Bouchard states:

> It is well known to naturalists and to animal breeders that there are wide and heritable differences in behavior within other species, but there is a curious reluctance among some scientists to acknowledge the contribution of genetic variation to psychological differences within the human species. Our findings support and extend those from many family, twin, and adoption studies, a broad consilience of findings leading to the following generalization: For almost every behavioral trait so far investigated, from reaction time to religiosity, an important fraction of the variation among people turns out to be associated with genetic variation. This fact need no longer be subject to debate; rather, it is time instead to consider its implications.[69]

Indeed, since every part of an organism, including the brain and nervous system, is exclusively built using the instructions contained in the genetic code, it is hard to imagine how a belief in intellectual power being strongly independent of genetics could ever come to dominate mainstream thinking generally and in the social sciences specifically. Yet the blank slate belief has done just this despite being very implausible theoretically and conceptually; and basically being disproven empirically. The persistence of faith in *tabula rasa* is largely due to ideological preference for liberal egalitarianism rather than having much, if any, empirical support.

The political activism of some "scientists" has caused the progressive expansion of the definition of "environment" to include extreme settings because variations in normal environments, broadly defined, in developed countries were found to be inconsequential to intellectual development. This finding is in direct conflict with their faith in egalitarianism and a more encompassing definition of environment allows them to prop up their belief; however shakily.

Though extreme environments such as heavy childhood disease burdens, severe malnutrition or starvation, severe abuse, or drug taking by pregnant mothers could result in intellectual and developmental impairments, these sorts of environments are not widespread in most developed countries and even in many developing countries the rates of such problems are relatively low and on the decline. Merely having a low socioeconomic status does not constitute an extreme environment. As the legitimate problems caused be severe environments recede, the relative contribution of genetics to intelligence can only increase because above a surprisingly low level, improving environments cannot make additional positive contributions.

Genetics determine the maximum potential intellect a person may manifest and no environment can ever cause a person to exceed that potential, however an extremely poor environment could cause them to fall short of it. As an analogy, consider a glass that can be filled with water. Improving the environment is like adding more water to the glass, but the maximum volume of the glass is predetermined and can't be increased; i.e., it is determined by genetics. In very poor environments few glasses get filled and so adjusting the environment can have some important benefits. However, it is not possible to fill a glass beyond its predetermined volume; the excess will just spill over and is wasted. In reasonably good environments, such as prevail in developed countries and some developing countries, enough water is available to essentially fill everyone's glasses up to the maximum volume. In such a setting, the maximum potential determined by genetics must be the overwhelming influence on measured intelligence. The Flynn effect (i.e., the slow rising of IQ scores over the last century) is explained by this in that there were some environmental changes available during that time which could raise phenotypic intelligence by a small amount. The glass wasn't being filled all the way. However, the Flynn

effect has in recent years been shown to be slowing down and even reversing in developed countries.[70] What this suggests is that we have more or less reached the upper limit of what environmental changes can do to improve intelligence. Once that point is reached, the only thing that continues to matter in differentiating people is genotypic intelligence.

So what is the direct evidence for the role genetics plays in intelligence? Of all the psychological traits that have been the subject of investigation, intelligence is by a large margin the most extensively studied trait and has been a research topic for over a century. As part of that research, many identical twin studies have been performed to try to quantify the relative contributions of environment and genetics to the trait. Identical twins raised in different homes offer researchers an opportunity to tease this out because they have the exact same genotype and different environments. Therefore, the contribution of genetics to each sibling's intelligence should be about the same. The degree to which they differ should allow an estimate of the contribution of the environment. However, fraternal twins, family relatives, and adoptees can also provide useful insights despite the lesser control of the genetic variable.

In *Intelligence, Genes and Genomics*, Richard Plomin considers a large number of twin studies in a comprehensive review.[71] The cumulative results of such studies yield some decisive conclusions. All such studies found that there was no less than a genetic heritability of .45 out of a maximum of 1.0 (45 %) with most studies finding the heritability to be much higher (up to 80 %). In a study that included 10,000 identical and fraternal twins, the concordance between the intelligence of identical twins was found to be .86 which was near the test-retest reliability of the test battery. That the correlation between identical twins is near the test-retest reliability limit leaves open the possibility that the genetic contribution is actually higher than could be determined via that test battery. Fraternal twins, who have the

same similarity to each other as typical siblings, were found to correlate with each other by .6 out of 1.0 (60 %). Consistent with twins, the intelligence of adults adopted as children is much more closely correlated to their biological parents than to the adoptive parents that created the environment they were raised in. Nationally representative studies have confirmed that non-related parental influence on intelligence in genetically unrelated adoptees is negligible and inconsistent.[72] Additionally, it has also been confirmed that the IQ in the upper ranges of ability are also heritable.[73] Results such as these have been replicated across a large variety of different cultures. The possibility that there is some peculiarity of Western culture that leads to these results is thus precluded.

Intelligence has also been confirmed to be a singular quantity (i.e., it can be represented by a single variable: Spearman's g) genetically as well as phenotypically

> The Heritability Correlation between different cognitive abilities approaches 1.0. This means these traits aren't inherited separately. Though g is a phenotypic construct, it is even stronger genetically.[71]

One of the most remarkable and surprising findings was that environment accounts for about one third of the variation in intelligence in childhood, while genetics accounts for half with other factors accounting for the remainder. However, contradictory to earlier assumptions, the role of environment actually *decreases* as a person reaches adulthood to the point where environment seems to have a very small role while genetics can account for 80 % or higher of the variation in intelligence.[71] This implies that rather than environment having a cumulatively larger effect as experience is gained, changes in gene expression during development come to dominant all other contributions.

Recent advances in genome sequencing and computer processing have begun to allow direct comparison of genetic similarity with socioeconomic

status and intelligence in unrelated individuals. In 2014, the first study to implement genome wide complex trait analysis to test these correlates had some remarkable findings. It turns out that the exact same genes which influence variance in intelligence also influence variance in socioeconomic status. The correlations between genetics and either phenotype separately was between .66 and 1.0; 1.0 being 100 %. The covariance between both phenotypes considered together and genetic influences was between 56 % and 94 %. Since limitations in the study design prevent consideration of non-additive influences and rare alleles, it is expected that these numbers are actually underestimates.[74] Another genome wide association study was able to show that three single nucleotide polymorphisms (i.e., single letter differences in the genetic code) were able to account for 2 % of the variation in education and cognitive function. This is a very large effect for a vanishingly small portion of the genome.[75]

Lastly, one study has combined genome wide association studies with MRI data to show that dynamic brain volume changes are also highly heritable and associated with IQ.[76]

> A substantial fraction of the variability in brain measures—especially structural but also some functional measures, and even brain metabolites—could be explained by genetic relationships among individuals. The total amount of gray and white matter in the brain, the overall volume of the brain—and even activation patterns on fMRI or connections tracked with diffusion MRI—were more similar among family members than unrelated individuals.[76]

The evidence for the genetic determination of intelligence is overwhelming and continued resistance to this empirically determined result is a sign of ideology overriding objectivity or complete ignorance of the relevant research.

Evolution of the X Chromosome

The organisms that are the most successful in the evolutionary sense are the ones who survive long enough to reproduce offspring that can then grow to do the same thing. The more prodigiously those individuals can survive and reproduce, the more evolutionarily successful they are. Organisms have been exposed to different environments in the course of evolution both through natural climate change at the specific locations they inhabit as well as during migrations between various locations with different environments. The individuals that are best able to change their own forms in order to be better suited to survive and reproduce in changing conditions will have more success. Evolution can and has selected for organisms with greater base rates of evolution, thus enhancing that species' potential to quickly evolve new and better adapted forms in response to changing environments. In other words, species that evolve more quickly in response to environmental change will be more likely to survive the slings and arrows of a changing environment.

One basic example is stress induced mutagenesis in E. coli.[77] When subjected to stressful environments, environments they are poorly adapted to, E. Coli bacteria switch to a version of DNA replication machinery which is more error prone. This leads to an increase in the number of mutations occurring in cells and thus an increased rate of evolution. This in turn increases the likelihood of the emergence of a better adapted bacterial strain. Though this is relatively dangerous because most new mutations will be harmful, the process increases the probability of a better adapted strain evolving at the cost of increased risk. Enduring increased risk is apparently acceptable in desperate situations and so this process evolved. Bacteria capable of increasing the rate at which they evolve would be better able to survive changing conditions than bacteria unable to manipulate the rate of

evolution. There is no *a priori* reason to reject the idea that this principle might apply to higher organisms.

X linked inheritance provides another mechanism under which the rate of evolution is increased. For most genes, new mutations are often hidden by the second normal copy on an alternate autosome. For genes on an X chromosome in males this is not the case. When a new mutation occurs on a gene in the X chromosome it is immediately available for a "vote" from natural selection as soon as it occurs in a male, because there is no gene on a secondary X chromosome capable of overriding it. When pseudo-dominance interacts with natural selection in this way, the phenomenon is referred to as **hemizygous exposure**.[78] The new mutation does not have to wait until it becomes prevalent enough in the population to occur in the same individual twice, which would take a relatively long time and might not happen at all for recessive alleles because there is no positive selection. Beneficial mutations on the X chromosome can thus be rapidly fixed in the entire population as a result of adaptive selection. Conversely, harmful mutations can be quickly culled from the population almost as soon as they appear as a result of purifying selection. Consequently, there is a counter-intuitive pattern of highly conserved genes residing side by side with rapidly evolving genes on the X chromosome.[79, 80]

Birds have a ZW chromosome system of sex determination. This system is an inversion of the XY system in that two large ZZ chromosomes lead to male development and one Z and a small W chromosome lead to female development. Work with platypus sex chromosomes suggest that the two systems are related and that the XY system evolved from a ZW system in a pre-mammalian ancestor.[1], [81]

A major component of the transition from the ZW system to the XY system involved selection for a concentration of brain related genes on the X chromosome from other parts of the genome. In chickens, autosomal

regions which bear by far the largest concentration of brain expressed genes are orthologous (descend from a common ancestor gene region) to a region on the mammalian X, and at some point must have been moved from the autosomes to the X in mammals.[82]

In short, the X was constructed from various highly conserved chromosomal sections which already contained the highest density of brain genes in the ancestral vertebrate genome.[79] In addition to highly conserved regions, transposable elements capable of moving smaller DNA segments (individual genes) from one place in the genome to another have been linked to human brain evolution and are massively enriched on the X.[83, 84] Indeed, there is evidence that the X chromosome recruits a disproportionately high number of genes from other parts of the genome.[85] Therian mammals generally, and humans in particular, characteristically demonstrate enhanced cognition as a result.[79] It is generally accepted among the relevant scientists that the concentration of brain genes on the X is not random and must have resulted from active evolutionary processes.[78] As one scientist has stated, "if higher cognitive abilities were a critical step in our own evolution, it makes sense that you might find them on the X chromosome."[2]

Selection for increased concentration of brain genes on the X in early mammalian ancestors implies that there are evolutionary advantages to evolving behavior more quickly than other, more obviously physical, traits. This makes sense *a priori* because a form that is otherwise identical may be able to survive in many varied environments as long as the behavior changes to suit those environments. In addition, variation in behavior may be more tolerable in terms of potential loss of fitness than, for example, variation in leg length. Differences in dietary preferences would likely be less costly than a deformed limb. A fast behavioral change could allow a

species to survive long enough in new environments to start the more slow process of physical organization changes. Once behavioral genes were put into the fast lane of evolution by migration to the X, it would be natural that intelligence would start to be more quickly selected for if it conferred evolutionary advantages.

In addition to rapid evolution made possible by hemizygous exposure in males, an XY system also provides the advantage of obligatory inter-change of brain related genes between the sexes which should lead to greater harmony between sexes in behavior and cognition than might occur in birds. If intelligence is mainly favored in only one sex, then the other can essentially be dragged along in the evolution of higher intelligence.[80]

Humans in particular have had an accelerated rate of evolution in genes expressed in the central nervous system relative to our closest ancestor, the chimpanzee.[2] This evolution encompasses both direct genetic changes and increased expression levels of 92 % of nervous system genes compared to chimpanzees.[86] Many of these genes participate in functions related to cognition[87] and have resulted in dramatic changes in both brain complexity and size; there has been a threefold increase in brain volume in the last 2.5 million years.[79] From this evidence, it is clear that intelligence and cognitive capacity fit the expectation of a trait undergoing high rates of evolution, which is consistent with expectations of X linkage of intelligence.

[1] Another interpretation of this relation between sex chromosome systems in the platypus is that it is evidence of a hybridization event rather than evidence of transition from a ZW to an XY system. I have no strong opinion on this possibility, but the taxonomic relationship between birds and mammals puts this finding in direct contradiction with what was previously expected. It was previously thought that the Z evolved fairly long after bird ancestors split from mammalian ancestors. Under that view, the platypus X should not share homology with the bird Z. I treat the most common current scientific opinion as correct for the purposes of this book. The most common opinion is that it is evidence of direct evolution from a ZW system to an XY system. If the platypus does turn out to be a hybrid, that does not change the finding that the evolution of

the therian X involved concentration of cognitive genes, which is directly discussed in the studies cited.

Gender Disparities in the Frequency of Mental Retardation Imply a Significant Contribution of the X Chromosome to Brain Function

Intelligence as measured by IQ is a polygenic trait that results from the cumulative effect of many genes. At each gene locus, there may be many different possible alleles. The majority of these alleles would have a very small relative impact on cognitive abilities because they would all be functional, with some being more effective than others at contributing to higher IQ. However, some alleles or new mutations for these genes could have very large impacts if they failed to work entirely. Nonfunctional alleles would have a disproportionate level of influence on cognitive ability since they can potentially disrupt entire important biological systems in the brain. As an analogy, consider a car's engine. There are many brands of spark plugs which may provide slightly better or worse performance relative to their peers. However, if your spark plugs break or are removed entirely, the engine ceases to function at all. Dramatic effects of this sort are much more noticeable both in car engines and in medicine than the minor differences between different types of functional components.

No one competent in the relevant fields would argue against the fact that the large majority of neurological disorders and mental retardation have a genetic basis. They also would argue that males are almost always over-represented among sufferers.[88] For cognitively relevant genes on the X chromosome, high impact, non-functional alleles and mutations would result in mental retardation being much more prevalent in males than females. For as long as rigorous data has been collected on populations of the mentally retarded, the evidence has consistently demonstrated substantially more affected boys than girls.[89] This pattern provides a potent indicator of the importance of X linked genes to general cognitive ability

and implies a possible role of X linked genes in improved cognition as well.[90]

In one particularly telling example, boys diagnosed with mental retardation were found to be much more likely to have similarly affected brothers than are girls to have similarly affected sisters.[91] Reading and learning disabilities, including dyslexia and ADHD, have also been clearly demonstrated to be much more frequent in boys than in girls.[92, 93] Men also suffer from neurological disorders far more often than women.[94] For example, men are 1.5 times more likely to develop Parkinson's disease.[95] Studies have reported 20 % to 32 % more male sufferers relative to females of moderate retardation.[78, 91, 96, 97, 98, 99, 100, 101] In traditional autism, the gender disparity ranges from 4:1 to 8:1 male to female sufferers depending on the study. For Asperger's syndrome specifically, the ratio may be as high as 11:1.[102]

Though X linkage of intelligence probably contributes somewhat to the preponderance of male autism sufferers, it will be shown later that it likely only provides a partial explanation. Specifically, X linkage is expected to independently contribute to a lowering of IQ, which increases the likelihood of diagnosis, but that brain structure, personality, and intellectual profile alterations are probably better understood through hormonal influences. In a few cases, such as with selected Asperger's patients or idiot savants, autism actually coincides with a (qualified) heightened intelligence; consistent with autism proper being caused by an independent, yet tandem, factor from those that contribute to intelligence.

This raises an important question: If it is reasonable to believe that low intelligence and neurological disorders can be characteristic of the male condition and that genetics provide the primary contribution, why is it not reasonable to expect the mirror image may be true as well? What if

exceptionally high intelligence really is a part of the genetic characteristic of the male condition? Objectively, it is a perfectly reasonable thing to expect and it has been suspected by interested geneticists since Lehrke first published his hypothesis in 1972.[1, 47]

X Inactivation

There are rare instances where a particular neurological disorder seems to affect more females than males. One explanation for this is that the disorder in question is caused by an X linked dominant or partially dominant gene which asserts influence on the relevant phenotype regardless of whether there is also a healthy allele present. One specific example is that of Rett syndrome which virtually only afflicts females. However, rather than demonstrating a contrary case from the norm where females are more harmed than males, it actually conforms to the same pattern as seen above; except in this case male embryos are so badly affected that they are spontaneously aborted early in pregnancy.[1, 103, 104] However, understanding this more fully requires an understanding of X inactivation in females.

In autosomes, both chromosomes are active and both are used equally in the generation of proteins at the proper dose or concentration. The expression level of the X chromosome is such that the dose of proteins is correct when only one chromosome is used to make proteins. This is necessary for men because they only have one X chromosome. In women, this would result in a double dose of proteins if there were no mechanism by which to lower expression. The way cells handle this problem is through the random inactivation of a single X chromosome in all cells early in embryonic development.[105, 106] Females are thus a mosaic of two cell types with each type having a different X chromosome inactivated; either the paternal or maternal X.

A salient example is that of calico cats. The unique color patterns are a direct result of X inactivation.[107] Genes that control hair color are present on the X chromosome in cats and when there are two different alleles a different color appears that is dependent on which X chromosome happens

to be inactivated in particular cells. Since male cats only have one X chromosome, and with it only one allele for color, they do not develop the calico phenotype.

Female mosaicism with regards to X inactivation typically results in roughly half of a woman's cells only expressing the set of X chromosome genes from one parent and the other half of cells expressing X chromosome genes only from the other parent. In a situation where one allele on only one X is problematic, this can greatly reduce the negative consequences of it since half of the cells function normally. For alleles with consequences so dire that the cells that express it can't grow and divide at all, only cells expressing the opposite, healthy X can develop. The result is a highly skewed pattern of X inactivation in which virtually all cells have an active X from only one parent.

Rett syndrome is an example of inhibited mosaicism with this pattern. It typically results in the inhibition of all cell groups which did not inactivate the X with the faulty allele. The result in females with this syndrome is that they almost exclusively only express one of their parental X chromosomes; the one that is normal.[1, 103 , 104] However, the negative effects of the faulty allele are in this case still only partially avoided. Since males can't rely on a second X chromosome, male embryos with the Rett allele are not viable and are naturally aborted early in pregnancy. Rett syndrome being an almost exclusively female disease is thus a false positive in undermining the general pattern of males being more susceptible to neurological disorders. Males are in fact more adversely affected by the condition. They are killed by it. It is plausible that other seeming exceptions are only superficial and thus also constitute false positives.

Indeed, strongly skewed x inactivation has been observed in phenotypically normal women who have one X chromosome that carries an allele with a severe mutation.[104] Unlike in Rett syndrome, skewed

inactivation in these cases offers essentially complete protection from the disease. Interestingly, this pattern of skewed inactivation is most salient in cases of monozygotic (i.e., genetically identical) female twins in which one twin exhibits symptoms of a disease and the other does not. For example, there have been monozygotic female twins where one twin had muscular dystrophy and the other did not.[108] Heightening the contrast, the twin without the condition was an accomplished athlete. This happens because during development, one twin arose from a cell lineage which inactivated the problem allele, and the other twin arose from a cell lineage that inactivated the healthy allele.

Superficially, the phenomenon of X inactivation could be seen to undermine the importance of pseudo-dominance in determining intelligence in males. So how does the mosaic nature of female cells interact with pseudo-dominance? Shouldn't individual cells and cell populations within women exhibit pseudo-dominance and thus decrease the differential impact of this phenomenon relative to males? One way to examine the mitigating effect of X inactivation is to consider the well-established and measured example of red-green color blindness. About 5 % or 1 in 20 males suffer from Deuteranomaly, the most common form of red-green colorblindness. Moving backwards from this number you can easily calculate, using the Hardy-Weinberg theorem ($p^2 + 2pq + q^2 = 1$), the expected incidence of Deuteranomaly in women if it only resulted from a homozygous recessive state. This number can then be compared to the real incidence in women to see how much X inactivation in females mimics pseudo-dominance in males.

We know the chance of inheriting a single x chromosome with a mutation in the relevant gene is 5 % ($q = .05$) from its prevalence in men. In order for women to definitely exhibit this trait they must inherit two copies of this gene. Calculating the overall probability of multiple events occurring

simultaneously is as simple as just multiplying the probabilities of the individual events together. In this case the probability is the same for both events because it is just the probability of the same event happening twice. The probability for a woman to be homozygous recessive for color blindness is thus:

$q^2 = (.05) \cdot (.05) = .0025 = .25\ \%$

.25 % is about 1 in 400 women are expected to be homozygous recessive for this type of color blindness. The actual incidence of Deuteranomaly in women is about .35 %. The extra .1 % is possibly a result of X inactivation in heterozygotes, but could also simply be within the margin of error and thus is a statistical fluke.

In order to calculate the percent of heterozygotes in the overall population the frequency of both the recessive allele and the dominant allele is necessary. Again from the Hardy-Weinberg theorem, the equation used to find this information is $p + q = 1$ where p is the frequency of the dominant allele and q is the frequency of the recessive allele and the sum of all frequencies of alleles (only 2 in this case is a reasonable assumption) in a population is defined as 1. Thus the frequency of the dominant allele is:

$p = 1 – q = 1 − .05 = .95.$

The frequency of heterozygous women is equal to $2pq$. The percentage of heterozygous women is thus:

$2pq = 2 \cdot (.95) \cdot (.05) = .095 = 9.5\ \%$

Therefore, 9.5 % of women are heterozygous for red green-color blindness. I have already shown that the actual difference between the estimated number of homozygous recessive women and the actual occurrence of

women with color-blindness symptoms is .1 %. The percentage of heterozygous women who display the color blindness phenotype is thus:

.1 ÷ 9.5 = .0105 = 1.1 %

About 1.1 % of heterozygotes seem to develop color blindness. Clearly, X inactivation does not significantly mimic pseudo-dominance in the vast majority of heterozygous women. This might result from the two cell types being sufficiently mixed that enough cells at any given location are dominant and thus hide their recessive neighbors.

Another potential reason may be because the "inactivated" X chromosome is not actually completely inactivated. It seems like that must be the case in Rett syndrome given that even inactivated the Rett allele causes massive problems. Recent research has also shown that females have significant levels of heterogeneous character despite X inactivation with as much 25 % of genes on the inactivated X chromosome being expressed; 15 % of those genes constitutively escape inactivation and the remaining 10 % escape at a variable rate from one cell to another.[106, 109, 110] Thus between cells within the same individual woman, some cells have more genes escaping inactivation than others.[106] A substantial fraction of genes escaping inactivation seem to be specific to the human lineage; mice, at least, have very few genes expressed from the inactive X.[111] However, for the relatively smaller number of genes in mice escaping inactivation, there were significantly higher expression levels of those genes in females than males.[112] This evidence makes it doubtful that X inactivation can be offered as a serious challenge to the validity of this theory.

In fact, X inactivation itself can be used to test whether or not behavioral or cognitive traits are X linked. In theory, genetically identical male twins should be more similar to each other than genetically identical female twins because it is possible for female twins to have different X

inactivation profiles. Though the effect is slight because averaging all phenotypes regardless of source genes can hide the specific influence of the X chromosome relative to the autosomes, it has been found that monozygotic female twins are more different from each other psychologically than male monozygotic twins.[112]

Direct Genetic Evidence for Brain Related Genes Located on the X Chromosome

Even in isolation, the disparity in cognitive disabilities between men and women compellingly implies the involvement of X linked genes in intelligence. However, the idea has been moving from speculation to confirmed reality as a result of a large amount of direct genetic evidence coming to light in recent years; to a large extent due to the completion of the human genome project.

X linked mental retardation (XLMR) is fairly common, affecting 2.6 people per 1000, which is at least 10 % of all cases of mental retardation.[96] More than 215 monogenic XLMR conditions have been identified if you consider different mutations within the same gene separately.[104] A non-exhaustive list of known X linked mental retardation diseases include Duchenne muscular dystrophy (there are cognitive symptoms), Borjeson syndrome, Lesch-Nyhan syndrome, Menkes' kinky hair disease, MASA syndrome, spastic paraplegia type 1, Pelizaeus-Merzbacer disease, and Coffin-Lowry syndrome.

In 1996, there were 2 specific XLMR genes known.[113] That number had increased dramatically to 90 genes known to play an active role in cognition by 2009[96, 104] and geneticists working in this field expect that many more XLMR genes remain to be discovered.[104] If you include suspected candidate genes with known genes, then there are over 150 known or suspected independent genes on the X involved in mental retardation.[114] Another important piece of evidence is that of all the families identified showing mental retardation with an X linked inheritance pattern, which unambiguously confirms the disease is X linked, only about 50 % have had

a specific causative gene identified.[104] For those cases, we know it is X linked but simply have yet to identify which specific gene is causing it.

A comprehensive study of one particularly large protein complex (NRC/MASC) within the Post-synaptic density (PSD) found the potential for significant influence from proteins generated from X linked genes. The PSD is a set of many protein complexes present in the connections between neurons and is involved in inter-neuron communication. Of the 7 known X linked proteins within NRC/MASC, 6 are associated with psychiatric disorders. 19 of the 39 X linked genes that are expressed as proteins within the overall PSD are associated with psychiatric disorders or retardation and this number is expected to increase based on work with mice.[96] These X linked proteins are utilized in a wide variety of functional roles within the PSD; 8 of the 10 categories defined by the study. All of the 6 X linked proteins involved in cytoskeletal and adhesion proteins in the PSD are mutated in certain brain diseases. In addition, two X linked kinase proteins (one serine and one threonine kinase) are also implicated with specific brain diseases. Tellingly, mutations within the Neuroligin family of proteins were found to be associated with a wide range of cognitive phenotypes, including elevated intelligence in individuals with Asperger's syndrome.[96]

That 90 of the 300 known genes (23 %) that are linked to mental retardation map to the X chromosome represents a large over-representation of X linked genes in brain tissue with a potential role in general cognitive ability.[104, 113] Most estimates of the overall expression of X chromosome genes in neural tissues are similar to the 23 % figure and generally range from 10–20 % (i.e., 20 % of genes expressed in neural tissue are X linked) even though the X only contains about 3.4 % of the genes in the human genome.[1, 104, 115]

One interesting study reviewed the scientific literature for genes experimentally confirmed to be involved with IQ. The study considered 158

genes and localized the chromosomal regions on which they were concentrated. The greatest concentration of IQ genes was found to be on the X. 25 genes, or 16 % of the 158 genes considered, were localized on the X. The next highest concentration was on chromosome 7 which contained 14 genes or 8.9 % of the total considered.[116] Studies such as this show that X chromosome over-representation in neural tissue ranges from 3 times (10 %:3.4 % ~3:1) expectation all the way up to a ceiling of 7 times (23 %:3.4 % ~7:1) what would be expected if all chromosomes were equally represented in brain tissue. Even the most conservative estimate still shows an extraordinary contribution of the X chromosome to general cognitive ability.

In addition, the genes on the X are peculiar in that many individual genes are about 3 times larger in size than the typical autosomal gene. Large portions of these genes are transcribed and it is suspected that in addition to protein synthesis large numbers of potentially important regulatory elements (regulatory RNAs) for other cell processes are being generated from these exceptionally large genes.[117] These regulatory elements could also be involved in generating the intelligence phenotype.

One suggested reason for the ostensible overrepresentation is that it might be due to ascertainment bias. Ascertainment bias may result because it is easier to find recessive genes on the X chromosome relative to the autosomes due to hemizygous exposure in males. This increases the likelihood that a detrimental allele will be expressed as an obvious phenotype and subsequently discovered. It is possible that similar frequencies of detrimental alleles involved in brain function reside on the autosomes, but they just aren’t seen because they are more frequently covered up by functional alleles. However, multiple evaluations of genetic databases indicate that ascertainment bias does not account for

overabundance of X linked genes related to mental retardation and that the X plays a more important role relative to the autosomal chromosomes even with possible ascertainment bias factored in.[33, 118] In short, these evaluations considered disorders not associated with mental disability along side those that cause mental retardation. If ascertainment bias was the cause of the exaggerated X effect on cognition, then you should also expect the same influence on non-cognitive disorders. Over-representation of non-cognitive disorders on the X was not found to any large degree, suggesting that the over-representation of cognitive genes is real and not a result of ascertainment bias. Generally speaking, scientific consensus accepts the reality of over-representation of X linked genes.[78]

Though there are an unusually large number of genes related to brain function on the X chromosome compared to individual autosomes, just looking at the number of genes actually underestimates the relative effect of those genes on cognition. One reason is because genes on the X chromosome are expressed at higher concentrations in brain tissue than they are in other tissues and relative to autosome gene expression within brain tissue. The ratio of expression levels between the X chromosome and the autosomes (X:Autosomes) was found to be greater than 1 (1.1–1.2) in humans when all genes were considered. For tissues other than the brain, the ratio was less than one. The proportion of individual genes with double the level of expression in the brain relative to other tissues was 2.8 times greater for X chromosome genes than for autosomal genes in humans.[110] For brain-specific genes (a gene with double the expression in brain tissue compared to other tissues), the X:autosome ratio was 1.43 in humans.[78, 119] About 12 % of all X chromosome genes qualify as brain specific genes. In other words, it has been unambiguously demonstrated by several studies that the X chromosome contains regions with an unusually high density of

genes expressed in the brain, and that many of those genes are expressed at an unusually high level in the brain compared to other tissues.[120]

Though it is well known that many genes involved in mental retardation lie on the X chromosome that does not mean all genes involved in retardation or cognitive ability map there. Autosomal genes certainly also play a substantial role in some forms of mental retardation and in general cognition. Specifically, the single most important cause of intellectual deficiency is due to Down's syndrome and about 1 in 7 cases of retardation involve chromosomal aberrations.[121] However, that there are other genetic causes of mental retardation and autosomal genes are involved in cognition is not mutually exclusive with the comparatively elevated importance of X linked genes. Regardless of how many non-X-linked genes are involved in cognition, so long as there is a large enough number of cognitively important genes on the X, sex linked patterns of intellectual inheritance will manifest.

The plethora of research implicating a large role of the X chromosome in cognition is well established.[79] The evidence suggests that the X punches well above its weight when it comes to determining intelligence and there is every reason to believe that the power of evidence for X linked intelligence will soon be overwhelmingly incontrovertible if it isn't already.

Sexual Dimorphism: Hormone-Independent Sources

X linked genes for cognitive ability provides a powerful explanation for the increased variance of males on aptitude tests and life achievement. However, traditional X linked patterns of inheritance do not provide a basis for shifts in the means for males relative to females either in general or for specific mental abilities. Other biological factors must account for the universal shift in the overall score distributions relative to each other. Most development of male specific characteristics is triggered by the Sex determining Region on the Y chromosome (abbreviated SRY). The expression of this gene ultimately leads to testis formation and androgen production. Androgens, and specifically testosterone, are well known to be the main masculinizing agents in therian mammals.

Though hormones have the greatest effect on shaping sexual dimorphism between males and females, other genes on the X and Y chromosomes also have direct sex determining effects independent of testosterone, estrogen, or their metabolites, including in the brain.[122, 123, 124, 125, 126, 127] One of the most compelling models for demonstrating the influence of sex chromosome content independent of sex steroid effects involves creating strains of mice for which the sex of the animal is independent of the sex chromosome complement. By moving the male sex determining region (SRY) from the Y chromosome to an autosome and then breeding that animal, it is possible to create XY females (i.e., has ovaries) and XX males (has testes) which can be compared to normal mice.[124] Comparisons demonstrate that some sexual dimorphism at the molecular level (i.e., expression levels of sex chromosome linked genes are sexually dimorphic), in brain structure, and in behavior is caused directly by genes on the sex chromosomes.[124, 126, 128, 129] This includes molecular differences in

the brain and even molecular and structural differences in specific brain regions such as the neocortex.[103, 125]

Another method for teasing out hormone independent influences on the brain is to observe sexually dimorphic structure in brain tissue prior to the development of the primary sexual organs in fetuses. Studies using this method in mice do find such differences, especially in the development of the cellular machinery connected with the neurotransmitter dopamine. It has been proposed that this dimorphism contributes to male susceptibility to certain disorders including ADHD.[103]

Turner syndrome is a chromosomal abnormality in which affected women have only one X chromosome. In Turner syndrome, brain development is adversely affected. Female mice with only one X chromosome (a Turner syndrome model) have been shown to be more fearful than normal females, implicating a direct effect of X ploidy number on behavior.[130] In humans, girls with Turner syndrome have less brain tissue in the parietal regions of both hemispheres, but more tissue in the right inferior parietal-occipital region than normal girls.[131] The effects on these regions are in the same direction as normal sexual dimorphism between boys and girls and these same regions are known for having a large number of sex steroid receptors.[132] Since androgens aren't produced to any large degree in Turner syndrome women, these effects must be a direct result of X ploidy number and the differing expression levels of some genes between genders that result. Since some genes do escape inactivation in normal females, the cause is likely haploinsufficiency of one or more X linked genes.[130] Haploinsufficiency just means that without both copies of a gene, an insufficient dose of protein is produced for that gene. Rather than hormones working alone, this implies a complementary interaction between

hormones and direct action of X linked genes that are expressed at different levels depending on the number of X chromosomes.

One non-exclusive mechanism by which hormone-independent influences can be implemented is through the epigenetic imprinting of genes which reflect the parent of origin (mother or father) and allows discriminatory expression based on which parent a particular gene came from. In females, since they get an X from both parents, this could provide a basis for differential use of specific genes on each parental chromosome. Since males only inherit an X from their mother they are limited to the imprinting pattern of maternally derived X chromosomes. It is possible the exclusive presence of this pattern plays some part in determining sex.

Knowledge on the full extent of imprinting and how much the process is used to shape development is somewhat limited, unfortunately. However, there is some intriguing preliminary evidence that X chromosomes do work differently in terms of impact on the brain and cognitive skills depending on the parent of origin. Work with women who have Turner syndrome shows that maternally inherited X chromosomes are associated with better visuospatial performance, while verbal ability is boosted for women who inherit the paternal X.[133] Considering that males can only inherit the maternal X and only females can inherit the paternal X, this is consistent with well established patterns of cognitive skills between gender previously discussed and is also consistent with the known results of sex hormone exposure discussed more thoroughly in a future section.

The pattern in Turner syndrome women suggests that non-hormonal and hormonal influence work in the same direction in causing sexual dimorphism rather than having independent effects or working in contrary directions. It could also be expected that the pattern of influence of ploidy number and parent of origin dependent expression on sexually dimorphic traits would be consistent with those of the gonadal hormones and

independent of the effect of recessive intelligence boosting genes. In other words, for any given trait influenced by either hormones or non-hormonal sex-determining mechanisms, you would likely expect to see a shift of the overall distribution of one sex relative to another rather than increasing variance.

A theoretical exception to this could result from random X inactivation which be expected to increase variation among females in cognitive traits. However, as extensively shown in the section on mental tests, greater female variance in cognitive traits does not occur in practice so either ***random*** inactivation does not actually happen (there is some evidence for this),[134, 135] inactivation has such a minor influence that it is undetectable, or enough genes on the X escape inactivation to prevent such a mechanism from acting with a large effect.

Evolutionary theory predicts that the imprinting mechanism is most important for resource allocation to the embryo rather than cognitive traits specifically. The paternal X benefits from singular devotion of maternal resources because a father can't be sure that future children born by the mother will be his. The maternal X benefits from equal distribution of resources to all progeny throughout the reproductive life of the mother; singular devotion to a single offspring can be detrimental to future pregnancies. In this scenario, imprinting serves as the mechanism of a sort of arms race between the interests of maternally and paternally derived genes which simultaneously influence resource devotion to the fetus in opposite directions and thus has little to do directly with cognition.[136]

Another theorized evolutionary role is that it might be to encourage altruism between half sisters since they share slightly more DNA than half brothers. By that same rationale, you could also theorize mothers being more prone to dote on sons since they only express the maternal X, and fathers being more prone to dote on daughters due to slightly greater shared

gene content with them than with sons. Speculation of this nature is interesting of course, though much more work will need to be done before much can be definitively stated on this topic. In any event, it is not as relevant to gender differences in intelligence. Teasing out how much of overall intelligence distribution shifts are caused by imprinting rather than gonadal hormones isn't strictly necessary for the thesis of this work. Either way, given the limited empirical evidence for a role of parental imprinting on the X and the robust evidence of hormonal influences, it is probably safe to say that whatever impact imprinting is ultimately determined to have is limited, although still present, compared to other influences.[133]

The Y Chromosome

Though the main mechanism by which maleness is indirectly caused is through the cascade triggered by the SRY gene that leads to testes development and testosterone production, Y linked genes can also have a direct effect on brain development and function and are a likely source of some molecular, structural, and behavioral sexual dimorphism.[128] Studies in postmortem brain tissue have determined that at least 20 % of the non-recombining region of the Y is expressed in the brain, though this is likely to be an underestimate.[129] The SRY gene itself is directly expressed in some parts of the brain and acts as a transcriptional activator of the tryrosine hydroxylase enzyme gene. The enzyme catalyses the rate determining step in the synthesis of the neurotransmitter dopamine.[129, 137] The SRY gene has also been shown to directly cause an increase in cortical thickness in mice. In humans, increased thickness of this brain region is associated with higher IQ.[138, 139] Given the role that Y linked genes play in molecular systems that has been demonstrated in these studies, it is quite plausible that various Y haplotypes have varying influence on male IQ, especially in males with ADHD.[129]

One mechanism by which Y linked genes could be expected to contribute to sexual dimorphism is through the presence of homologous genes on the X and Y. Remember that most distinct genes between the X and Y began as a single gene in a distant ancestor, when the X and Y still functioned like autosomes and were the same in size, structure, and content. Through the course of evolution these genes and the proteins they produce became structurally and functionally distinct because there is no crossing over during the meiotic process for these genes. Additionally, even if the function remains similar, it is also possible for such genes to be

differentially expressed in the brain in an age and region specific manner which could be expected to lead to divergent function of the tissue. A number of genes with homologues on both the X and Y chromosome have been identified in mice which have strongly sexually dimorphic expression.[112]

In humans, the homologous gene pair PCDH11X and PCDH11Y are genes on the X and Y chromosome respectively and which function in cell to cell interactions in the central nervous system during development. Since this part of the Y chromosome no longer exchanges genetic material with the X chromosome, the homologues have drifted apart. They are structurally different, and possibly also functionally distinct. In addition, they demonstrate a different pattern of expression both within and between tissues; possibly because they possess different promoter regions. A promoter region is a section of DNA that can be bound by a protein which can then promote transcription into RNA and ultimately lead to increased expression levels of the targeted gene's protein. This strongly implies that these two related genes play an important role in sexual dimorphism in various tissues, but notably in the brain as well. Unfortunately, exactly how these genes act in this way remains to be investigated.[129]

As was discussed in the case for sexually dimorphic traits that arise directly from the genes on the X independent of hormone mediated influences, it is probable that the direct effect of Y linked genes function in an additive way with the effects of sex hormone exposure. An additional consideration for the Y is that it is much smaller than the X and contains a limited number of genes. This restricts the direct overall impact of genes on this chromosome in influencing biological processes relative to other mechanisms.

Hormones

A great variety of structural, activational, and physiological differences at both the macroscopic and microscopic level have been found between male and female brains, most of which are triggered by sex hormones.[132, 140] This has strong effects on adult behavior and extends to behaviors not typically identified with sexual behavior directly or indirectly.[141]

In the process of masculinization, the developing structure of the brain in young male animals is shaped to allow for the expression of male behavioral patterns in adult animals; including male sexual behavior. In the separate process of defeminization, the male brain losses all or most of its ability to respond (or the nature of the response is changed) to the activational effects of estradiol and progesterone in order to prevent female sexual behavior in adulthood. Activational effects do not change the structure of already developed tissue, but can affect what genes are expressed and at what concentration at the molecular level. Activational effects tend to work in the same direction as more fundamental structural effects, but at a much smaller magnitude.

Masculinization and defeminization are two distinct processes which happen in tandem in the developing male. It must be noted that most of the studies on these processes have been done with rodents, but are likely applicable to humans as well considering that diseases in humans which mimic experimental procedures in rats produce similar effects. Congenital adrenal hyperplasia and polycystic ovary syndrome both result in higher concentrations of fetal testosterone in girls. In both cases, girls exposed to higher fetal testosterone later developed more masculine behavioral traits and preferences, such as better visuospatial skills and lesbianism.[141, 142, 143] Speculatively, failure in either stage of male brain development could in

theory be expected to lead to two “classes” of male homosexual. In the case where both masculinization and defeminization failed, you would expect the stereotypically flamboyant and feminine gay. In cases where only one failed (specifically defeminization) you might expect to see an otherwise masculine acting male with typical female mate preferences.

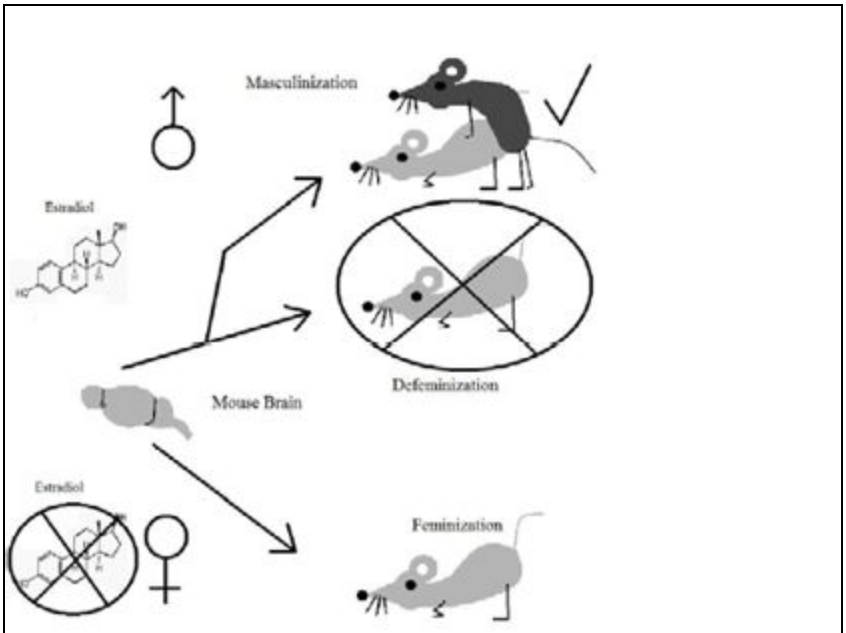
Testosterone underlies the expression of most male typical behavior and triggers both masculinization and defeminization. It is also important to note an immediate metabolite of testosterone, estradiol, which results from the activity of the enzyme p450 aromatase. Studies with rats show that regions of the brain that are known to be highly sexually dimorphic have high concentrations of this enzyme.

Estradiol actually turns out to be more potent in masculinization than testosterone directly and can be found to be at double the concentration in fetal male rats compared to females in sexually dimorphic regions of the brain. It is somewhat ironic that estradiol and estrogen receptors, which promote female behavior at other stages of life, are critical in the masculinization of the brain in early development, at least for rats.

Evidence for whether estradiol plays a similar role in primates is mixed. A testosterone analogue which can’t be converted to estradiol was found to be sufficient to masculinize female rhesus monkeys.[144] However, high concentrations of aromatase have been found in certain brain regions of adult male monkeys.[145] Another hint comes from racial differences in estradiol concentrations. Black males, who excel at games requiring masculine athleticism in events such as those that take place at the Olympics, have significantly higher blood serum estradiol concentrations than males of other races.[146] Black males are not generally considered to be feminine.

The process of defeminization could explain how a single hormone is able to provide masculinizing effects in one gender and feminizing effects

in the other during adulthood. In addition, the link between estradiol and male behavior is widely conserved among vertebrates, including birds.[147] For estradiol to not play a similar role in humans would be a unique exception to the general trend, and thus not likely. More research will need to be done to elucidate what role estradiol plays in male brain development in primates but it is probable that both the action of androgen hormones such as testosterone as well as estradiol make important contributions to the process.



The presence of estradiol during the critical periods of fetal development in mice induces two separate processes. In the process of defeminization, the brain is altered so that female typical sexual behavior is reduced or eliminated in adulthood. In the process of masculinization, the brain is altered so that male typical sexual behavior is expressed in adulthood. Without estradiol, the brain develops along a default female-typical trajectory.

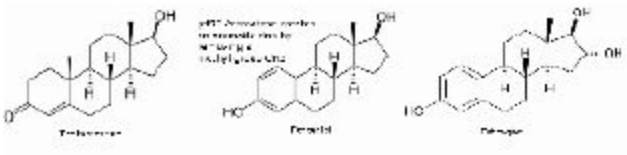
Image inspired by art from Schwarz J. M., McCarthy M. M. (2008) Steroid-induced sexual differentiation of the developing brain: multiple pathways, one goal. J *Neurochem*. 2008. 1561–72.

There are three critical periods during which testosterone plays an important role in brain development and gene activation in males: in humans this is between 8–12 weeks during gestation, from shortly after birth until the fourth month, and then from the onset of puberty until death. The structural changes influenced by testosterone, especially those which occur near birth, cannot be triggered outside of those periods and the development path taken during that time is irreversible thereafter. With testosterone exposure during those periods, a male typical structure is promoted; without it a (default) female structure develops.[140, 141, 148]

Early development times in rats are made critical due to the conversion of testosterone to estradiol and the presence of elevated levels of estrogen receptors in sexually dimorphic regions of the brain. Animal studies have also shown that the critical windows in sexual differentiation coincide with the times when differences in serum testosterone level between sexes peak. Outside the critical early windows, these receptors are expressed at much lower concentrations, but they don't disappear entirely.[140]

Defeminization reduces, albeit not completely, the influence these hormones can have on the adult male rat brain. Brain development is further specialized or attenuated by differential localization and concentrations of sex steroid receptors in different regions of the brain. In other words, one part of the brain can respond differently to or be more susceptible to influence by a given level of sex steroids than another region due to spatially divergent expression of the relevant receptors. A relationship between sex steroid receptor localization and later brain structure and even behavior has been demonstrated. In some regions estradiol works to increase the number of dendrites or dendritic spines as well as astrocyte complexity while in other regions it suppresses the growth of these cells. The actual effects are very region specific.[140] In animals, removing androgens from males via castration results in female typical behavior and

the inverse is found when females are administered the same hormones.[140, 148] When done early during fetal development, the effect is most pronounced. Administering sex hormones later in life does have activational effects which can move the individual's cognitive function to be more like that of the relevant sex, however it is not as strong as the effects of administration during the critical periods.



Brain Volume

There are significant sexual dimorphisms in brain tissue, most saliently in structure, but also in neuron firing rates and neurotransmitter systems.[141] In humans, male brains are 8–10 % larger than female brains on average[52, 132, 149, 150] and have about 15–16 % more neurons.[150, 151, 152] Controlling for overall body size differences does not eliminate the finding that male brains are larger.[151] Men have an even more profoundly increased density of synapses; the connections between neurons. A recent study found that men have 33 % greater synapse density than women when all brain layers are averaged ($12.9 \cdot 10^8$ vs. $8.6 \cdot 10^8$ synapses per millimeter). When specific brain layers were considered, the increased synapse density of men ranged from 18 % more at minimum up to 52 %.[153] Brain cells communicate with each other through synapses and these connections are expected to be very important in cognition.

In studies which address gender differences in brain size and IQ, the correlation between IQ and brain size ranges between .1 to .45[52,154] and studies with the most accurate brain size measurements tend to find greater correlations between brain size and IQ.[52] A study considering only males, and using more accurate MRI brain volume data (as opposed to estimates based on skull measurements), found the correlation between brain volume and IQ to be .35. Statistically correcting for the restriction of range in the study boosted the correlation to .51. The same study also found that the more g loaded a given test, the more it correlated to brain volume up to a correlation of .59. This finding is consistent with those which consider racial differences in brain size and IQ and also find substantial correlations.[155] Over a multitude of studies, the consensus for correlation

between brain size and IQ is about .4.[156] It has also been demonstrated that cranial capacity is highly heritable (i.e., it is genetically determined) through identical twin studies.[157]

Specific data from two separate studies are included below in which male brains are found to be larger than female brains.[158, 159] Different methods of measuring cranial capacity were used in each study. In the first, cranial capacity was estimated based on the measured dimensions of the outside of the skull of living subjects, while in the second dry skulls were filled with mustard seed and the volume of the seed was subsequently measured. Both studies were done in India on ethnic Indians and they were chosen because they are fairly recent and similar *recent* studies are conspicuously absent from western publications. Given the methods used, it is likely that the second study is a more accurate reflection of differences. Most research that has occurred in the last hundred years yielded results consistent with these findings and the pattern is true for all ethnicities. It must be noted however that there is substantial variation in brain volume between individuals. It is quite possible for an individual female to have a larger brain than an individual male, but in a betting situation the odds are much better that any given male's brain is larger than any given female's.

Gender differences in Skull Size

Average Skull Size	1380.52 +– 94.63 cm^3	1188.75 +– 91.16 cm^3	192 cm^3	1302.95 +– 108.8 cm^3	1179 +– 97.08 cm^3	123 cm^3
Range:	Not Provided	Not Provided		1070–1560 cm^3	1000–1420 cm^3	
Percent difference	14 % larger			9 % larger		

In addition to overall brain size, specific analysis of particular brain regions finds that the substantial majority of regions are significantly larger in males than females in absolute volume.[150] Controlling for brain volume differences does find that some regions are proportionally larger in females than males relative to overall brain size, even if the same regions are larger in males by direct comparison. Specific regions that are larger in males include, but are not limited to, all the outer lobes of the cerebrum (frontal, temporal, parietal, and occipital), the cingulate gyrus, the insula, and the corpus callosum.[150] The outermost part of the brain, the cerebral cortex, is also thicker in males.[149]

Differences in brain volume are driven largely by male sex steroids which promote additional growth of white matter. Increased cortical thickness though, which is associated with IQ, might partially be a direct result of SRY expression in the brain as well.[138, 139] As a proportion of the brain, men have significantly more white matter than women and women have more grey matter than men.[160] Unadjusted for overall volume differences, however, men have about the same amount of grey matter as women and the male advantage in white matter volume is even more profound.[58, 150, 161] In other words, the grey/white matter ratio difference is primarily due to women having less white matter rather than having more grey. White matter derives its name from the myelinated sheath which surrounds the majority of the axons in this tissue which gives it its characteristic color and speeds the transmission of action potentials. Grey matter, lacking this sheath, appears grey in color in living tissue. As a result of greater growth of white matter, males have 15 % higher neuronal density in the cerebral cortex than females.[151]

Testosterone and estradiol, mainly in fetal development, drive most of these male typical sexual dimorphisms in the brain, and individuals with greater male hormones have exaggerated male typical features.[162] Estradiol enhances neuronal density, size, maturation and migration while testosterone promotes the connectivity between different brain regions.[132] For example, testosterone induces the growth of ten times the number of neural fibers between the bulbocavernosus and anteroventral periventricular nucleus.[140]

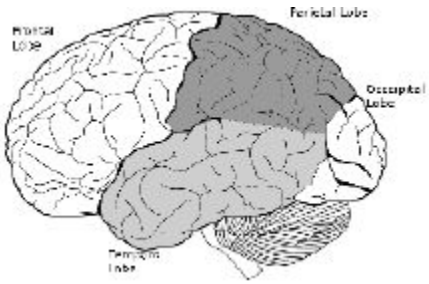
An especially important consequence of fetal testosterone is the promoting of between hemisphere asymmetry in males.[163] Specifically, fetal testosterone delays development of the left hemisphere of the brain relative to the right hemisphere and induces the specialization of that hemisphere for visuospatial processing at an earlier stage in boys.[141] Males have a greater amount of grey matter in the right hemisphere than their left hemisphere, while girls are more balanced. However, girls do not have more grey matter in their left hemisphere than boys have in that hemisphere because of overall volume differences.[58, 161, 164] The left hemisphere is known to play a larger role in language skills and the difference in development trajectory likely explains some or most of the female advantage in verbal ability. Similarly, the right hemisphere is prominent in visuospatial skills and likely underpins male dominance at this ability.[58, 141, 161, 164]

Through a quirk of biology, there is a crossing over of motor control in the brain with the physical orientation of body parts. As such, the left hemisphere controls the right side of the body and the right hemisphere controls the left side of the body. In an experiment with a split brain patient (a procedure sometimes performed on people with severe epilepsy) and controls, it was found the split brain patient could only complete visuospatial tasks when the tasks were presented to their left visual field

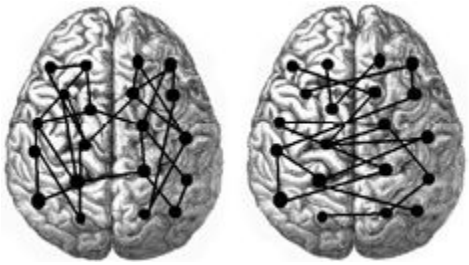
which feeds into the right hemisphere. Controls were able to complete the task regardless of which hemisphere the information was presented to presumably because of information exchange from left to right hemispheres. An interesting effect of left hemisphere developmental delay in boys is that there is a strong divergence in the incidence of left-handedness between boys and girls. Left-handedness is much more common in boys as a result of right brain hemisphere prominence.[163]

In addition to rightward asymmetry, there is a divergence between males and females in inter-hemisphere connectivity.[161, 164] The greater degree of white matter in males strengthens short distance connections within individual hemispheres. As a result, male brains display greater modularity and transitivity. Modularity refers to the ability to divide regions into coherent and discrete units or sub-networks of function, while transitivity refers to the strength and number of connections between discrete modules or nodes. Greater transitivity indicates stronger and more numerous connections between neighboring discrete networks of cells. One of the exceptions to the trend of greater white matter in males, at least after adjusting for brain volume, is that females have proportionally more white matter in their corpus callosum (again, the difference is not as great in absolute terms because of the overall larger male brain). This region facilitates connections between the right and left hemisphere. The consequence of this divergence is that in all regions of the cerebrum, male brains are optimized for within hemisphere connectivity within and between different lobes which occur bilaterally separate and female brains are optimized for longer-range connectivity between mirror lobes in each hemisphere.[160] The cerebrum is divided into multiple lobes including the temporal, parietal, occipital and frontal, which you can see in the image on the next page.

Lobes of the Brain



Strong Connections between Different Neural Networks in Different Areas of te Brain



Males, left, tend to exhibit greater connectivity between regions within hemispheres compared to regions between hemispheres. Females, right, tend to exhibit greater connectivity between regions in different hemispheres compared to regions within hemispheres.

Image modified from “cerebral lobes” by derivative work of Gutenberg Encyclopedia. Licensed under CC BY-SA 3.0 via Wikimedia commons – http://commons.wikimedia.org/wiki/file:cerebral_lobes.png#/media/file:Cerebral_lobes.png

For the original data and inspiration diagram, see Ingalhalikar, M., Smitha, A., Parkera, D., Satterhwaiteb, T. D., Elliot, M., Ruparel, K., Hakomarsond, H., Gurb, R. E., Gurb, R. C., Vermaa, R. (2014) Sex differences in the structural connectome of the human brain. *PNAS*. Vol. 111 No. 2.

Below the cerebrum, the cerebellum displays the opposite pattern with males having greater inter-hemisphere connectivity, which likely underlies enhanced motor skills in males as that is the region most involved with those skills.

Differences between hemisphere connectivity and asymmetry likely underlie the finding that verbal and spatial reasoning appear to be inversely correlated once the influence of general intelligence is removed and that each gender tends to excel at one or the other task.[59] The implication is that there are trade-offs to these alternatives in structuring of the brain and that enhancing one ability requires diminishing the other.

Brain structure specialization results in men and women using different brain regions to solve identical problems and the more complex the problem, the greater the divergence in brain areas used.[58] An experiment evaluating brain activation during verbal oriented tasks found that women performed substantially better and that they displayed much greater degree of inter-hemisphere activity than men during the task.[165] A similar experiment which evaluated spatially oriented tasks found that men performed substantially better and displayed much more intra-hemisphere activity than women during the task.[166]

Some specific sexual dimorphic brain regions have also been linked to the performance of cognitive tasks. In humans, the inferior parietal lobe and intraparietal sulcus has been shown to be important for numerical and spatial abilities and is in close proximity to visuospatial and posterior spatial-attentional systems.[58] The inferior parietal lobe is 25 % larger in males than in females, likely due the presence of a high density of sex-hormone receptors during fetal development;[132] although growth of that region in Turner syndrome women suggests a direct and complementary role of X linked gene expression as well.

Occipital grey matter does not stop growing in men even by age 22, while growth peaks in females by age 13. Overall grey matter increases in both sexes to at least 22 years, but increases at a larger rate in males. White matter and occipital grey matter both correlate with spatial performance in adults.[58] In addition, greater blood flow and grey matter has been found in the Broca's area in women; a region in the left hemisphere known to be important for language processing. This indicates a greater contribution of language centers to general intelligence in women than in men.[58]

As mentioned earlier, females identified with a mutation for congenital adrenal hyperplasia, which causes unusually high concentrations of androgens, have enhanced spatial and mechanical ability as well as male typical interests and sometimes also male mating preferences.[142] In rats, prenatally treating females with testosterone enhances their spatial ability as determined through maze tasks. Gonadectomies (castration) of male mice before the critical development period results in lowering visuospatial ability and working memory.[167, 168, 169, 170] Prenatal testosterone has even been linked to increasing proficiency in the SAT math and decreasing it in the SAT verbal in humans.[171]

Though structural differences provide the bulk of the contributions to sex differences in specific abilities, it has also been demonstrated that testosterone has activational effects in adults independent of early development. Men with more testosterone have better visuospatial ability and working memory than lower testosterone men.[172] In addition, female to male transsexuals demonstrate improvement in spatial ability as a result of hormone treatments.[102]

Autism and the Extreme Male Brain

Cambridge university autism researcher Simon Baron-Cohen, the cousin of comedian Sacha Baron-Cohen, advances the idea that Autism Spectrum Conditions (ASC) including Asperger's syndrome can be at least partially explained as being the expression of an "extreme male brain" (EMB) that results from unusually high concentrations of testosterone during fetal development.

Increased fetal testosterone affects brain morphology, which results in increasing sexual dimorphism in a variety of brain regions.[148] Excessive testosterone triggers super-normal male-typical development of the brain. This hypothesis is consistent with the fact that ASCs have a heavy male bias. It is theoretically easier to transition from normal male testosterone levels to excessive levels than it is to go from normally low levels in females to excessive levels. Further evidence for this theory includes recent research showing that women with Polycystic Ovary Syndrome, a condition which leads to elevated levels of Androgens in the fetal environment, have a 59 % increase in the risk of having children with an ASC.[173] In support of this idea, in traditional autism, the gender disparity ranges from 4:1 to 8:1 male to female sufferers depending on the study. For Asperger's specifically, the ratio may be as high as 11:1.[102]

Morphological evidence offers persuasive support of EMB theory. In cases where there is sexual dimorphism in brain structure, individuals with Autism tend to have a more extreme expression of the male typical phenotype. For example, male brains in infants are on average larger than female brains, and autistic children tend to have even larger brains than the male average. In normal males, larger brain size is mostly a function of increased growth of white matter and to the extent that an autist's brain is

larger than the male average it is also a function of increased white matter growth.[161, 164] Specific brain regions which are normally sexually dimorphic demonstrate the same trend where autists tend to be exaggerated from the male average. For example, the amygdala is larger in males than females, and larger still in autists than developmentally normal males.[102] Given that fetal testosterone has been robustly implicated in driving male typical dimorphisms, it is quite probable that an excess of the hormone during development accounts for the exaggerated male typical phenotypes found in autists.[162]

Though autists are popularly thought of as having low intelligence, autism has been identified in individuals at all levels of intelligence, including at high levels.[174] It is likely that the peak of autism diagnoses at low IQ levels is at least partially a result of ascertainment bias; having low IQ being the main trigger for seeing specialists who perform tests and make the diagnosis. Concurrent appearance of autistic traits with unrelated genetic factors leading to lowered IQ or other neurological vulnerabilities thus greatly increases the probability of diagnosis and is not necessarily evidence of a common cause.[175] Autistic individuals with high IQ are also likely better able to compensate for their atypical neural functioning by the time they reach adulthood and are thus less likely to ever be diagnosed. Returning to the analogy of the tool-set and tool user, autist's possess a series of tools which are very poorly designed for social interactions. An exceptionally competent tool user might be able to overcome this disadvantage through raw intelligence. The extra vulnerability of males to neurological disorders resulting from hemizygous exposure on X linked cognitive genes could be expected to work synergistically with elevated levels of testosterone during normal male fetal development, especially if those levels are atypically high, to cause the predominance of males diagnosed with an Autism spectrum disorder.

As might be expected from an exaggerated male brain structure, autists tend to have an exaggerated male typical cognitive profile. In other words, they have a "spiky" profile on intelligence test batteries. They tend to perform much more poorly on the sub-tests that require verbal skills and language processing and have ability peaks on sub-tests which emphasize spatial reasoning.[174, 176] For example, in the highly visuospatial block design task (BDT) of the Wechsler test battery, 47 % of autists have a peak compared to only 2 % of the general population. The peak is typically between 1–3 standard deviations above the performance you would expect based on how they did on other tests (i.e., their baseline). In addition, about 50 % of neurotypical individuals perform under their baseline IQ on this task, but less than 10 % of autists perform under baseline.[177] Perhaps coincidentally, like autists, high intelligence individuals who aren't diagnosed with autism also tend to display intellectual profiles with specific ability peaks.[34]

One test, Raven's Progressive Matrices (RPM), has been used to measure autistic intelligence independently of verbal skill. The test is highly visual and requires very little verbal instruction. It is widely regarded as one of, if not the best, single measures of intelligence:

> The Raven's Progressive Matrices has been empirically demonstrated to assay the ability to infer rules, to manage a hierarchy of goals, and to form high-level abstractions. Broadly recognized as a paramount metric of reasoning and problem solving, the Raven's Progressive Matrices is believed to be a "paradigmatic" measure of fluid intelligence, and fluid-intelligence tasks are proposed to require coordinated executive function, attentional control, and working memory. The Raven's Progressive Matrices occupies psychometric centrality among tests of cognitive ability; in Snow, Kyllonen, and Marshalek's (1984)[178] classic diagram, which summarizes the intercorrelations among numerous tests of cognitive ability, simple, domain-specific tests lie along the periphery, and Raven's Progressive Matrices occupies the center, as the most complex and general single test of intelligence.[179]

In a study comparing the performance of autists on the Wechsler test battery, which requires a great deal of language processing even for visual tests as a result of oral instruction, and the RPM found that autists performed on average 30 percentile points higher than would be expected from their Wechsler score. Individual scores ranged even higher than that up to a maximum of 94 percentile points better on the RPM.[179] Compared with the neurotypical control group, autists are actually more efficient at solving some classes of items on the RPM. They were 23 % faster at figural items and 42 % faster at analytical items.[180] This study provides persuasive support to the idea that autists preferentially use visuospatial specific strategies and brain regions to solve cognitive tests.[180] There is evidence that locally oriented processing, likely due to enhanced white matter growth, and skewing towards the posterocentral occipital brain region play a large role in visuospatial ability peaks in autists as they are found to be enhanced in the large majority of the autistic population.[177] This is consistent with an exaggeration of normal male sexual dimorphism of enhanced white matter growth and dependence on the occipital region in visuospatial processing.

People with Asperger's syndrome do not display a visuospatial peak on the Wechsler as autists commonly do. When they do possess a peak it is generally on verbal items. Why those with Asperger's should buck the trend with regards to the ability peaks in other autists isn't clear. However, there are still important commonalities between autism and Asperger's. Aspies display a similar trend, albeit less extreme, as autists when comparing RPM to their Wechsler test battery score in that they perform better on the RPM than might be expected from their overall Wechsler score. In addition, neurotypicals tend to have a loss or distortion of information as a result of mandatory hierarchies of processing in cognition. Autists and aspies both can maintain more accurate mental representations of the information in the environment when performing high level, complex tasks which leads to

enhanced efficiency, and show more creative and independent thinking with regards to the specific type of information for which they have an ability peak; verbal information in the case aspies and perceptual information in the case of autists.[176]

It is well-known that some autists, despite having social problems and difficulty functioning independently, often display some remarkable intellectual talents; especially when it comes to detailed memory of their favorite topic. The subset of autists with uncanny intellectual abilities used to be widely referred to as idiot savants to indicate both their lower level of overall functioning and their above average excellence in a particular narrow domain.

As part of the extreme male brain theory of autism, Simon Baron-Cohen proposes that there exist two dimensions by which humans can interpret the way the world works. The first dimension, empathizing reasoning, involves interpreting the goals of conscious agents and general theory of mind. Empathizing reasoning allows efficient inference of mental and emotional states in others and promotes the drive to respond with appropriate emotion and physical actions to those states. It must be noted that actual "empathy" does not necessarily have to play a large role in this sort of reasoning. It could just as easily and perhaps more accurately have been called "Machiavellian" reasoning. The major thrust of this form of reasoning is understanding the emotional states of others and responding to those states well; whether this knowledge is used to sympathize with others or pursue raw self interest is secondary.

The second dimension, systemizing reasoning, is defined as the drive and ability to analyze and construct rules for a particular system that can produce consistently predictable outputs from given inputs as a result of operational rules.[181] It is especially effective at interpretation of non-agentative lawful systems such as are common in the natural world. Lawful

systems are characterized by being highly predictable. Given a specific input, a lawful system can be expected to repeatedly have a consistent output after some operation takes place. Examples of highly lawful systems, approaching 100 % lawfulness, would be things such as mathematical formulas, the functioning of engines, and the movement of celestial bodies. Given a perturbation of such systems, the resulting change or output can be predicted with the real-world results varying minimally from predication. Moderately lawful systems, such as meteorology, are also amenable to systemizing reasoning.

Systemizing requires that a system is held virtually constant while only changing one variable at a time during the process of data collection. Due to the inherent complexity and extraordinary variance of social situations it is virtually impossible to apply systemizing reasoning to navigation of social settings. Human beings have a high degree of variance in their personality and other psychological dispositions which makes them highly difficult to accumulate data on and subsequently make predictions about behavior in a rule-based way. A given input can and will likely result in a host of different outcomes in different people. Thus, human behavior is a highly unlawful system or at least it is of such complexity that it is beyond the human capability for systemizing at the rate at which social interactions actually happen.

Empathizing reasoning is more efficient in that it focuses on cues people give, especially non-verbally, to indicate their emotional state and thus allows the correct inference of that individual's goals. It is possible to analogize empathizing reasoning to a pre-compiled software program or specially tailored hardware that comes pre-built in the human mind. Since it is too difficult to understand human behavior from day to day through consciously derived rule-based systems, innate instincts that are already

optimized to understand and correctly respond to human behavior are more efficient.

There are sex differences with regard to the degree upon which systemizing or empathizing reasoning are depended upon between genders and this likely reflects differences in the relative need each gender had of either type of system during evolutionary history. It is likely that the relative preference for either type of reasoning is underpinned by the same structural brain differences that lead to sexual dimorphisms in verbal and spatial reasoning. These various forms of reasoning may in fact all be facets of the same underlying cognitive phenomenon. In general, women tend to express a greater degree of empathizing (i.e., Machiavellian) reasoning than systemizing reasoning, while males demonstrate more systemizing reasoning. For example, women are better at recognizing faces than men, and are better at recognizing female faces than male faces.[58] Fetal testosterone exposure, independent of gender, correlates positively with systemizing reasoning and negatively with empathizing reasoning. Since males normally have greater fetal testosterone, it is understandable why they tend to more commonly systemize.[148] Like visuospatial reasoning, systemizing is correlated both with neuroanatomical features and university major choice and likely underlies the greater male participation in STEM fields.[182]

Autists, as a result of an extreme male brain phenotype, express an even greater degree of reliance on systemizing reasoning than normal males.[183] For conceptual ease, Baron-Cohen postulates levels of reliance on systemizing reasoning for navigating the world with lower levels being less reliant. Most normal women are at level 2, where they use some degree of systemizing reasoning but utilize empathizing reasoning more. Most normal men are at level 3 and thus rely more on systemizing than empathizing, but still engage in both. The typical engineer, scientist and mathematician, most

of which are male (and maybe all would be if selection was based purely on merit), would be at level 4 where they have a very high degree of reliance on systemizing and this reliance makes them effective in engaging the lawful systems which are an everyday part of their work. People with Asperger's would be level 5 and consequently do quite well on intuitive tests of physics. Levels 6–8 are reserved for those with varying severity of autism.[181] However, it is possible that the main or only difference between people with Asperger's and typical autists is normal or above average IQ in the former vs. below average IQ in the later rather than different levels of dependency on systemizing.

Autists can be thought of as hyper-systemizers who attempt to interpret all sensory input, including agentative action, through systemizing. Interpreting agents and high variance systems in terms of input-operation-output isn't feasible and as a result social situations tend to cause a lot of consternation for autists. To cope with the inability to successfully systemize unlawful environments or situations, autistic people develop preference for stable, unchanging environments or at least environments which change predictably. Unexpected change or a break from routine can commonly cause autists immense discomfort since it breaks the systemizing mental schemas on which they are reliant. As a result, they tend to form interests in topics and hobbies which are amenable to systemizing and also attempt to force the environment around them to conform to some rule set. For example, systematically recording the weather, repetitively watching certain TV shows or specific episodes, developing encyclopedic knowledge of important dates or train schedules, repetitively rocking or other stereotypical behaviors are all examples of hobbies with lawful properties taken up by autists. In the case of TV shows, even though a TV show has agents, the events, script and other aspects of the story never change from one viewing to another and thus it is highly lawful.

The first phase of systemizing reasoning requires the methodical collection of large sets of data, in phase two this data is scrutinized in order to find regular patterns, and in phase three rules governing the pattern are established. A typical behavior consistent with hyper-systemizing in autists includes deep mastery of narrow topics that results from extensive data collection. In other words, most or all autists engage heavily in phase 1 of systemizing. This behavior is also consistent with normal sexual dimorphism as women tend to have more diffusion of interests, whereas men have more focused interests; with focused interests meaning an increased level of detail for a narrower range of topics.[59]

From these extensive lists of data, regular patterns can emerge. From the identified pattern, laws and rules governing systems can be formulated. The end result of systemizing is a rule set which allows the determination of the probability that some output event will occur given a specific input and information about the overall state of the system. The development of classical Newtonian mechanics is a prime example of this process in action and also demonstrates how valuable such thinking is to the functioning of modern high technology states. Analysis of expansive and detailed notes on the positions of planets over time yielded to Newton the laws governing bodies in motion and which required the invention of calculus to understand. From historical records of Newton's behavior, some scientists have guessed he suffered from Asperger's or autism. Other genius level scientists such as Albert Einstein and Nikola Tesla have also been conjectured to have some form of autism based on accounts of their (sometimes erratic) behavior and personality. Most autists never make it past phase 1 of systemizing, however, which means they just collect large sets of data and nothing comes of it. However, the contributions of those who do make it to the later phase of rule development, such as Isaac

Newton, deliver unique and creative insights which constitute enormous contributions to human achievement and advancement.[181]

Like IQ and personality traits, autism appears to be a highly heritable (genetic) condition.[184] Autists are twice as likely to have fathers or grandfathers, including maternal, working in engineering than the general population. People who pursue stem fields have higher rates of autistic relatives than the general population. The parents of autists tend to perform very well on tasks which test systemizing and mothers of autists have hyper-masculinized brain activity during tests of systemizing. Given that intelligence plays a large role in assortative mating, it is likely that autistic children are often the result of mating between two high systemizers (i.e., the genetic base level of fetal testosterone is high in those parents).[181] For example, you could expect that university faculty working in stem fields, who tend to excel in systemizing, would produce autistic children at higher rates than the general population. Preliminary evidence indeed supports that this is the case.[185]

The special case presented by autism sufferers provides incremental validity to the case that performance in certain intelligence tests and fields, especially stem fields, is enhanced by male specific brain development and activational patterns that are mostly or completely biologically determined. The implication is that female under-representation in these fields is the result of biological influences and not from widespread discrimination.

Hormone Mediated Influences Interacting Synergistically with X Linked Intelligence Explain Gender Gaps in Test Scores

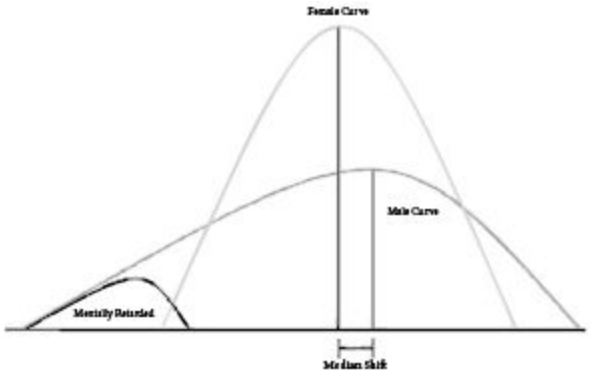
A gender gap favoring males exists on SAT math tests both on average and at the highest levels. On average males score about 34 points higher on the math exam and of scores above 700 there are about 1.6 males to females. Among perfect scores, there are 2 males to every female. This pattern has stayed consistent for more than 35 years.[58]

However, looking at the whole set of SAT data provided by college board in recent years shows that there are also a number of a gender gaps that favor females. The data from 2011 is used in this example, but all recent years consistently demonstrate similar results.[186] Most obviously is their better performance on the writing section, though this gap is not as extreme as that which exists in mathematics for males. In 2011, there were almost 100,000 more girls than boys that took the SAT; a difference of 6 %. Girls also seem to perform better academically than boys. In the SAT population, there were 127 girls in the top ten percent of their academic class, based on GPA, for every 100 boys. This gap narrowed but remained for students between the top 10 and 20 %. There were 144 female test takers with an A+ (4.0) GPA to every 100 boys, while the average GPA of girls was 3.4 compared to 3.27 for boys. Girls also had more years of coursework in all subject areas surveyed, which notably includes mathematics and science, and they had taken more AP courses, again including in mathematics and science.

These figures have to be taken with something of a grain of salt because the academic advantage of girls is partially a reward teachers give for more docile behavior unrelated to cognitive ability and which is a strong factor in

grading at the elementary level.[187] Some studies have also demonstrated that female teachers tend to grade males more harshly than intellectually equivalent females. Since in most western schools the teacher population is often 75 % female or more, this could also partially explain current male underperformance.[188] In addition to more submissiveness to authority figures, the gender gap in academic performance is likely also partially attributable to non-cognitive skills more common in girls such as organization, dependability, and self-discipline with respect to completing school assignments.[189, 190] These traits are probably helpful for the timely completion of questionably useful busy work.

Comparison of Hypothetical Intelligence Curves by Gender Based on Known Trends



Three hypothetical intelligence distribution curves are shown: The male distribution, the female distribution, and the distribution of the mentally retarded. The area under each curve represents the total population. The male distribution is shifted right as a result of sexually dimorphic influences common to all males and/or females. Testosterone and its metabolites are expected to be the primary causal agents of this right-shift. The male curve also has more variance and there are more males among the mentally retarded and among the highly intelligent as a result of the pseudo-dominant expression of recessive X linked genes. These recessive genes extend the male curve further both left and right because particular alleles can either make positive or negative contributions to mental functioning. The male curve is extended farther to the

left because it is expected to be easier to generate non-functional alleles compared to super-functional alleles. All curves are exaggerated for clarity.

Still, it is doubtful that sex differences in submissiveness, favoritism among teachers, and other non-cognitive factors can fully account for differences in grades earned. Girls are probably legitimately doing better as a group. Considering all these gaps together suggests that overall there are more factors favoring females than males in the environment of secondary education. Female takers of the SAT, as a group, appear to be much better prepared to take a standardized test like the SAT, including in the quantitative area that males currently outperform on.

These advantages continue into college enrollment and ultimately in the number of degrees awarded. In 2002, 46 % of college freshman were male, yet by the 2005–2006 school year only 42 % of degrees awarded went to males and graduation rates are similar today.[191] The widespread belief in systematic discrimination against girls is difficult to reconcile with their overall higher academic achievement. That almost 60 % of college degrees are awarded to women is a very considerable gender gap. As the SAT-M and relative career advancement shows, however, these non-cognitive skills and achievements are unlikely to translate into better performance on highly g loaded tests or occupations which require raw intellectual ability.

So how can all these seemingly contradictory patterns be reconciled under a single, consistent narrative? The profile of male intelligence might be best understood through considering males as having two distinct intelligence distributions which overlap. One population distribution is in the normal range, has high variance, and includes those men that are over-represented relative to women at the far right of the bell curve and who constitute the most intelligent individuals in the population. Overlapping with the left side of the typical population distribution is a bulge falling in the lowest ranges of intelligence and which includes the mentally retarded.

Given the relatively greater likelihood for poor mutations and allele combinations to occur, the population with cognitive deficits should be greater than the super-normal population. A small minority of males are born with heightened cognitive ability, while being mirrored on the other side of the distribution by a larger absolute number of males with lower cognitive function. Considering these two populations separately and in light of X linkage of intelligence explains the overrepresentation of males in many eminent professional positions as well as the greater occurrence of low intelligence and mental retardation in males.

Minimum Intellectual Prerequisites for a Hypothetical Occupation

Above is an intelligence distribution for a hypothetical population. The area under the curve represents the population size. The vertical black line represents the minimum intellectual requirement for a cognitively demanding field of or occupation. The white area represents the people able to perform this role and the darkly shaded area represents the people unable to perform effectively in this role.

It is conceivable that any given occupation or academic path has some minimum intellectual requirement. Drawing a vertical line through a population's IQ distribution at that minimum requirement point would divide those able to do it from those who can not; regardless of a high level of work ethic. Considering only those on the right of this line, the closer to the line a person came, the less competent that person would be at the given task, and the greater difficulty they would have in performing the job. In reality, this dividing line is probably a bit fuzzier as a result of variation of specific cognitive profiles and non-cognitive psychological dispositions. In

addition, many jobs may only require an adequate, rather than exemplary, performance. Still, this line is conceptually useful even if in practice it may be broad and/or fuzzy.

One study confirms this conceptual view of occupations, at least in fields requiring a high proficiency in mathematics.[192] In mathematics and physics undergraduate programs, it appears that anyone who does not have enough innate ability to score over a 600 on the quantitative section of the SAT cannot be expected to succeed in those programs no matter how much of an effort they make. In other words, a person must be in the 85th percentile of the population or above in innate quantitative ability to have any shot at success in math or physics programs. Any score lower than 600, and the chance of success is negligible. To have a 50 % chance of success or greater, they need to be able to score a 700 or above on the SAT-M which is in the top few percentiles of the population. Though the number of subject areas surveyed in this study is limited since data was only available for a few subjects, it is likely that other math and logic intensive, and thus male dominated, disciplines have similar minimum thresholds. Computer science, engineering and informatics are probable examples.

Fields which are more verbally slanted do not seem to exhibit the same minimum threshold requirement as mathematics intensive programs; for example, English, sociology and the like. It must be noted that such fields more easily suffer grade inflation (i.e., subject material is made easier and grades for all students increase without a corresponding increase in actual skill) given the large array of extremely subjective material present in them and the ability for teachers to grade whimsically. Such an effort would make the minimum threshold so low that the majority of people accepted into college would be able to eventually get through a typical verbally slanted humanities program and any threshold would be undetectable based solely on graduation rates.

Considering that the ideological bias of academia generally drifts towards denial of innate cognitive differences and making education available to all, it seems likely that grade inflation would be pursued rather than tolerating a high rate of flunking out in order to preserve egos and superficially appear to be making progress towards social "justice." Innate cognitive ability, rigorous standards, and admittance of low IQ protected classes together would necessitate a high rate of flunking out by those same classes; reducing standards is the easiest way to get around this problem while still appearing politically correct. It is seriously doubtful that a minimum intellectual threshold in English or sociology programs isn't possible; the current programs just aren't sufficiently rigorous. Perhaps such a threshold did exist before the advance of post-modernism.

It also can't be ruled out the Universities are merely financially motivated. Through grade inflation they can expand the pool of people that pay outrageously high tuition fees and thus get more money for the ever-increasing non-scholarly bureaucracy present at most universities. Since what happens to students after they graduate is of little consequence to the universities themselves, devaluation of degrees is of minor importance compared to all the increased revenue of a large student body. Whatever the motivation for grade inflation at universities, the question remains as to why the threshold stubbornly remained in mathematics programs in spite of ideological and financial pressure against it. The answer is simple: Since it is not possible to dumb down something as independently objective as an equation, the hard sciences have not been nearly as susceptible to ideological meddling.

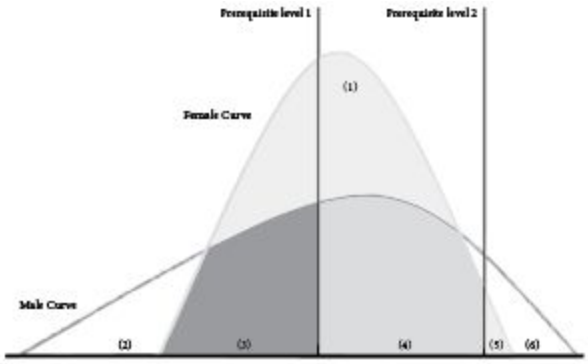
In any event, the minimum level of cognitive ability is unlikely to legitimately approach the very far right tail of the distribution curve very often and probably only for a few select occupations. Most medium level pursuits can be expected to have a minimum requirement at or slightly

below average intelligence. Since girls cluster more closely around the mean, there would be a larger absolute number of girls suitable for meeting the minimum intellectual prerequisites for the majority of disciplines which are generally at a medium tier in terms of intellectual requirements. Males are more likely to either be disqualified from these medium tier roles for too little intelligence or to gravitate towards higher tier professions less accessible to women because of the higher intellectual demands, depending on the individual. When the line is very far to the right of the curve, the vast majority of the population, both male and female, would not be able to perform adequately in the field. Since there is a relatively large gender gap in this small population at the far right of the curve, the inevitable result is that many more males will occupy high level positions relative to females. The expected pattern of gender imbalances in professions would be that the lowest tier and highest tier professions would be male dominated, and the medium tier professions would be female dominated. If X linked intelligence combines with hormonal influences that lead to sexual dimorphism for quantitative, visuospatial, and language ability, the gender gaps in tests, the nature and level of career achievement, and differences in IQ distributions can be readily understood. For example, if you consider the directions of sexual dimorphism in tandem with the X linked pattern of cognitive ability, the two processes explain certain patterns observable on tests like the SAT, which are highly g loaded and thus measure intelligence fairly well.[38, 39]

The test with the largest gender gap is the SAT-M. For males, sexual dimorphism favoring quantitative ability works additively in males born with a superhaplotype on the X and results in exceptional performance. For girls who take the SAT-M, a disadvantage from sexual dimorphism combines with a middling effect from the diploid X. The diploid X works to hide IQ boosting recessive alleles and together these two biological

phenomena result in much lower scores than the highest achieving men. For the relatively rare girls born with a supergenotype (two superhaplotype X chromosomes), sexual dimorphism functions antagonistically alongside X-linked genes and disadvantages them relative to superhaplotype boys. Together these two things can explain the greatness of the gap with respect to the SAT-M.

The verbal and writing tests, on the other hand, show a pattern of parity or slight advantage to girls. In this case, sexual dimorphism acts antagonistically with X linked superhaplotypes in males and draws their scores toward the mean. In females, sexual dimorphism provides an advantage, but the diploid X prevents the boost to general intelligence necessary to make their sex-specific talent stand out. The paucity of expressed supergenotypes prevents the gap from getting excessively large and thus male and female scores appear more closely matched. For girls born with a supergenotype, a very significant advantage in performance could be expected on verbal tests, while a middling effect would be expected on mathematics tests. Indeed, such girls would be expected to demonstrate a gender gap on verbal and writing tests currently more apparent on the SAT-M for boys, but they are hard to detect because of the drastic reduction in their chance of occurring compared to superhaplotype males. Speculatively, Ayn Rand may be an example of a supergenotype woman given her high degree of intelligence and the influence of her prolific writing.



The male and female intelligence distributions are shown overlapping above. In addition, there are two minimum intellectual prerequisite lines for two hypothetical fields of study or occupations. One hypothetical occupation has a minimum intellectual prerequisite near the average of the population. The other occupation has a minimum intellectual prerequisite near the right side of the intelligence distribution. A number of regions become apparent because of these divisions.

1. There are more females than males near the mean intelligence of the population which creates a surplus of females relative to male in that intellectual range. The females in this zone would be effective at occupation 1, but not 2.
2. Pseudo-dominance of the X and intelligence suppressing recessive alleles create a surplus of males at the lower ranges of intelligence.
3. The overlap of males and females without the minimum intelligence needed to be effective at either occupation.
4. The overlap of males and females able to perform effectively at occupation 1, but not occupation 2.
5. The overlap population of males and females able to perform effectively at occupation 2 as well as occupation 1.
6. The surplus population of males relative to females able to perform effectively at both occupations 1 and 2.

For the occupation with an intellectual prerequisite at line 1, it is clear that there are a larger number of females suited for it than males when you add the part of area (1) that is right of line 1 to area (4). Equally clear is that for the occupation with an intellectual prerequisite at line 2, there is a larger number of males suited for it when you add area (5) to the part of area (6) that is right of line 2.

Occupational emphasis on visuospatial skill or verbal skill is not considered in this diagram, but would constitute an overall shift left and right respectively of the female distribution relative to the male distribution.

Both curves are exaggerated for clarity.

In practice, analysis of individuals at the far right of the bell curve is consistent with this picture of gender differences. Among the most intellectually talented, there is a .4 standard deviation difference in population size favoring males. This pattern was most apparent before the GRE and SAT were redesigned in recent years. In the early 80s SAT population, as you move from left to right in the score distribution on the SAT-M, there were 2 males for every 1 female (2:1) among scores over 500, 4:1 for those with scores over 600, and 13:1 for scores over 700.[193] A similar study on the SAT from the late 80s found similar numbers. In 1987, 99 % of people with perfect scores of 800, 90 % of scores from 780–790, and 81 % with scores from 750 to 770 were males.[194] Moreover, when you restrict the range to only study those with high levels of intelligence, it appears that X linked superhaplotypes and hormonal influences on general intelligence becomes incrementally and substantially more important than hormonal influences on specific abilities characteristic of one sex or another. In other words, for the highly intelligent it is more important to have a high general intelligence from a superhaplotype and a larger brain from testosterone exposure than it is to have hormone mediated abilities specific to a given sex.

The population which takes the GRE is highly selected and tends to draw almost exclusively from the far right of the bell curve of the general population. These people tend to be among the smartest of the college population, which itself is in theory the best of the general population in terms of intelligence. Among these select individuals, men on average tend to have a 20–30 point advantage on the GRE verbal test compared to women despite the female specific sex advantage on such tests. The advantage on the GRE-M is of even greater magnitude than the GRE-V and

the SAT-M advantage with males scoring 75 points higher than women on average.[195] Another study which looked at average GRE scores in the 1990s found a similar pattern for average differences. On average, men scored 496 on the GRE-V, 577 on the GRE-Q, and 552 on the GRE-A while women scored 472 on the GRE-V, 506 on the GRE-Q and 529 on the GRE-A.[196] As is the case with all other studies on test takers, males taking the GRE very likely also have increased variance.

> If normal distributions are assumed, on the basis of the above GRE means and standard deviations, there were 2.0 times as many males with verbal GRE of 700 or greater, 3.2 times as many males with a quantitative GRE of 700 or greater, and 1.5 times as many males with an Analytic GRE of 700 or better.[196]

Thus, the closer the minimum intellectual requirement of a profession approaches the far right of the intelligence distribution, the greater the gap favoring men will become as a necessary outcome of innate biological differences in intelligence between genders. The results of these innate, biological gender differences among the most intellectually talented would be expected to cause large differences in the gender ratio of a given field depending on how intellectually rigorous it happens to be and indeed this seems to be the case among graduate school programs. Those which are the most intellectually rigorous tend to be overwhelmingly male, and those which are the least rigorous tend to be overwhelmingly female. On the next page is a table which shows the fields with the highest mean GRE scores and the percent of graduates which are male. Another table shows the lowest mean GRE scores and the percent of graduates which are female.

Academic Disciplines with Top Ten Highest Cumulative GRE Scores (Verbal, Quantitative, and Analytical) and Male Dominance in the 1990s

Physics and Astonomy	1903	87.59
Material Engineering	1840	83.29
Chemical Engineering	1820	84.44
Philosophy	1811	72.09
Other Engineering	1786	89.70
Chemistry	1764	71.87
Computer and Information Technology	1762	84.57
Mechanical Engineering	1762	93.01
Electrical and Electronic Engineering	1760	90.54
Civil Engineering	1718	89.40

Academic Disciplines with the Ten Lowest Mean Cumulative GRE Scores and Female Dominance in the 1990s

Elementary Education	1475	79.22
Accounting	1466	46.03
Education – Other	1460	65.42
Public Administration	1443	33.78

Education Administration	1430	54.82
Special Education	1410	82.47
Home Economics	1406	74.24
Student Counseling and Personnel Services	1405	64.66
Social Work	1385	69.50
Early Childhood Education	1376	96.77

Data from Templer, D., tomeo, M. E. (2002) Mean Graduate Record Examination (GRE) score and gender distribution as function of academic discipline. Personality and Individual Differences. 2002 Jan. Vol. 32 No. 1, 175–179.

The intellectual stratification by discipline shown in the tables has been very consistent, with the disciplines in approximately the same order, since at least the 1940s based on multiple sources of data.[197] As can be seen from the data, the top 10 most intellectually demanding fields are all at least 70 % male or more. This means that for all of them there are at least thirty percentage points more males than would be true at parity, and many are substantially more male dominated than that. On the other side, all of the least rigorous fields are substantially more female dominated, though the difference is usually less extreme. This makes sense because the difference in numbers of females compared to males diminishes as you move away from the far right of the bell curve. As you approach the ability mean of the overall population from the right you would eventually expect to hit a threshold where women start to outnumber men.

The biological differences in intellectual ability between genders have important consequences not just in who successfully graduates from difficult programs in the hard sciences, but in eventual prestige and achievement in the most intellectually rigorous fields. In his 1995 book *"Genius: The Natural History of creativity"* H.J. Eysenck overviews history's greatest scientists and found that "in the list of geniuses studied by Cox (1926), there are no women. There are no women among Roe's (1951a, b, 1953) eminent scientists, and very few in American Men of Science, or among members of the royal society; none in a list of leading mathematicians."

Yet despite the fact that the tests which effectively measure innate talents and intellectual abilities have not shown any change whatsoever in the gulfs between men and women, significantly more women than would be expected based on scores are being admitted and pushed through programs for which they are clearly less suited to than men. Since 1999 there has been a substantial increase in women graduating with advanced

degrees. The number of doctoral engineering degrees awarded to women doubled between 1999 and 2009 and the overall growth rate of all advanced degrees awarded by gender has grown at three times the rate for women than men.[195] This trend can not be explained by female intelligence improving; scores from tests not adulterated like the modern SAT and GRE clearly indicate that this has not occurred. The only explanation for this is that political pressure has trumped merit in the admission and graduation process. Universities, by necessity, must be lowering standards to include more women so that they can on paper look more sufficiently politically correct. Why the results from the SAT and the GRE from the 80s and 90s are probably more accurate and reliable than, for example, the modern finding of 2:1 males among perfect scores on the SAT-M will be discussed in the next section.

How Standardized Testing Undervalues Boys

As much as the SAT is useful for demonstrating the differences in innate talents between gender, it, like most current tests of cognitive ability, almost certainly underestimates intelligence in males and/or overestimates it in females. Results that did not reveal large male biased patterns in intellectual achievement would be counter-intuitive given the fact that males have brains which are on average 10 % larger, those brains on average have 10–15 % greater neuronal density and up to 52 % greater synaptic density. Contrary to the assertions of the most outspoken critics of testing, those who advocate stereotype threat and similar concepts, the main bias in testing is against males rather than females. As mentioned in the sections on mental testing, males and females have their relative strengths and weaknesses given different types of test items. This isn't so bad in and of itself, but the problem with current tests is that they largely omit or lack focus and rigor on items at which males excel; like numerical and spatial reasoning as well as common knowledge.[54] On tests of common knowledge for example, demonstrated to be highly g loaded, males perform on average 8–9 points higher and of course such items are not included because of fallacious claims of cultural bias.[54,198] SAT scores can account for 10.8 % of the variance for the receipt of a patent. Adding scores on spatial reasoning tests to SAT scores can account for 18.6 % of the total variance;[199, 200] an increase of 7.8 %. Spatial ability measures thus substantially increase the predicative validity of the standard SAT.

Considering the empirically determined importance of visuospatial ability, its relation to systemizing reasoning, and to scientific endeavors and success specifically, it is curious that these types of tasks are conspicuously absent from aptitude tests which are supposed to identify people qualified

for STEM; tests including the SAT and the GRE.[34, 65, 201] In the modern versions of both tests, there is a verbal component, a numerical component, and a writing component with the writing component being just a more subjective (less g loaded and thus less valid) way to measure verbal aptitude and intelligence. One study comments on the current state of the GRE, and the SAT shows the exact same pattern:

> Based on approximately 2.5 million GRE test takers assessed in 2002–2005, 30 % scored P700 (out of a top possible score of 800) on GRE-Q (ETS data: all examinees tested between 1 July 2002 and 30 June 2005, N GRE-V = 1,245,878, N GRE-Q = 1,245,182). The GRE-Verbal was not compromised by ceiling effects, with only 3 % scoring P700. Indeed, the GRE-Q mean of 591, with a standard deviation of 148, reveals that the mean is 1.4 standard deviations from the GRE-Q ceiling; whereas the GRE-V mean of 467, with a standard deviation of 118, places this mean at 2.8 standard deviations from the GRE-V ceiling (twice the distance). This results in 10 times as many scores P700 for GRE-Q than GRE-V! Of the two most critical specific abilities for commitment to and excellence in STEM educational–occupational tracks, selection criteria for advanced education and training in the US are severely compromised by ceiling effects for one (mathematical reasoning) while the other (spatial ability) is totally neglected.[65]

What this means is that a large range of ability in numerical reasoning is clustered together in the high range of the GRE quantitative test and is thus preventing the possibility to distinguish high ability students from exceptionally high ability students. By making the maximum score of the test (the ceiling) low, you can ensure that the very able and exceptionally able have roughly the same score. Individuals who best excel in spatial ability (mostly men) are unidentified because that method of mental reasoning is completely ignored. Meanwhile, the verbal ability test is designed such that exceptional talent can readily distinguish itself due to a much larger difficulty ceiling. In addition, verbal ability is double weighted by a second exercise which also exclusively focuses on verbal reasoning.

(Un)coincidentally, this is exactly how you would design tests if you wanted to obfuscate innate gender differences that showed men doing better

than women. On the GRE-Q, super-exceptional men get the same scores as merely able women because they can't demonstrate their greater talent with a higher score than the low maximum. By making numerical tests ineffectual at the upper ranges of ability and ignoring spatial reasoning entirely, these tests ignore two essential factors in creativity and intelligence which are relevant for any field, but especially relevant for STEM. The testing of abilities which women have a sex advantage in are remarkably over-emphasized and makes men and women appear on paper to be more intellectually equal than they really are. Hence the "narrowing" of the gender gap on the SAT-M since the 1980s says less about girls getting better than it does about boys being limited.

Especially disconcerting is that this test design guarantees that there are a relatively large number of men at both the mean and at the high levels of ability who are having their talent squandered. They are not being admitted to the quality of schools they should be. In public school, they are not being given the type of hands on education that is befitting of their talent in spatial and mechanical reasoning even though it is the men with these particular talents who are most important for the technological development of our civilization.[34, 65] To quote the researchers who study this problem, "students especially talented in spatial visualization [read: men] relative to their status on mathematical and verbal reasoning are particularly likely to be underserved by our educational institutions."[34] The negative consequences of this pattern of testing isn't limited to the students themselves. Engineering and STEM programs are shooting themselves in the foot by making selections based on tests which heavily emphasize verbal reasoning because available evidence strongly suggests that there is a cognitive trade-off between verbal and spatial reasoning. High verbal ability implies a suppression of spatial reasoning and vice-versa.[59, 197]

> If schools of engineering, say, are attempting to be more selective with respect to the intellectual profile of their graduate student body, by selecting students based on their GRE composite (GRE-Q + GRE-V), they could actually be working against themselves: Verbal ability could be operating as a suppressor variable and systematically precluding through indirect selection students exceptionally talented in spatial ability but relatively unimpressive in verbal ability; that is, many of these unselected students may be truly exceptional in reasoning with forms, patterns, and shapes.[65]

From the standpoint of completing this work, the major problem introduced by this systematic bias against males is that it is difficult to know exactly how large the mean male advantage is in general intelligence, though it can be reasonably guessed that current figures mostly underestimate the male advantage in overall IQ distribution. For example, it has been estimated that a full 50 % of those who are in the top 1 % of ability are missed as a result of ignoring spatial reasoning.[65] Almost all of those missed are male.

It is unlikely that College Board, the company that designs and administers the SAT and GRE, does not understand what effect this kind of test structure has on the resultant scores. As a professional testing company, it is their bread and butter to understand how IQ tests work and how to design effective ones. There is simply no way they could miss this glaring problem. However, I don't think I can necessarily blame them for how they designed the test. They are acting rationally to avoid false accusations of sexism and bias from feminists that would surely result if the tests openly demonstrated the innate intellectual superiority males have over females in general and especially in mathematics and mechanics; accusations which probably did happen in the 70s, 80s, and 90s and prompted restructuring the test to "narrow" the male-female gap. This problem is rooted in a feminist dominated culture which can't bring itself to admit that men have innate cognitive advantages over women because it violates widely accepted beliefs, though clearly inaccurate, that verge on the religious in character. In this case, it is the belief that all men and women are created equal and thus

have equal potential in all things. Holding onto this belief in the face of the overwhelming empirical evidence against it requires surveying an extremely gerrymandered map of cognitive talents. Figuratively, the way these tests are designed is equivalent to hiding one's head in the sand. That equalizing men and women in test scores requires two different tests of verbal intelligence (one of which is conveniently subjective), a poorly designed quantitative test, and ignoring an entire dimension of mental reasoning says a lot about just how large the gap between men and women is and in what direction it leans.

Keep in mind that what I am stating here isn't some sort of conspiracy theory but rather an open secret among the specialists who design and study cognitive tests. To quote the American Psychological Association (emphasis mine):

> Most standard tests of intelligence have been constructed so that there are no overall score differences between females and males[60]

This manipulation of IQ tests is confirmed by prominent intelligence researcher Arthur Jensen in his book *Bias in Mental Testing*.

> The most widely used standardized tests of general intelligence have explicitly tried to minimize sex differences in total score by discarding those items that show the largest sex differences in the normative sample and by counterbalancing the number of remaining items that favor either sex. This is true, for example, of the Stanford-Binet and Wechsler scales of intelligence.[198]

Current standard practice in the design of most standardized tests is to either throw out items that favor one gender, or to balance them in such a way that gender differences in overall scores are minimized.[58] In practice, this mostly requires removing items favoring males and adding those favoring females (i.e., adding verbal questions and writing sections and removing visuospatial questions). The addition of the writing section to the SAT that occurred in 2005 coincided with some other changes to specific

items on the test that exemplify this manipulation of tests to favor girls. Most of the changes corresponded with a reduction of the g loading of the test; a lower g loading means that the test is not as good at measuring intelligence and is thus less valid in predicting outcomes. Generally speaking, the changes were made because they benefited girls relative to boys,[58] though some changes may have also been to favor specific races that don't usually do as well as Whites or Asians.

In psychometrics, the field which studies intelligence tests, it would have made more sense to focus on and expand tests that clearly showed a difference between sexes in order to fully explore the limits of those differences rather than to develop general tests that effectively hide those differences. What happened instead is an ideological desire for pure equality triumphed over objective truth seeking. To the consternation of social engineers, such test biasing has not been nearly as effective at hiding innate male advantages as they would have hoped. For example, despite the SAT being biased in favor of females as described above, much larger numbers of women taking the SAT than men, and an educational system that is on the whole neglectful of boys at best and outright hostile at worst,[187, 202] large gaps favoring males have remained consistent for over 35 years.[58] Christina Hoff Summers described the current hostile situation boys face in public schools in great detail in her book *War on Boys*. She notes that

> The promoters of "gender Fairness" have a great deal of power in our schools, but they are far too reckless with the truth, far too removed from the precincts of common sense, and far too negative about boys to be properly playing any role in the education of our children… Any advantage boys enjoy (such as better scores on standardized math tests or greater participation in sports) constitutes gender bias that must be aggressively combated; any advantage girls enjoy (such as better scores on standardized reading tests or greater college attendance) constitutes a triumph of equity.[202]

The persistence of gaps in tests is primarily due to the impossibility of hiding larger male variance as a result of changes in tests which mostly only shift the relative means. Having a high general intelligence ensures that a person will do well on all tests, even those for which they have less specific aptitude.[59] This is why male GRE takers do better than girls on the GRE verbal test despite having an innate sex-specific disadvantage. High IQ boys who are smart enough to navigate successfully through the hostile system are fortunate, however that doesn't provide much help to the more average boys who simply become disillusioned. Though all males are underserved by the most commonly used tests as a result, high functioning autists are especially vulnerable to the effects of biasing tests towards female linguistic advantages given their more extreme expression of male typical cognitive processing and heavier reliance on visuospatial and systemizing reasoning.

Supposedly, the GRE has been recently revised to increase the ceiling of the quantitative section; possibly as a result of the large number of perfect scores among Chinese applicants limiting its utility. If so, and depending on exactly how this was done, it is probable that we will see a return of gender differences like those which existed in the early 80s. Unfortunately, this is only half of the correction that these sorts of tests need. To truly evaluate the full scope of human intelligence tests of visuospatial abilities have to be added as well. It is hard to imagine this happening in practice because the differences that would become apparent would strongly confirm the old stereotypes and demonstrate that a large majority of women simply aren't suited for technical vocations.

Given the evidence that gender gaps owe most of their existence to unalterable biological influences, it is unlikely that aggressive social policies and test manipulation will be able to close the male advantage in the highest levels of achievement or the female numbers advantage in overall academic performance when moderate levels of intellectual

prerequisites are considered. Policies that are introduced to address these gaps need to take into account the genetic and other biological influences involved. Most probably, it will simply have to be accepted that some gaps can never be ameliorated. We are approaching a point in scientific understanding where the debate over the existence sex differences in intelligence will be settled with the conclusion that such differences are real and have a large impact. It is now the time to start considering the implications.

Wealth, IQ, and Fertility

Knowing what the sex differences in cognition are and the biological mechanisms by which they come about is important, but why these particular differences were selected for during evolution is an open question. Due to an inability to go back and actually observe evolution, hypotheses on the evolutionary pressures which gave rise to a particular result are by their nature unavoidably more speculative. The "Why" is harder to determine than the "What" and the "How." The only thing we can be 100 % sure of is that evolution took place and that cognitive tendencies were shaped by natural selection. Since we know natural selection occurred, it is worthwhile to formulate ideas which can attempt to explain what is known within that framework. Some explanations may end up being wrong or incomplete, but that does not diminish the fact that some evolutionary rationale must be extent and true even if we don't know what it is. As such, engaging in some speculation guided by what we do know empirically is worthwhile.

Sexual selection pressures, in which it is female mate choice rather than direct benefits that make a trait advantageous, may have driven the evolution of the human brain and intelligence.[33] Thus, the human brain might be considered analogous to the peacock feather. In some bird species, highly colorful and conspicuous males gain nothing from the metabolically expensive growth of ornaments except that they become more attractive to females. Such ornaments also make those males more noticeable to predators. It is postulated that such expensive ornaments serve as an indicator of the behavioral and immunological success of the male in his environment because high quality in these traits are the only way he could metabolically support the ornament and also not get eaten. Though sexual selection was undoubtedly important to driving evolution of intelligence in

the human lineage, it is doubtful that intelligence constitutes only costs with no benefits as is probably true for colorful birds. Specifically, intelligence most likely became a sexually selected trait at least partially due to that trait improving male resource gathering.

Before continuing, a distinction between what has traditionally meant success (socioeconomic status, or social success) and evolutionary success (or evolutionary fitness) needs to be made. The accumulation of social status and/or wealth generally fits most people's definition of success, whereas evolutionary success does not necessarily require either status or wealth, only survival to adulthood and successful reproduction of children which also survive to adulthood to have children. A person can be poor and/or hated yet still be evolutionarily successful. In most of history, evolutionary success and social success have been positively correlated.[203] Gregory Clark, in his book *A Farewell to Alms,* persuasively demonstrates that the resounding success of the industrial revolution in Britain and later Europe owes most of its debt to the unusually high fertility of the most economically capable men relative to poor men during the entirety of the middle ages. Economic capability is strongly associated with intelligence as well as other pro-civilizational psychological traits and thus greater fertility among the wealthy constituted a eugenic trend. There were a variety of things that kept evolutionary fitness in sync with socioeconomic success. Wealthier parents could better protect their children from malnutrition, disease (through essentially quarantining themselves at country properties during epidemics), and they were able to afford more children. The poor on the other hand produced fewer children and lost many of the children that they did have.

In modern society, where disease and malnutrition has been eliminated for the most part, these pressures have been significantly relaxed, though not entirely broken. Childhood mortality has been reduced for basically

everyone in developed countries and excessively generous welfare benefits have been widely adopted, both of which boost fertility of the unintelligent to a greater degree than the intelligent. And, rather than being a neutral influence on reproduction of the intelligent, welfare benefits likely diminish the fertility of the intelligent by siphoning off wealth they otherwise could have used on raising more of their own higher IQ children. In addition, various types of contraceptives have been invented which are disproportionately implemented more often and more successfully by the intelligent. As a result, less intelligent individuals tend to have greater fitness than the intelligent now that they are raising more children to adulthood. As such, the fertility trend which led to the industrial revolution and the flourishing of Western civilization seems to have been largely reversed.[204]

Several studies have demonstrated that there currently exists a dysgenic trend with regards to intelligence and fertility and this has probably been the case since at least the 1890s.[205, 206] This trend is true for all ethnic groups and both genders, but is much more severe for women than for men. A standard deviation increase in a woman's intelligence increases the chance she will remain childless by 25 %.[205] Fertility is even more reduced as a result of education than IQ directly, again more severely for women than for men. 1 in 4 women with a masters, PhD, or other advanced degree never have children.[207] Lastly, income further reduces fertility for women, but ameliorates the problem of reduced fertility for men. Intelligence highly predicts the stated preference to remain childless for both men and women.

Correlations between Intelligence Measures and Fertility by Race and Gender

IQ	**-.162**	**-.089**	**-.272**	**-.049**	**-.166**
Education	**-.209**	**-.87**	**-.359**	**-.092**	**-.186**
Income	**-.027**	**.058**	**-.194**	**.008**	**-.058**

Meisenberg, G. (2010) The reproduction of intelligence. Intelligence. Vol. 38 No. 2, 220–230. Source data from the national longitudinal study of youth.

However, preference for childlessness only predicts actual childlessness at the end of reproductive life in women. Intelligent men with a preference for childlessness tend to have at least one child by the end of their reproductive lives. That the women who intelligent men get involved with convince, trick or coerce them into having children is a eugenic trend we can be thankful for. Based on current trends, and even with that moderate eugenic pattern, a decline in genotypic IQ of about 2.9 points per century has been estimated. Without these trends, it has been estimated that IQ measurements would be about 5 points higher on average than they are today.[208] So far, the overall decrease has been masked by increases in phenotypic intelligence (termed the Flynn effect) that results from environmental improvements such as enhanced education, better nutrition, and reduction of childhood disease burdens. However, in developed countries most of the available improvements from these sources have already been realized and recent studies show that the effect is now diminishing and possibly even reversing. Furthermore, if dysgenic effects on genotypic intelligence are real, it is probable that overall intelligence will decrease at a faster rate than genotypic intelligence alone. A reverse Flynn effect could be expected in the future because a population with reduced overall IQ is less likely to be able to maintain the near optimal environments that exist today.[209]

However, as was previously noted, the large majority of intelligence tests in use have a heavy pro-verbal, anti-visuospatial skew as a result of conscious efforts to minimize the appearance of gender differences in

intelligence. As such, it can be expected that men in general typically have their intelligence underestimated and those men whom are found to be the most intelligent may have an atypical pattern of enhanced verbal skill relative to visuospatial skill and thus only constitute a portion of high intelligence men. It has been estimated that a full 50 % of the exceptionally able, mostly men, have been missed due to the absence of visuospatial items on common admissions tests.[65] This fact likely acts as a confounding influence on the findings of dysgenic fertility among men with regards to intelligence because many of those findings rely exclusively on tests of only or primarily verbal aptitude. If men who have an atypical cognitive profile have reduced fertility relative to equally intelligent men with a more normal male cognitive profile, this would go a long way in explaining why, even though IQ and income are highly correlated, contradictory effects on fertility are found between these two metrics. An additional possibility is that rather than intelligence reducing fertility among men with relatively enhanced verbal skill directly, their enhanced performance on current admissions tests results in elevated rates of recruitment to higher levels of education. Devotion of time to education generally must come at the expense of reproduction for both men and women.

Whatever the cause of the apparent dysgenic trend in men, income likely acts as a good proxy for getting around feminine bias in intelligence tests in that it can identify male intelligence more holistically. If income is a fairer metric of male intelligence than current tests, then it highly suggests that there is at least a partial eugenic trend on male intelligence, as opposed to the indisputable dysgenic pressure on female intelligence. Similar to the finding that increasing IQ in women reduces fertility, a standard deviation increase in earnings increases the chance of childlessness by 26 % for women while increasing income in men is associated with an increased rate of fatherhood.[205] This finding has been confirmed in multiple surveys and is

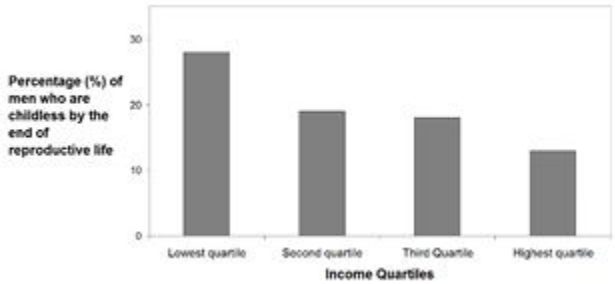
consistent across modern industrial societies, pre-industrial Europe, and current, primitive African societies.[210] However, the selection pressure on male wealth is weaker in modern industrial societies compared to historical societies which is probably partially due to more common polygyny in primitive societies.

The association between income and enhanced fertility in men is primarily driven by increased childlessness rates among men with low income. As can be seen in the graphs below, the rate of childlessness among the lowest income men is nearly 20 % higher than men in the highest income bracket and childlessness decreases progressively as income increases. The trend for women is both opposite and even more pronounced for changing income. Like IQ, studies have demonstrated that income generation potential is at least moderately heritable and thus this pattern constitutes ongoing natural selection on humans with inverted selection pressures between genders.[211, 212] Income, as a proxy for intelligence, likely acts as a mitigating agent for general dysgenic trends. This is especially true if the intelligence of some men is being underestimated, though even then it is unlikely to totally negate the current dysgenic trend. In addition, if the proportion of low income men who actually do have children are having substantially larger numbers of children than the high income men who have children, then this selection effect on income would be overwhelmed.

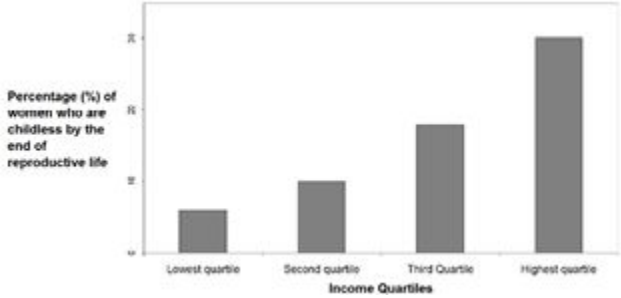
Of the traits considered here and probably among all possible traits as well, wealth is proposed to be the primary (though not exclusive) male phenotype on which female mate selection is based and this form of sexual selection can be broadly defined as hypergamy. The hypergamic instinct is widespread among humans and appears in a large variety of human cultures and ethnicities.[213, 214] As a result of female preference, men pursue wealth generation and status in order to convert these resources into increases in evolutionary fitness, meaning in this case reproductive success. IQ is only

indirectly selected for in that it is usually a prerequisite for high levels of wealth generation. Female hypergamy results in a relatively strong selection for IQ because of its close association with income in men. It may also be that hypergamy specifically selects for visuospatially skewed cognitive profiles in males if such profiles more commonly lead to increased income than balanced or verbally skewed profiles.

Childlessness Rate vs. Income Quartiles for Men



Childlessness Rate vs. Income Quartiles for Women



Data from Nettle D., Pollet T.V. (2008) Natural selection on male wealth in humans. *Am Nat.* 2008 Nov. Vol. 172 No. 5, 658–666. doi: 10.1086/591690.

The vagaries of economics, general prosperity, and the generousness of social welfare benefits can be expected to alter the amount of income the average man can earn from one time to another, the degree to which women must depend on men for financial support, and the IQ required to earn a given income. In times of plenty, more men at lower IQ could be expected to earn relatively high incomes. In times of drought and fierce competition for resources, only the most resourceful could be expected to earn enough to draw the eye of hypergamic females.

In periods of scarcity the emphasis females place on wealth in mate selection would probably increase relative to other traits such as charisma and physical appearance. As such, the ebbs and flows of the economic cycle could rapidly ease or intensify selection for male IQ as ease of access to accumulable resources per person increases and decreases. It is likely that a large part of the decrease in selection for intelligence in modern societies is a result of widespread abundance and prosperity. With greater access to resources for all men, there is less to distinguish the most intelligent from the moderately intelligent. In addition, this implies that dysgenic trends might suddenly reverse once the IQ distribution of the total population was lowered sufficiently to prevent society as a whole from providing relative abundance to most. Indeed, the close association between precipitous drops in fertility during economic hardship, such as occurred during great depression, could indicate that economic conditions play a very large role in selection for intelligence. Counter-intuitively, when the economy is at its worst, natural selection is the most eugenic and beneficial. Bad economies thus have an upside.

Intelligence as a Sexually Antagonistic Trait

A given trait or gene is termed sexually antagonistic if it increases evolutionary fitness in one sex and reduces it in the other. For example, a gene which boosts overall testosterone levels in both genders could improve reproductive fitness in males by increasing size and aggression, but decrease it in females by reducing female typical sexual behavior and preferences. Theoretically, there are several mechanisms which could be expected to boost the frequency of sexually antagonistic genes for one or the other gender. The frequency of sexually antagonistic alleles should increase so long as the benefit to one sex outweighs the detriment to the other. Sexually antagonistic genes can occur both on the X and on autosomes; though sex-biased genes are likely more favored on the X. The increase in frequency in female biased dominant alleles is expected to be boosted on the X chromosome by the fact that the gene only exists in males 1/3 of the time. Subject to female selection pressures 2/3rds of the time, dominant female-biased genes can increase in frequency on the X relative to the autosomes even if the detriment to males is actually greater than the benefit to females. Alternatively, male biased recessive or partially recessive genes could also be boosted on the X because at low frequencies they can be expressed in males while simultaneously being hidden in females. This allows positive selection and prevents purifying selection against recessive male biased genes until after they are well enough established in the population to enable homozygous recessive females to appear, and thus allows the increase in frequency of recessive alleles which harm females more than they help males. Keep in mind that the presence of female biased genes on the X is not mutually exclusive with the presence of male biased genes; both categories could exist side by side.[80] New

mutations which formed sexually antagonistic alleles can thus be expected to increase in frequency until the negative pressure in one sex balances the positive selection pressure in the other; establishing a stable equilibrium frequency. The stable equilibrium frequency would vary based on the detriment to benefit ratio of specific alleles.

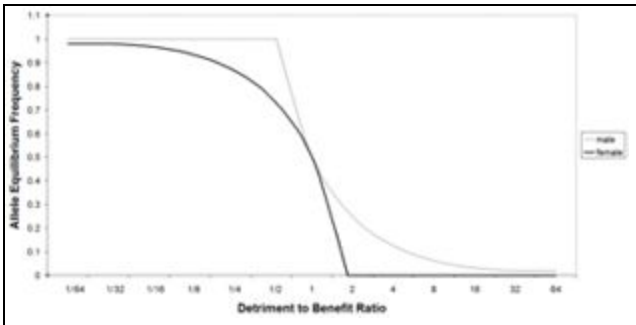
The accumulation of sexually antagonistic genes at a stable, above-zero equilibrium frequencies creates pressure to minimize the harm caused to one gender while preserving the benefit for the other. This pressure can then select for secondary genes to act differentially between the sexes as modifiers of expression. For example, they might reduce expression in the sex that is harmed and/or boost it in the sex that is helped (i.e., make expression sex-limited). Through evolutionary progression, the harm caused by sexually antagonistic genes would be expected to be attenuated over time by modifier genes.

As modifier mechanisms evolve incrementally, the detriment to benefit ratio slowly decreases and at each increment the stable equilibrium frequency also would increase by a directly proportional increment. Over time, it is possible that the antagonism ratio could be reduced to zero, which would strongly increase the chance that the allele would get fixed in the population.

Studies with fruit flies, which possess an independently evolved XY sex determination system, have demonstrated the presence of substantial amounts of sexually antagonistic variation linked to the X. In other words, when certain haplotypes of the X have been shown to increase the fitness of one sex they also tend to be harmful to the fitness of other. Both male-biased and female-biased haplotypes were found.[215] One study went so far as to experimentally verify sexual antagonism with a novel allele introduced by the researchers. The allele was a recessive male-biased allele on the X with approximately twice the level of detriment to females as

benefit to males. It was found that the stable equilibrium frequency of this allele was about 8 % despite the large relative detriment to female flies.[216] Though the direct insights about the human genome are limited since the X chromosomes in each species are unrelated, this finding strongly supports the theory that sexual antagonism exists and is promoted on the X chromosome in XY sex determination systems. If the mechanism of sexual antagonism is empirically known to exist in one XY system, then it is quite probable that it exists in others from a theoretical standpoint.

Allele Equilibrium Frequency vs. Detriment to Benefit Ratio



The above graph compares the expected stable equilibrium allele frequency of a sexually antagonistic allele at an X linked gene locus over various detriment to benefit ratios. It assumes that the population also has at least one additional sexually neutral allele in competition with the sexually antagonistic allele. The detriment to benefit ratio refers to the ratio of the negative selection coefficient of one sex to the positive selection coefficient of the other for the same sexually antagonistic allele. The black curve shows the expected equilibrium frequency of dominant female benefit alleles at various D/B ratios while the grey curve shows the expected equilibrium frequency of recessive male benefit alleles at various D/B ratios.

Data from Gibson, J. R., Chippindale, A. K., Rice, W. R. (2002) The X chromosome is a hot spot for sexually antagonistic fitness variation. *Proc Biol. Sci.* Vol. 269 No. 1490, 499–505. doi: 10.1098/rspb.2001.1863

In humans, the current available evidence is stronger for the accumulation of male biased genes on the X. Given that sex chromosomes underlie the

cascade of changes that cause divergent development between males and females, it is not surprising that there is a much greater number of genes on them involved in reproductive tissues than would be expected if such genes were equally distributed across the whole genome.[117] Perhaps less expected, an inordinate number of genes which are only expressed in spermatogenesis (gamete formation that happens exclusively in males) or exclusively male tissues are located on the X chromosome,[78, 217, 218, 219, 220] but there doesn't appear to be an enrichment on the X for female exclusive tissues.[221] In addition, there is also an overabundance of X linked genes which influence traits which make males more attractive to females.[222] This demonstrates that genes which mostly or exclusively benefit males, and may be sexually antagonistic, can reside on the X chromosome at high rates in mammals. If this is true of reproductive genes, then it is also logical for it to be true of brain related genes which guide behavior. Non-human primates certainly conform to this model.[103] Interestingly, many mental retardation disorders have genital abnormalities as a symptom, which implies a duel role for some X linked genes in both exclusively male spermatogenesis and presumably also male biased brain function phenotypes.[117] Amusingly, it appears that the old trope about men thinking with their genitalia is literally true to an extent because testis expressed genes are, at least partially, also brain expressed genes.[80]

Intelligence, through the indirect proxies of wealth generation and resource accumulation, constitutes a highly sexually antagonistic trait because of its substantial and inverse effect on fertility between genders. As such, there is a very strong selection pressure to suppress intelligence in females and promote it in males, at least in so far as it boosts male income and decreases female income. As sexually antagonistic intelligence genes accumulate, you would expect mechanisms to evolve which could preserve

their benefit to male fitness while reducing their harm to female fitness. From the discussion on the effects of testosterone on differential brain development it is clear that this pressure has been large and consistent over the course of human evolution. It has been and continues to be so strong, in fact, that modern males have on average 10 % larger brains, 15 % higher neuronal density, and up to 52 % greater synapse density. The differential between empathizing reasoning and systemizing reasoning between the sexes is also probably a result of this pressure because it is very likely that systemizing reasoning better facilitates wealth accumulation. It is also possible that verbally skewed intelligence reduces income potential relative to visuospatially skewed intelligence. Not many writers are known for being rich. By this rationale, men are selected for a level of intelligence and a specific cognitive profile that boosts wealth accumulation while evolution has inversely selected for women with lower intelligence and/or a skewed profile which makes them as minimally educable as possible in disciplines which have high income potential. Females thus have a profile that predisposes them to pursue child birth and rearing while being provisioned by a man.

The evolution of intelligence could thus be expected to follow a certain pattern. Judging from the income data, the negative effect on females appears stronger than the positive effect on males. Consequently, dominant alleles which boost intelligence would be expected to have a much more difficult time increasing in frequency in the population due to the harm they instantly cause to female fertility, and so would be preferentially lost.[126] Genes which have recessive alleles that boost intelligence would preferentially accumulate on the X at above-zero, stable frequencies due to the benefit to males and the delay of harmful effects on females. As the frequency of these recessive alleles increase to the point where they start harming female fitness, so does the pressure to modify their expression

such that they have minimal effect when present in females.[221] The already present system on the Y which triggers the cascade leading to most sexual dimorphism, and which originally was probably only involved in mating behavior and gonad differentiation, is co-opted into being a modifier for progressively more and more recessive intelligence boosting genes. Once the negative impact of such genes on female fitness is attenuated, the recessive allele can reach fixation in the population. The repetition of this process for many genes on the X is thus likely to be a primary mechanism by which human intelligence has been increased so rapidly during the course of evolution.

Hypergamy

In most vertebrates, females are the gateway to sex and reproduction. They are the ones with agency over which males do or do not reproduce. Depending on the animal, females have developed preference for various traits in males. In birds, males with the best colors and/or songs may be preferentially mated. For most ungulates, the main determinant is success in between-male physical competition. Second only to the reproductive organs themselves, observation of mating behavior demonstrates that the brain is the most important organ in the reproduction process (songs for birds, ritual competition for ungulates). However, for a given behavior to become favored by sexual selection in one gender, it must also have a corresponding preference to it in the opposite gender. As one geneticist put it:

> Behavior plays a dominant role in the premating phase in nearly all species. Sexual choice based on behavior requires changes at more than one gene locus. In its simplest form, it requires at least 2 gene loci: one for behavioral trait development in the male and a second for preferred recognition of this trait in the female. For the performance of complicated behavioral traits, numerous genes are necessary, just as numerous genes are necessary to express a preference for that specific trait. Finally, selector and selected genes became the same. In other words, the genes for sexual preference and for the development of the preferred sexual trait are both genes that are related to mental performance, i.e., they are 'brain' genes. Many of these genes are linked on the same chromosome, the X chromosome.[79]

Behavioral preferences in women must therefore co-evolve with behaviors in men. Though between male competition and other behaviors probably play a role in the preferences of human women as with other animals, there is also a strong preference for males with above average access to resources and wealth. A preference for a mating partner with above average access to wealth, resources, and possibly also social status is defined as hypergamy.

Colloquially, women whose hypergamic preferences are strongly amplified are referred to as “gold-diggers.” Essentially this is considered a form of shallowness among women and is mirrored in men by preference for young, attractive women at the beginning of their reproductive life. The male preference is arguably even more aggressively denounced as shallow. However, it is difficult to rationally justify such criticisms if these preferences translate into real added reproductive success. Older men certainly do maximize their reproductive success by marrying younger women, and so such a preference is both justifiable and can be expected to remain a persistent trait.[223] Likewise, gold-diggers also increase their reproductive success with their preference for wealth and status.[223] Thus, the trait can also be expected to be persistent in the population. The generally stronger cultural criticism of men mating with younger women likely derives from the self-interest of older spinsters who benefit from the successful discouragement of men from pursuing their reproductive interests without regard for spinsters. The social criticism is likely stronger against men compared to women, for preferences manifested for fundamentally similar reasons, due to the greater affinity for social manipulation (i.e., Machiavellian reasoning) women innately enjoy. Either way, from an evolutionary perspective, maximizing reproductive fitness is quite understandable for both sexes; including female preference for status and wealth in males.

Since greater access to resources can be expected to increase fitness of children through better care and nutrition, it is obvious why resource accumulation would face positive selection pressure. In many animals, females perform the entirety of child bearing, rearing, and the resource accumulation such behavior requires. If the developing offspring is too metabolically costly or causes too much incapacitation, then both the mother and offspring will die. As such, the females of most animals are

presented with hard upper limitations on how much can be invested in offspring development. In humans, females have raised the upper bounds of the maximum allowable biological investment in children as well as tolerable incapacitation by outsourcing resource accumulation to males via the evolution of hypergamic mating preferences.

Hypergamy was positively selected for because female ancestors who developed hypergamy could devote more of their energy directly to children than female ancestors who tried to "have it all" and consequently raised larger numbers of more fit offspring. As a result of reduced need for resource accumulation, women could afford to be much more incapacitated by pregnancy and could spend considerably more time raising the young than is typical in other animals. It was consequently possible to reap large benefits from this increased investment. Notably, outsourcing resource accumulation (and protection from threats) allowed for significantly greater metabolic investment in brain development both during pregnancy and childhood.

As the sexual selection mechanism of hypergamy increased in frequency, so too did the pressure on males to get better at accumulating resources. As men got better at accumulating resources, the benefit to mating with wealthy men increased, this in turn increased the selection for hypergamy in women yet more. This amounts to a runaway feedback mechanism of selection which escalates over time, and given the close tie between intelligence and wealth in men, female hypergamy likely gave rise to the rapid evolution of human intelligence. There is substantial evidence that traits that are the targets of sexual selection are overwhelmingly influenced by X linked genes.[221] In mammals, it is estimated that X linked genes constitute about 25 % of the overall influence on sexually selected traits compared to only about 1 % of the influence on non-sexually selected traits despite the fact that the X only makes up about 3–4 % of the genome.

Given the large abundance of brain related genes on the X, there is a strong implication that brain and intelligence genes are under strong sexual selection pressures (i.e., hypergamy). Female hypergamy, to a large extent, is thus an instinct women use to identify the minority of men born with exceptional X haplotypes in order to preferentially pursue them as mating partners.

Corollaries of Hypergamy

Just because a male has resources does not mean he would necessarily use them to help a woman raise her children. The development of a preference for male wealth also requires mechanisms for ensuring the male actually invests in the resulting children to evolve in tandem. This need is likely reflected in greater female verbal intelligence and the resulting acuity with social navigation and manipulation. In other words, enhancement of innate Machiavellian reasoning in women is explained by their need to ensure provisioning from males. In addition, almost unique among vertebrates, human women have hidden estrus and are sexually receptive outside of their fertile periods. With estrus partially or completely hidden, males are required to spend the majority of their time around the female to ensure paternity. Greater sexual receptivity regardless of potential for fertilization ensures a more constant and consistent stream of resource transfer from male to female, which is then easier to extend to times of pregnancy and young child care.

To maximize the functioning of this scheme, female sexual receptivity has to be concomitant with resource transfer over most of the population. Females have thus developed a sort of instinctual trade union which suppresses other females from making sex too freely available. Sexually receptive “scabs,” to borrow union terminology, reduce the incentive of males to bond with and transfer resources to females in general because they are much, much cheaper sources of sexual gratification. Lowering the price of sex results in women being able to extract fewer resources from men per unit of sexual activity. Women in general thus have a strong incentive to suppress female sexuality at the population level and thereby reduce the supply of sex and increase the price. Widespread female promiscuity would also likely increase the probability of men leaving their wives and children for new women, thus partially or completely depriving

them of resources and incrementally adding incentive for females to suppress sexuality in other females.

In the review article titled *Cultural Suppression of Female Sexuality*, Dr. Roy Baumeister provides a comprehensive overview of the available evidence for female control of female sexuality and compares alternative theories of suppression of sexuality in females; including male control theories.[224] Evidence in support of female control over overall female sexuality includes cases where there are fewer men available per woman, and thus men have more power to dictate terms of the sexual market place. In such cases female sexuality is increased. The opposite pattern emerges when women are fewer and have greater power in the sexual market place. That female sexuality decreases when women wield the power in the market place suggests that they tend to favor environments with less overall promiscuity.

Studies have found that mothers, and not fathers, are the main influence on daughter's sexuality. Mothers talk much more to their daughters about sex than any other parent-child interaction on the subject. In so far as fathers talked to their daughters about the topic, there was no influence on sexual behavior, whereas the greater a mother talked with her daughter, the later she began having sex. Again, female influence leads to lower rates of promiscuity.

Female peers also have a much stronger influence on sexuality in teenage girls compared to virtually no influence from male peers (excluding boyfriends, who increase female sexuality rather than suppress it). Female-peer influence generally worked to suppress female sexuality. Comparison of pacts made by same-sex college students going to spring break demonstrates that men tend to support and encourage each other in pursuing sex, whereas females agreed to discourage sexual activity by shielding friends from sexual advances made by men. Female peers put much more

emphasis on reputation being important to acceptance in social groups than boys, and excessive promiscuity was stressed as undermining a girl's reputation among those peers. Individual girls report that their female peers would tend to disapprove and become jealous if they engaged in too much sexual activity.

Prior to the sexual revolution, when general attitudes were changed, a survey found that 92 % of women condemned pre-marital sex by other women compared to only 42 % of men. This gap narrowed after the sexual revolution, but still demonstrates stronger moral condemnation by women. Women are also found to be more supportive of double standards with regards to male and female sexuality; that is being less tolerant of female promiscuity than male promiscuity. Women with liberal attitudes on female sexuality report that they feel pressured not by men, but by female peers. This pattern makes sense because male promiscuity, being intrinsically difficult, is an indicator of high fitness value; especially for women making mating decisions. Male promiscuity is an important qualifier by which women can judge potential mates in that the determination of male fitness value is essentially crowd-sourced and multiple independent judgments are made. A crowd-sourcing judgment in this way is an effective means of increasing reliability; multiple women are unlikely to all be wrong about a man's mate value. Female promiscuity, being intrinsically easy, is not an indicator of value and often cause the women who engage in it harm by reducing the willingness of men to commit to them. Widespread female promiscuity also causes women harm more generally by reducing the market value of sex, thereby reducing the resources all women can expect to extract.

Even in Islamic countries which perform genital surgeries on women to reduce sexual pleasure and thus reduce female sexuality, women are heavily involved in maintaining this norm to the near exclusion of men. It is the

mother or grandmother that decides if and when the surgery will be performed. The actual surgery is performed by a (female) midwife, and having the surgery is regarded as a status symbol among female peers. Girls without the surgery are sometimes ridiculed by their female peer group for not having it. Contrary to a male suppression theory, Islamic men prefer sex with wives who have not had the surgery and sometimes actively seek out such women to marry. Some men have argued for a less severe version of the surgery, but were foiled by determined support of the practice by women. In cases where a father supported the procedure, 100 % of their wives also supported it. In cases where the father opposed it, 41 % of mothers were determined to have it done anyway. Male Islamic family members often were not even aware of whether or not their female relatives had the procedure.

The benefits accrued to women by enforced scarcity of sex explain why the phenomenon of "slut shaming" as well as the dislike of pornography and sex workers is almost entirely female driven.[223] In addition, drug use could also be expected to increase female promiscuity and reduce the cost of sex, which, in connection with the sexual trade union instinct, explains why most temperance and prohibition movements have been largely female driven as well. Although many leadership roles in temperance movements were occupied by men, the base supporters were overwhelmingly female.[225]

Women are able to get more resources for sexual favors if access to sex is limited and they understand this at an instinctual level, though maybe not at a conscious level. A sexual trade union instinct is not necessary to begin the process of developing hypergamic instincts, but it is understandable why it would begin to develop in parallel once hypergamy became sufficiently widespread in a population. Far from being the "more moral" sex as was commonly claimed in the past and even today in especially disingenuous or delusional feminist circles, the disproportionate

condemnation of “vice” and the more organized seeking of institutional controls on behavior by women results from a distinctly self-serving and self-interested sexual trade union instinct. That doesn’t make the instinct bad, continence is arguably one of the most important social conventions for a civilization to thrive, but it is useful to understand that the enforcement of sexual restraint by women arises from self interest rather than general concern for civilization.

In modern democracies with female suffrage, institutional controls most often take the form of increasing the size and scope of government[225, 226] both with regards to behavioral regulations as well as other areas which women could potentially see benefits, such as increasing the welfare state. The main beneficiaries of the welfare state are single mothers and the disproportionately female elderly population. The sexual trade union instinct is thus part of the larger phenomenon that is sometimes popularly referred to as “the feminine imperative.” The feminine imperative can be broadly defined as the push by women to shape the social and legal institutions of society such that they benefit women specifically without much interest in whether those changes are neutral or harmful to men and civilization generally; this push is not always organized but generally moves in a consistent direction.[1]

None of this is meant to imply a conscious conspiracy on the part of women. Rather, it is expected that for women, the observation of promiscuous behavior on the part of other women elicits an emotional response of disgust and/or disdain which is then acted upon by exacting punitive measures against the offender; typically through Machiavellian social measures such as gossip, ostracism, and anything else groups of women use to punish individual members. Women are likely far more aware of all the subtle ways in which other women can be cruel to them than is possible for most men to grasp and understand. The emotion itself

requires no rational explanation in the agent acting upon it for it to be operative in the social sphere, it must simply induce women to act as enforcers of the sexual cartel against other women. Conscious awareness of the true reason why women feel an urge to act as sexual police (i.e., mother hens) for other women is thus completely unnecessary. As such, any number of rationalizations, true or false, can be effectively used by women to justify both the emotion and the action. Fundamentally, however, the emotion and action is antecedent to any and all rationalizations, even the correct one of an evolved sexual trade union instinct.

Studies with epilepsy patients who have undergone callosotomies strongly imply that the pattern of post hoc rationalization is generally true of all human action and behavior. Patients with severe epilepsy sometimes have the corpus callosum severed to alleviate their regular and extreme seizures. This results in the left and right hemisphere of the brain being completely cut off from each other. The interpretive part of the brain that is almost always in the left hemisphere, and is used to justify the actions of the individual, is thus cut off from any direct information about what the right hemisphere is doing or why and so it must make up excuses on actions initiated by the right hemisphere without any information.

Cognitive researcher Michael Gazzaniga discusses this and recounts specific research which demonstrates the lengths the interpretive center of the brain will go in his book *The Ethical Brain.*[227] For example, a patient with a collesotomy was presented with instructions to begin walking only in his left visual field, information that goes only to the right hemisphere of the brain as a result of a quirk of biology. When asked by researchers why he began walking, the interpretive part of the brain spontaneously created the explanation that he wanted to get a soda since it had no knowledge of the instructions. In other words, “I don’t know” does not seem to be an acceptable explanation for the interpretative part of the brain. When faced

with an unknown, the brain will more often make something up to explain the action or feeling. Stroke patients which have damage to the brain in such a way that they are paralyzed in a limb and information about the damage cannot be forwarded to the interpretive center sometimes create surprising explanations for the problem such as the limb not actually being their own or a professed desire not to move it. Gazzaniga recounts another particularly intriguing example:

> The left-hemisphere interpreter is not only a master of belief creation, but it will stick to its belief system no matter what. Patients with "reduplicative paramnesia," because of damage to the brain, believe that there are copies of people or places. In short, they will remember another time and mix it with the present. As a result, they will create seemingly ridiculous, but masterful, stories to uphold what they know to be true due to the erroneous messages their damaged brain is sending their intact interpreter. One such patient believed the New York hospital where she was being treated was actually her home in Maine. When her doctor asked how this could be her home if there were elevators in the hallway, she said, "Doctor, do you know how much it cost me to have those put in?" The interpreter will go to great lengths to make sure the inputs it receives are woven together to make sense—even when it must make great leaps to do so. Of course, these do not appear as"great leaps" to the patient, but rather as clear evidence from the world around him or her.[227]

Emotions, intuitions, and actions occur, and then the interpretive center of the brain justifies all after the fact and usually tries to do so rationally; or at least pseudo-rationally. So it is with the sexual trade union instinct and whatever common explanations for between female interactions are proffered as a result of it. It is, fundamentally, an instinct which drives coordinated behavior from a bottom up, not a top down, mechanism. In popular slang, this rationalization process is referred to as "hamstering" in reference to a hamster which exerts great effort running as fast as it can on a wheel, yet goes nowhere and accomplishes nothing. Great mental effort can be exerted in crafting elaborate rationalizations, but virtually no realization of truth results. It is anecdotally observed that while both men and women can "hamster", women tend to be more susceptible to the process. This is consistent with the greater degree to which women rely on the interpretative

left hemisphere speech centers in their cognition and which results in enhanced Machiavellian reasoning. The left hemisphere interpreter acts as a sort of lawyer that can “justify” even outrageous behavior or beliefs, and women have better built-in lawyers. Conversely, reduced male susceptibility is consistent with the slant towards right hemisphere development that fetal testosterone induces in males.

[1] Internet writer Rollo Tomassi regularly writes about the feminine imperative, or sexual trade union instinct, and what sorts of wide ranging impacts it has on our institutions, governments, and prevailing opinions at his website: http://therationalmale.com/

Hemizygous Exposure: An Intriguing Example of Evolutionary Trade-offs

It is ironic that the male advantages in technical ability and IQ, which often engenders astonishing levels of envy among some women, actually results directly from women's own mating preferences and enforcement of traditional sexual morality. However, envy is not particularly justified. Men are what they are because of who our female ancestors decided to mate with.

Perhaps more importantly, the mechanism which led to the current common male advantages comes with substantial costs. Specifically, evolution has selected for males to be essentially more disposable. Since individual men can impregnate multiple women, evolution can afford to generate relatively large numbers of men unfit to reproduce whether as a result of mental retardation, low intelligence, unsuitable behavior, or other flaws (a society can also better afford to lose a large number of men in wars for the same reason). Hemizygous exposure on the X in males provides the mechanism by which deleterious alleles, especially for genes involved in the brain and in behavior, can be quickly exposed to purifying selection and removed from the gene pool. As such, whenever a faulty behavioral allele is removed from circulation, it is much more commonly working in a male body.

Hemizygous exposure thus enables an elegant compromise in regards to intelligence and how that intelligence is distributed among genders. Women have gotten the side of intellectual security. Intelligence in women is low-risk and low-reward. It is less likely that a woman will end up as a top level genius, but in consolation they are also much less likely to inherit severe neurological disorders. Reduced risk of loss of fitness in women is advantageous because the removal of viable fertility in substantial numbers of women in each generation would result in a significant reduction of

overall fitness of the species. In other words, the overall birth rate would be substantially reduced if many women were unfit each generation. This biological fact also likely explains why women found guilty of committing crimes are typically less severely punished than men. People instinctively value a woman more because her fertility is intrinsically valuable to the species regardless of what she did; whereas a man is easily replaced with respect to fertility. In men, intelligence is high-risk and high-reward. A man is more likely to win the genetic lottery, but also has a greater risk of inheriting low intelligence, learning disabilities or neurological disorders.[228] Even males coming from families with relatively high IQs run a greater risk of expressing debilitating forms of autism. The loss of viable fertility in substantial numbers of men each generation constitutes a much lower threat to the overall fitness of the species and so the benefits of purifying selection comes at a much reduced cost when focused much more exclusively on men.

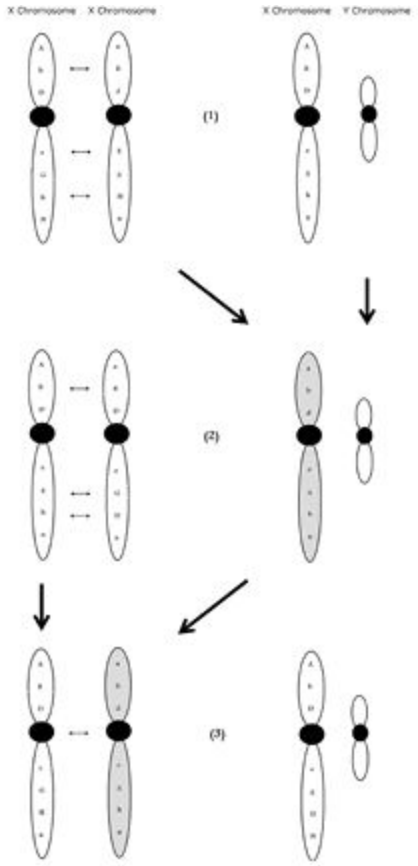
This has a number of evolutionary implications. On the right side of the intelligence bell curve you have the male jackpot winners who were able to take advantage of their turn of fortune, accumulate resources, and reproduce prodigiously. This leads to an accelerated spreading (relative to autosomal genes) of the successful X chromosome gene pattern, unaltered, to their more numerous daughters compared to other men who have fewer or no children. Ultimately, this leads to increased frequency of specific alleles in the whole population, and increased likelihood that a similar combination will reappear in the future.

On the left side of the bell curve are the individuals, also mostly male, who lost the lottery. This population includes men with low intelligence and especially those who inherit X-linked neurological disorders. Arguably, it is the reduction of fertility in these men which has had more impact on the evolution of intelligence rather than any large increase in the fertility of the

intelligent. These individuals are significantly less likely to be economically successful and therefore to reproduce. The reduction in their fertility presents an effective means by which evolution can eliminate poor alleles, or combinations of alleles, from the gene pool. The implicit assumption taken by society of men being disposable, or at least more disposable, unfortunately has a real biological justification. Men are literally the cannon fodder of natural selection. As a result of this process, 80 % of women that lived in the past have modern descendants, but only 40 % men of the past have such descendants.[1] This finding is based on studies of the non-recombining region of the Y chromosome which passes from father to son unaltered by recombination with the X. Fewer numbers of genetically distinct Y chromosomes in a population implies a smaller population of male ancestors have surviving descendants. In mirror to this, mitochondria are for the most part only passed on from mother to children and mitochondrial genes do not get recombined. Fewer differences in various mitochondrial genomes imply a smaller population of ancestral women has surviving descendants. Obviously, there is more mitochondrial variation than Y chromosome variation, hence a larger population of ancestral mothers.

The most important evolutionary implication from the arrangement of hypergamy combined with X linkage of intelligence is that it specifically provides a biological framework for the rapid evolution of mental traits in humans that is known to have occurred from research in evolutionary biology.[229] According to Dr. Bruce Lahn, in an article on the evolution of the nervous system, “The human lineage appears to have been subjected to very different selective regimes compared to most other lineages… Selection for greater intelligence and hence larger and more complex brains is far more intense during human evolution than during the evolution of other mammals.” Selection for human intelligence was far more intense because

male parental investment and the female hypergamous instinct. It was far more rapid due to hemizygous exposure resulting from the enhanced localization of brain genes on the X that comes from hypergamic sexual selection. Hypergamy is thus the engine which has driven the evolution of human intelligence and especially male intelligence.



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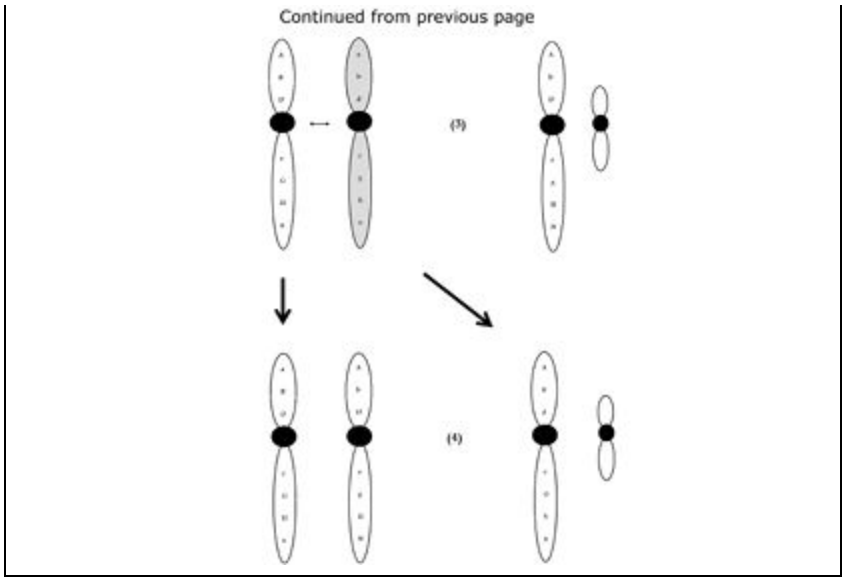


The life cycle of a superhaplotype

Above is a diagram of four generations of inheritance of X chromosomes in which a superhaplotype is formed, passes through several generations, and then is finally destroyed. A letter indicates a gene. Capital letters are dominant alleles with average contributions to intelligence. Lower case letters are recessive intelligence boosting alleles.

(1) In the first generation, a superhaplotype is formed in the female by the random recombination of alleles on the X and is passed onto a son. All of the alleles on this superhaplotype are expressed.

(2) In the second generation, the superhaplotype son exhibits higher than average intelligence because the recessive alleles are always expressed. Since the male does not have a second X chromosome, recombination cannot break apart the superhaplotype and it is passed onto any daughters without alteration. (The small portion of the Y that does recombine is a limited exception to this).

(3) Even though the female in this generation possesses a superhaplotype, she also has a more normal X. This second X reduces the impact of the superhaplotype in boosting intelligence. During the formation of new X chromosomes, recombination with the non-superhaplotype X destroys the superhaplotype.

(4) In this generation, a brother-sister pair are shown instead of a mating pair. These children regress towards the mean population intelligence compared to their grandfather because the superhaplotype was broken in generation (3).

Beyond Intelligence: Additional Traits that make Promoting Education and Careers to Women Unaffordable

The findings about intelligence performance and its relation to hemizygous exposure can, by itself, guarantee unequal representation in the highest

domains of achievement. Variance, mean, and specific ability differences severely limits the absolute number of high ability females relative to males generally and in the highest levels of mathematics, science, and engineering especially. The result is that there are not as many women who possess the minimum, innate aptitude prerequisites to achieve at the same level at the same frequency as high ability men. Of people who actually go on to work in hard science and engineering, the vast majority score over the 90th percentile on numerical tests and men will always be heavily over-represented at the highest levels of those tests for innate reasons. Achieving fair representation is therefore impossible when "there are only between 1/2 and 1/7 as many women as men who excel in the relevant abilities."[57]

Women may make poor substitutes for men in occupations which draw on systemizing reasoning, visuospatial skills, and often also in the most cognitively demanding fields for purely biological reasons, but there is more to the story. There are other facets of the female psyche which further reduce the likelihood of parity with males at the highest levels. High ability women do exist, even if at a relatively lower frequency, and they might be expected to be high achieving in their careers. Yet they tend to place more value on lifestyles and interests which are not conducive to maximizing wealth generation or career advancement. In other words, they tend to disperse their investment of time and interest among many things rather than focusing exclusively on the pursuits which could lead to greater career attainment. Reflective of this dispersion of interest is the number of hours worked per week by men and women in the top levels of ability.

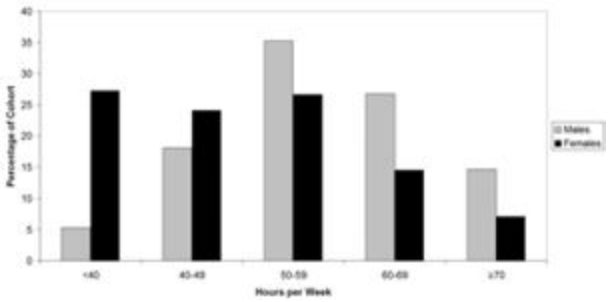
A study which tracked high ability men and women found that there are large gender differences in the preference for number of work hours per week even after controlling for the high general intelligence prerequisite. Those who prefer to work 40 hours a week or less are overwhelmingly female, and those who work or would be willing to work over 50 hours a

week are overwhelmingly male. The preferences found in this study are supported by US department of labor statistics. 26 % of working women were part-time in 2011, which is twice the rate of men.[230]

Despite this large sex difference in hours worked, both men and women seemed similarly satisfied with their lives. In other words, women working less than full time are happy with their schedule and have little interest in increasing their hours. Since notable accomplishments are rarely achieved by people who work less than 40 hours a week (world-class performers typically work between 60–80 hours per week),[45] this incrementally adds to the proposition that innate cognitive differences explain the underachievement of women relative to men. Once you control for numbers of hours worked and years of experience, the fabricated and fallacious "pay-gap" between men and women disappears.[231] The small fraction of women who actually work like men also earn like men. Using personal preferences as the explanation for high-ability female underachievement also has the virtue of not relying on conspiratorial thinking (i.e., patriarchal oppression).

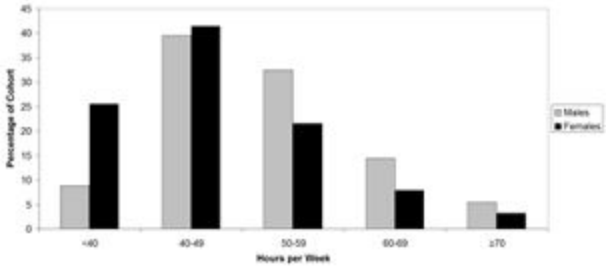
A number of reasons have been given for divergent work hour preferences between men and women. Surveys which try to identify the priority level of various values among the intellectually gifted confirm obvious and traditionally known stereotypes. Males care more than women about being successful at work, having money, and creating something impactful on the world while women cared relatively more about children, being near relatives, and having a spiritual life;[231] though not to the complete exclusion or lack of prioritization of career values.

Desired Hours to Work Per Week by Gender



The stated preferred number of hours to work per week among intellectually elite adults by gender. Graph does not indicate actual hours worked per week, only desired number of hours. There were 1165 males and 675 females in this cohort.

Actual Hours Worked Per Week by Gender



The actual number of hours worked per week among intellectually elite adults by gender. There were 1163 males and 579 females in this cohort.

Data from Lubinski, D., Benbow, C. P. (2006). Study of Mathematically Precocious Youth after 35 years: Uncovering antecedents for the development of math-science expertise. Perspectives on Psychological Science. Vol. 1, 316–345.

Males more often prioritize theoretical values (72 % vs. 35 %) and realistic interests (4 times the rate of women). Women, on the other hand, placed artistic values (61 % vs. 16 %) and aesthetic values (41 % vs. 15 %) as top priorities more often than men.[45] Likely following the prioritization of theoretical and realistic values, men tend to favor gadgets (probably a result of enhanced spatial ability)[34] above interactions with people relative to women with a mean difference of a standard deviation. These sorts of values are very predictive of vocational choice when combined with general cognitive ability measures.[45]

Paradoxically, at least if you don't consider biology playing a role in gender differences, increasing equality of opportunity for both genders does not increase female participation in stereotypically male fields like engineering, or increase male participation in stereotypically female fields like nursing. Quite the contrary, countries which have more opportunity and freedom for women to pick any career have more stark gender disparities favoring both men and women depending on the vocation. This is certainly true in Norway, rated the most gender egalitarian country in 2008, in which 90 % of nurses and 10 % of engineers are women.[232] Presumably, women in poor countries are more likely to pursue STEM because they are more concerned with being employed than living out their ideal preferences. When free to make decisions about what field to work in, men and women both ask themselves "what am I best at?" not "what could I do?" and so the natural sex differences manifest themselves in career choice differences.[58] Measures such as these add incremental support to systemizing reasoning being dominant in males and empathizing reasoning being dominant in females; that dominance motivating each gender to pursue fields corresponding to their innate psychology.

In the academic literature, the above sexual dimorphisms are often collectively referred to as “balanced” lifestyle preferences in the case of women, condescendingly implying that men have “unbalanced” preferences. The phenomenon could equally be described as men having “focused” preferences, while women are implied to be “unfocused.” This would reverse the condescension, but misses the point. These tendencies likely reflect evolved division of labor between the sexes and thus one style is not more right than the other, but are complementary in forming stable and effective families. However, it is without a doubt that the male style is more conducive to wealth generation and career advancement which makes sense given the male provisional role throughout human evolutionary history. Men evolved to excel at specific professions, which requires a great deal of single-minded focus (80 hours a week worth for the greatest performers), so that they could fund expensive families. Women evolved to maintain a household and children which would require proficiency at a much wider variety of tasks occurring simultaneously. Women have little use for focused proficiency in that context.

It isn’t just the absolute greatest achievers that gender differences in work time preferences have implications for. Some careers are highly important to the function of society generally and therefore much is invested in educating and training people to become professionals. Expensively trained, skilled women in virtually all professions exit the work force at substantially higher rates than men with similar training. A recent New York Fed paper estimates that about 1.6 million skilled workers were lost between 1993 and 2006 due to female disengagement and that the overall female workforce participation rate has been stable at around 60 % since 1994.[233]

The skilled female labor with the most extreme pattern of opting out is masters of business administration graduates from elite schools. Only 35 %

of the best, most qualified women who get educated from the highest ranked schools are actually participating in the work force; they are 30 percent more likely to opt out than their peers who went to less selective schools. Though even for those women at less selective schools, it must be noted that a 35 % opt-out rate is still very high. Depending on the vocation and education level, the rate of expensively educated women opting out ranges from 20–40 % but for most careers the female opt-out rate clusters around 30 %. Women with children work even less than this with a range of 40–60 % opting out over all professions with most professions having around a 50 % opt-out rate.[234] The female dropout rate is partially due to new mothers deciding not to work to raise children, and it is also partially due to significantly greater earnings by husbands making their income relatively insignificant by comparison.[233]

One important example of female opt-out is engineering; 40 % of women who get a degree in engineering,[235] for which women aren't generally very suited for, end up never even working in engineering or quitting very early in their career. This is good for engineering firms, but not for society because of the poor return on our investment in educating these women. Women leaving engineering is generally blamed on men being ambiguously "mean," but innate biological differences in preferences and aptitudes as well as politically correct institutions lowering standards to graduate women who lack competency much more persuasively explain this outcome. Men don't tend to be very nice to incompetent men either. Dislike of incompetency is probably amplified as well because men are justifiably resentful of women who receive undeserved positions and promotions as political spoils of the feminist movement rather than being subjected to the rigorous competition men have to navigate. That competition is made worse by the presence of these women because they occupy positions, without nearly as much direct need for actual contributions, that otherwise would

have gone to more talented men. Men are very aware of this, and they know that it is extremely unjust.

Perhaps the most important example of female opt-out being problematic is in medical training. Training medical doctors is hugely expensive and they receive the highest degree of taxpayer subsidization. Some of the costs are born by the degree seeker, but the majority of the cost is paid for by the state through taxes on the general population and ranges into the hundreds of thousands of dollars per doctor. The general population consents to this subsidization because they realize that they will need medical doctors to treat them when they become ill. However, prioritizing women in these careers is a poor investment for the tax payer even when they have the cognitive ability to meet the demands of the profession.

Work-time preference differences between genders strongly imply that training men is generally a better investment for society than women at the same level of ability. Especially considering 4 out of 10 female doctors are working less than full time and some of those do not practice at all.[233, 236] Even full time female doctors work on average about 4.5 hours less a week than men. A man who works 50 hours per week, 50 weeks per year, for 40 years would work a total of 100,000 hours. A woman who worked 35 hours a week for the same time frame would only work 70,000 hours. This rough calculation is quite generous in assuming that women working part-time only work 5 hours less than the standard work week and that they do not switch out of their trained profession at an early point for the duration of their working life. However, it is known in practice that many women end up switching out of the profession they were expensively trained in long before they retire.[233, 236, 237, 238]

These sorts of lifestyle choices are fine when the costs are born by the women who make them, but they are unacceptable when the costs are largely paid by society via wasting tax money on training that goes unused

and in terms of shortages of access to medical care due to too few trained doctors practicing. The problem only promises to get worse because of the push to get gender parity in medicine. As of 2010, 30 % of practicing doctors were female but almost 50 % of new medical school graduates were female. It is estimated that if the trend of female opt-out continues, and there is no reason to think it won't, there will be up to a 150,000 shortage of doctors in the near future. General practice and pediatrics will most acutely feel the problem since these are the fields women gravitate towards.[236] The public will have difficulty gaining access to medical care and costs will rise substantially because of the push of women into medicine.

In addition to a preference for less work hours and a tendency to opt out entirely, working women also call in sick or are otherwise absent at about twice the rate of men.[239] For sick leave specifically, women are absent about 50 % more often for self-diagnosed sickness and 34 % more often for medically certified sick leave.[240] Some, but not all, of this increased absenteeism can be explained by a greater likelihood for mothers rather than fathers to stay home with sick children. The rest may be due to legitimate increased susceptibility to illness (for example, menstrual pain and hysteria), a degree of semi-hypochondria, or a general lack of tenacity in the face of women's dislike of working. The later would be consistent with normal female work preferences. There is also some evidence for increased hypochondria; though women more often report ill health than men, it is not reflected by higher mortality rates. Reported ill health is much better correlated with mortality in men.[241] Whatever the reasons for these trends, the consequence is that by any measure, women as a population make for less productive and reliable employees than men even when they have similar levels of intellectual ability.

The costs shouldered by businesses forced to hire women to meet diversity quotas is enormous. Though employee turnover has been

increasing in recent years for all demographics, the above data makes it clear that women lead the pack. It is estimated that employee turnover will approach 65 % in the near future. The median cost of employee turnover is 20 % of the employee's annual salary for positions that pay under 75 thousand dollars annually, but there is a large range of costs and the cost increases drastically for specialized positions that require significant education. Replacing highly paid, specialized positions can cost up to 213 % of the lost employee's annual salary.[242, 243]

Studies and articles which address the problem of female opt-out, because of the feminist tendencies of the authors, generally advocate costly female-friendly policies.[242, 243, 244] In other words, they advocate lower standards for women relative to men and toleration of a greater degree of absenteeism for women. Essentially this means that feminists want the costs and opportunity costs of women's decisions to be externalized to employers and fellow employees who have to pick up the slack for absent or disengaging women, and vicariously to society who have to deal with less available service agents. The obvious and easiest solution is to simply not have as many women in these positions or restrict them to positions which can tolerate less devotion. This is exactly what our ancestors sensibly did. A company would be better off not having female oriented policies to discourage women from working there and thus maintain a more reliable work force.

Women and the University

In recent years, there has been a divergence between genders in the number of university degrees awarded. Almost 60 % of all degrees now go to women. This trend is often held as great progress for our society. Considering the huge cost of this education and the high rate of opting out by women, especially the most elite women, this conclusion is highly questionable.

Even ignoring female opt-out, if a closer look is taken at the specific degrees women are receiving the picture isn't quite as rosy as is often implied. To be sure, men also succumb to pursuing essentially worthless degrees, but they do so at a lesser rate than women and since the absolute number of men pursing college degrees is less, the problem is quantitatively less severe even when they do. Some of the most common degrees women are getting, such as business, health, and biological sciences, do make them more employable and socially valuable (when they actually work). Most, however, are notorious for conferring little value in the job market and can be expected not to improve income significantly. Among the top ten most common subjects studied by women as undergraduates are education, social science, psychology, visual and performing arts, communications, liberal arts and humanities, and English.[245] Graduate studies which can also be expected to produce less or no human capital and do not confer much in the way of high income also seem to be much more attractive to women than men. Below is a table showing the graduate degree paths that are dominated by women (i.e. 50 % or more of the students are female).

Academic Pursuits Dominated by Females at the Graduate Level[196]

Elementary Education	79.22
Education – Other	65.42
Education Administration	54.82
Special Education	82.47
Home Economics	74.24
Student Counseling and Personnel Services	64.66
Social Work	69.50
Early Childhood Education	96.77
English language and literature	64.47
Anthropology and Archaeology	53.71
Arts—History, theory and criticism	60.99
Secondary Education	62.50
Foreign Language Literature	70.06
Library and Archival Science	68.89
Curriculum and Instruction Education	67.35
Psychology	62.22
Sociology	50.75
Health and medical science	58.52
Education evaluation and Research	71.43

Data from Templer, D., tomeo, M. E. (2002) Mean Graduate Record Examination (GRE) score and gender distribution as function of academic discipline. Personality and Individual Differences. 2002 Jan. Vol. 32 No. 1, 175–179.

All of the degree paths examined by the particular study and found to be female dominated are included. A number of these paths are essentially just "professionally" training women to be mothers or surrogate mothers of children. Elementary and early childhood education sticks out in this regard, though probably all of the education paths do this to one degree or another. How anyone could possibly think it is necessary for women to have expensive post-tertiary degrees to watch young children play is hard to understand. Women have been watching young children successfully without any education for millennia before this farce was introduced at universities.

Other degree paths which seem particularly useless include English and foreign literature, art history, home economics (i.e., how to be a housewife; where is grandma when you need her?), and student counseling. Disciplines which in theory might be useful if properly designed, such as psychology, sociology, and anthropology, have the problem of being almost totally infested and controlled by people with very radical, far-left ideologies. Considering how far these ideologies force these areas of study away from realistic understandings of reality, their utility is heavily undermined. Though the study this table comes from does not provide information on the relative number of women pursuing each field, it does provide a general idea of the type of degrees women are more attracted to than men in post-tertiary education.

The unrestrained credentialism and general disregard for relative usefulness of college majors that has engulfed America has led to a severe erosion of the value of degrees, partially through a glut of graduates in the labor market and partially because of the easing of the difficulty of degree attainment to accommodate the masses. This trend promises to continue along this absurd path in the future as governments push for ever more credential earning through subsidization of education. The result of this

credential inflation is 48 % of college graduates are now working in jobs that do not require a college degree, and since most degrees are awarded to women it can be expected that the majority of these "underemployed" college graduates will also be women.[246]

The average student graduates with 26,000 dollars of debt, and 1 in 10 have over 40,000 dollars in debt.[247] The total student loan debt in the US has recently exceeded 1.2 ***trillion*** dollars. Since those degrees are becoming progressively less valuable, more indebted graduates will have progressively more difficulty finding jobs that will allow them to afford to pay that debt back. As a result of these ominous numbers, a push for student loan forgiveness programs has emerged in recent years by activists and political leaders. One such program that has already been implemented is the "pay as you earn" program. In the program, a college graduate with student loan debt who earns under a certain amount only has to pay 10 % of their discretionary income (income above the poverty line) for a maximum of 20 years, and only 10 years if they work for the government or a job defined by the government as "public service" (i.e., mostly left-leaning, politically partisan NGOs). After that time, the remaining student debt is completely forgiven.[248] Why low-pay and low-skill government and NGO work should be singled out to be especially favored is curious and in the later case likely reflects a sort of cronyism where people are being encouraged to become professional progressive political advocates on the taxpayer's dime.

It can be expected that the people most attracted to this arrangement will be those who pursued the least useful degrees and accumulated the most college debt since they have the most to gain from meeting the criteria of the program. Since most college degrees are now awarded to women, and they much more commonly get degrees which do not confer high income, this program is essentially a huge wealth transfer to women who made poor

educational decisions. This is amplified even more by the greater likelihood of women to work for the government, meaning more women will qualify for the shorter time to forgiveness. Women are 50 % more likely to work for the government than men. Almost 60 % of state and local government workers are women. Though women do not make up the majority of federal workers, they still make up a substantial minority at 42.2 %.[230, 249] Any expansion of loan forgiveness will thus fundamentally be a transfer of wealth from taxpaying men to women with very low productivity. It is difficult to justify this transfer considering many of these taxpaying men never even had an opportunity to go to college.

Some of these government and quasi-governmental jobs themselves are arguably an indirect form of welfare. That is, they are make-work jobs created to employ otherwise unemployable people, at least at the level of compensation provided. It is an open secret that government jobs in particular are the subject of affirmative action and so-called "anti-discrimination" laws and are intentionally used to artificially boost the income of certain groups; one of which is women.[250] Even more indirectly, make-work jobs are pushed in the private sector and semi-public NGOs which receive government contracts that stipulate similar requirements as a prerequisite for being the beneficiary of government largesse.

An important example of this pattern is the rise of "human resource" departments in many private corporations. Since it is often difficult to employ women in the nuts and bolts operations of many companies due to lack of aptitude, many companies simply expand HR to pad their workforce with more women to look like an "equal-opportunity employer." Thus they avoid bad public relations and possible lawsuits. 90–93 % of HR personnel are women.[251] Human resource departments are notoriously disliked by other employees within companies, from the lowest rung all the way up to

CEO, and are often considered an obstacle to business development rather than an asset.

The main “utility” of human resources is that they focus on navigating the large number of frivolous laws intended to benefit certain protected classes, such as women. In other words, they are not very useful outside of the artificially created environment that results from the burdensome regulations of the state. Outside of this artificial utility, HR is very out of sync with regards to how actual productive employees feel about their employer. In theory, employee attitudes are something HR should be intimately familiar with. In surveys of employees, 83 % of HR staff believed that most employees intend to stay at least one more year. In reality less than half that number are committed to staying that long. 81 % of HR staff believed other employees would recommend working for their employers to their friends. Only 32 % actually would. Another example of the low-value of human resources is their self-reported most important value. Consistent with its overwhelming female majority, human resources personnel value “communication skills” most. Finance and how the business actually operates seem to take a backseat for many of these women.[252] With such absurd prioritization, it is questionable how valuable they actually are during the hiring process, a point where they are supposed to be contributing the most value to the company. If they don’t understand the business, how can they select the best, most qualified employees?

Unsurprisingly, according to a recent study on hiring practices, HR women use their power in the hiring process not to advance the interests of the company, but to select potential boyfriends and to exclude female romantic rivals.[251] In the study, resumes were sent to various companies from fictitious men and women with pictures indicating different levels of attractiveness or no picture at all. Attractive women were much less likely to be invited to an interview than ugly women or women without photos.

Attractive men were the most likely to be invited. Clearly, the overall usefulness of this department within companies is questionable and best understood as a form of indirect welfare for women who aren't particularly useful in the world of work.

After you take into account the women who quit working entirely, you have to also consider those women "working" in relatively unproductive occupations being subsidized by government wealth redistribution programs or enforced by government regulations. Once these things are considered, it turns out that a preciously small fraction of women are actually engaged in any sort of productive, economically useful labor; perhaps as small as 30 % or less of working age women. These trends raise the question about what exactly is getting accomplished by sending women to universities at great cost. For a large proportion of these women, sometimes exceeding 50 %, it appears that the main effect of the college environment is to put relatively smart women in contact with relatively smart men who they can seek to marry and depend on for financial support. These men not only have to provide for their traditional obligations, but in many cases now also have to pay for the loans that went to gain the wife's unused education. This is hardly fair for these husbands.

Another 20 % or so use their degrees to qualify for economically useless make-work jobs in government and quasi-governmental organizations. In essence, if not by intention, the main function of education for women is merely to service the hypergamy of elite women and provide a subsidized plan B for those who fail to ensnare a high earning mate. If servicing hypergamy is the main purpose of female education, intentional or not, then surely there is a less expensive and more practical way to do this. The old-style finishing schools for girls immediately come to mind. Such schools focused on training elite women for adult life and prepared them for marriage. Many women are still using education for this purpose, but they

aren't actually getting any training for what many of them actually end up doing. Bringing back such schools would better align with what many women end up deciding to do with their lives. It would also likely be a lot cheaper than the ever growing costs of college. More important still, focusing the 50 % or so of elite women who fundamentally just want to get married and have children on that task would improve the fertility of our best and brightest. The current average age of first birth for highly educated women is 32 and 1 in 4 highly educated women never have any children at all;[244] a deeply dysgenic pattern.

On a personal level, opting for part time work after receiving expensive educations places the potential husbands of these women in a very bad position. Not only are they required to provide provisioning for the wife and children as in traditional settings, but they must now also take on the burden of student loan debt from her unused (and thus useless) education. It isn't surprising given this situation that, combined with the risks of unreasonable child support and alimony after frivolous divorce, men are opting out of marriage in record numbers. It has become an irrational decision and the irrationality of entering into such arrangements only seems to increase over time. Society can't afford educated women when as a group they don't provide much return on the investment and their diversion from motherhood results in deeply dysgenic fertility patterns.

Direct Wealth Redistribution to Women

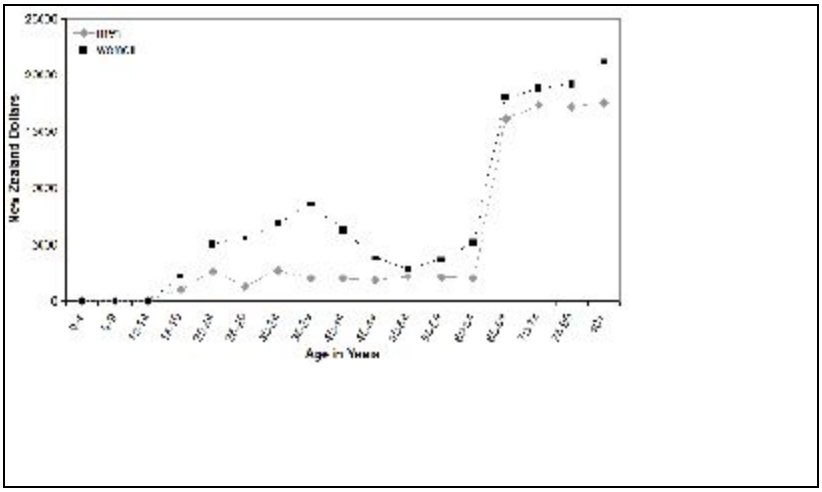
In addition to pushing for a greater role by the government in regulating behavior, the feminine imperative also results in massive increases in the size and scope of government in other areas; especially in increasing taxation to facilitate wealth transfers to the poor and increasing wealth transfers from men to women post-divorce. Women's suffrage has been shown to have caused between a 25 and 33 % increase in government expenditure within 11 years of its implementation for various governments at various times.[225, 226] According to IRS data, men in the US pay substantially more (almost double) in taxes than women; mainly because of their higher income. Comparing self-employed men to self-employed women, which conveniently factors out any potential make-work jobs for both groups, shows an even greater divergence with men paying more than three times the amount of taxes than women.[253]

Men earn more partially because of their greater devotion to the workforce in terms of hours worked per week and accumulating more uninterrupted, consecutive years of participation in the workforce. Superhaplotypes also cause there to be a greater number of very high IQ men than very high IQ women which causes men to be over-represented in the highest paid positions that require high intelligence. Such professions tend to pay more due to their greater difficulty and the limited number of people able to perform them.

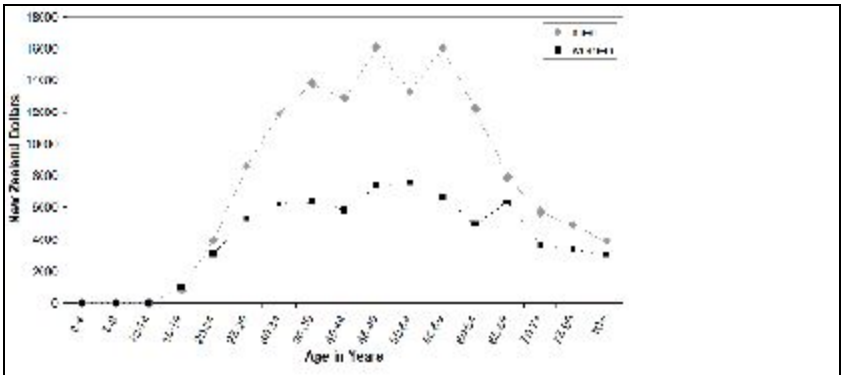
Other Western countries have similar patterns. One of the best studies on differences in government payments and benefits receipt by gender was done on the population in New Zealand. Taxes paid vary significantly across all age ranges, but during the majority of their lifetime men are contributing about twice as much in Tax revenue (14,000 vs. 6,000 NZD

annually during working age) and are always contributing more than women during the entirety of working age.[254]

Direct Tax Per Capita by Age and Gender



Received Income Support Per Capita by Age and Gender



The above graph shows incomes support benefits per capita by age and gender. Income support is analogous to welfare and retirement benefits in the US. Throughout all points of life after working age, women collect more benefits than men; the exact opposite pattern of payments to the state. During child rearing years, there is a large peak in benefits collected by women compared to men which reduces somewhat as children become adults and are no longer dependent on mothers.

Data from: Aziz, O., Gemmell, N., Laws, A. (2013) The Distribution of Income and Fiscal Incidence by Age and Gender: Some Evidence from New Zealand. University of Victoria Working Paper.

On the other side of the coin, women receive substantially more income support benefits compared to men both in terms of monetary value per woman and in the number of women receiving benefits. How much more women receive than men varies with age, but it is higher at all ages and peaks at 4.8 times what men receive during the 35–39 age range. This is likely due to the increased support given to single mothers with dependents. Middle of life benefits in the US follow a similar pattern for similar reasons. The Temporary Assistance to Needy Families (TANF) mostly provides money for single mothers or the children of single mothers. 86 % of adult recipients of the program are women.[255] In addition, almost 1 in 4 women (23 %) in the US receive food stamp assistance at some point in their lives; about twice the rate of men. There are some racial differences in receipt of benefits, but the gender pattern is consistent for all races. Among whites, 19 % of women receive food stamps at some point in their lives vs. 11 % of men. For blacks, the rates are 39 % vs. 21 % for women and men respectively.[256] White women are thus nearly as dependent on government food stamp benefits as black males. Other welfare programs in the US which in practice are substantially or mainly wealth transfers to single mothers from taxpaying men include the Earned Income Tax Credit (EITC), the Women, Infants and Children food program (WIC), Supplemental Security Income (SSI), Child nutrition programs, public housing, section 8 housing and Medicaid.[257, 258]

In a fundamental sense these programs are equivalent to the cuckolding of all tax-paying men. Cuckolding is when a woman has a child by one man, but convinces a second that it is his in order to deceptively gain access to his accumulated resources. Men with self-respect and dignity do not pay

for the children of other men. Welfare programs are similar except deception is not required because the state acts as the coercive middle man who makes the cuckolding mandatory. It is also less obvious than the personal case because the costs are dispersed among all productive men and they generally never interact with the single mothers directly to see their money being wasted. This wealth, which would be better spent by productive men providing for their own biological children, is forcibly taken from them to pay for women who have made extremely poor personal decisions in their lives and produced children statistically much more likely to be involved in criminal and disorderly behavior. The increased criminality of children of single mothers is a large externality which costs a society a great deal in terms of increasing police and prison spending on top of the direct wealth transfer programs.

The recent introduction of the "affordable" health care act also acts as a wealth transfer from working age men to women. Men go to the doctor and need medical care much less frequently than women. Before the new health care law, insurers were able to adjust prices based on gender to reflect actual costs. No more. Now men and women cannot be charged differently based on actual medical care use and single men are even required to pay for personal coverage which can only benefit women, such as maternity coverage. The result is that healthcare costs for young men have increased substantially more than for women of all ages. The average increase was 56 % for men compared to 4 % for women though in specific areas the average increase for young men has been as high as 200 %.[259] Car insurance shows the opposite pattern where men are made to pay more due to their greater likelihood of getting into catastrophic crashes (women are more likely to have an accident, but those are usually minor). Unsurprisingly, there has been no attempt to enforce "equality" in this situation.

The greatest income support occurs at the oldest ages, and is present in pretty much every Western country. In New Zealand, older women receive about 20 % more retirement benefits than men. Though the gap between benefits receipt isn't as large per capita in retirement compared to other ages, men have a much shorter life expectancy than women which results in women in aggregate receiving substantially more benefits than is indicated by a per capita analysis. Women live 6–10 years longer than men on average[260] and in New Zealand, only 39 % of people over 80 are male.[254]

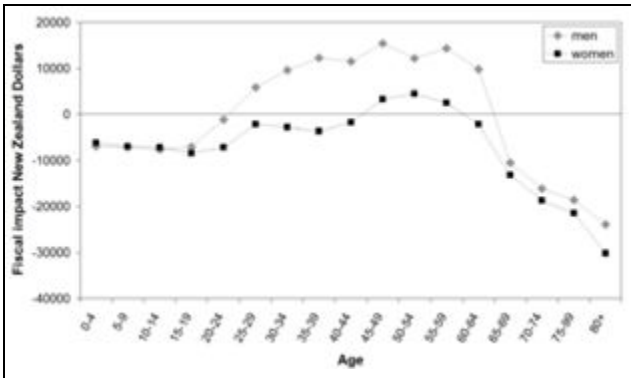
In the US, social security, Medicare, and the "affordable" healthcare act have much the same effect as retirement transfers do in New Zealand. The elderly, who are mostly women, are probably the single greatest beneficiary of the new US healthcare law. The demographic gap in the US favoring women among the old increases from 1.3 women per 1 man at age 65 until there are about 2 females for every 1 male at 85 years old and older.[261] Considering the size of the wealth transfer in old age, socialized retirement benefits constitute an absolutely massive redistribution of wealth from working age men, who pay much more into the system, to old women who as a group withdraw substantially more. In addition, it is likely that these older women did not contribute much during their youth considering what is known about female work habits. Medical care especially imposes massive costs. Such costs increase exponentially for the very old, most of which are female. Again, this is money that would be better used by young, productive men financing their own families instead of transfers towards entitlements for old women.

The net fiscal impact is a measure that subtracts the costs of state benefits from paid taxes to find the net impact on government revenue. Comparing genders shows that, in New Zealand, women have a negative net fiscal impact over most of their lives (see graph on the previous page). As a group they take more money from the government than they pay into

it. This difference must therefore be made up through increased taxes received from men. Men pass the break even point and start contributing positively in their early to mid twenties. However,

> Women, on average, do not pass this 'break even' point until their mid-40s. This is due to a combination of lower workforce participation, higher health and education spending, higher income support and lower direct and indirect taxation.[254]

Net Fiscal Impact by Age and Gender



The above graph shows the per capita net fiscal impact by age and gender in 2010 in New Zealand. The net fiscal impact is calculated by subtracting government expenditures (education, income support, healthcare, etc) from direct and indirect taxation. Only figures which are easily attributable to individuals are used. From these figures, it can be seen that women withdraw more benefits from government than they put back in for most of their lifetimes. In other words, they have a negative net contribution to government finances for the majority of their lives. Women do not pass the break even point and start contributing positively until their early to mid 40s.

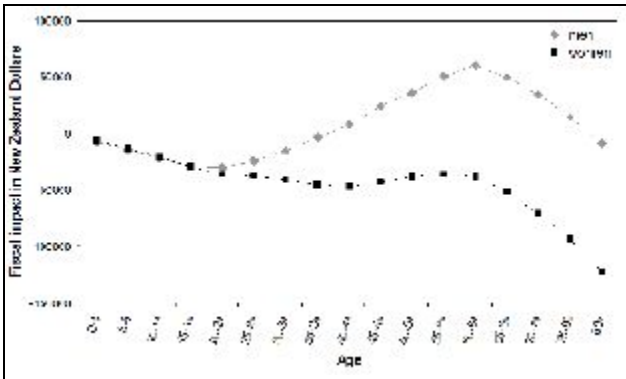
Data from: Aziz, O., Gemmell, N., Laws, A. (2013) The Distribution of Income and Fiscal Incidence by Age and Gender: Some Evidence from New Zealand. University of Victoria Working Paper.

The cumulative net fiscal impact adds the net fiscal impact from all prior years in a person's life to see the net effect of their whole life up until that point on government finances at a given age. As can be seen in the graph on the next page, women in New Zealand (and presumably in other countries

with similarly generous government benefits) never make a positive contribution to state finances.

> The positive net fiscal impact women make from 45–59 never outweighs the prior negative net fiscal impacts. As a result, when the large negative net impacts of the retirement years arrive, they simply add to an already negative profile. Men, on the other hand, appear to have a positive cumulative net fiscal impact from approximately 40 until 80 years of age. For these particular taxes and public expenditures, the net fiscal incidence on men is approximately zero when cumulated over all ages.[254]

Cumulative Net Fiscal Impact by Age and Gender



The above graph takes the 2010 cross-sectional data for net fiscal impact on government finances for each year and adds all previous years to get an estimate of cumulative lifetime impact at a particular age for both genders. As can be seen from this estimate, the brief period for which women have a net positive impact on government finances is not enough to offset their previous received benefits. Women are thus on average a net drain on government finances when considering their whole lifetime and do not contribute positively to government finances.

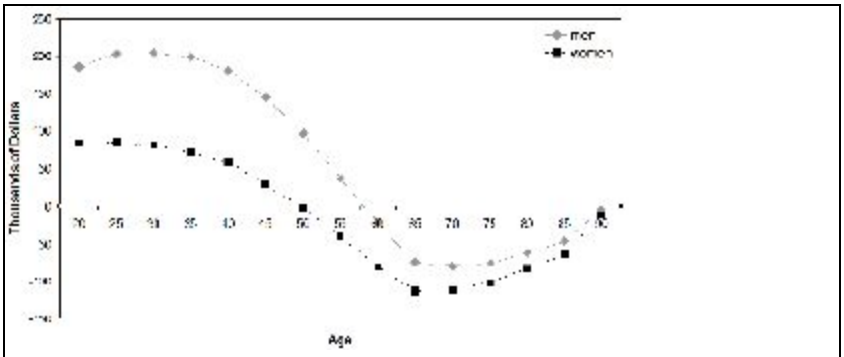
Data from: Aziz, O., Gemmell, N., Laws, A. (2013) The Distribution of Income and Fiscal Incidence by Age and Gender:

Some Evidence from New Zealand. University of Victoria Working Paper.

The United States generally has less socialized benefits compared to other countries and does not demonstrate as extreme of a trend, but the overall shape is similar. Though, as stated previously, the degree to which the same

pattern is present in the US is somewhat obfuscated because some things which in other countries would be factored into state finances, such as healthcare, are not in the US. Obamacare is essentially a bachelor tax which would not get factored into the net fiscal impact since the "tax" goes through private insurance companies rather than through the government. Other essentially male specific "taxes" that would not be generally included are things like child support and alimony that mostly go from men to their ex-wives, but passes through the state which skims off the top. Factoring in make-work government jobs overwhelmingly populated by women would also reduce the net fiscal impact of women since those taxes are merely a recirculation of other tax revenue.

Average Net Tax Payments by Age and Gender in the US (1991)



The above graph shows average tax payments minus transfers per person by age and gender in the US. As can be seen in the graph, men pay substantially more taxes during the entirety of their working life, and receive less net transfers in retirement. More recent IRS data does not group by both age and gender, but still shows that men overall pay substantially more in taxes than women. That men over all ages pay more suggests the pattern above is still present today.

Data from: Aziz, O., Gemmell, N., Laws, A. (2013) The Distribution of Income and Fiscal Incidence by Age and Gender:

Some Evidence from New Zealand. University of Victoria Working Paper.

IRS data can be found here: Data on Salaries and Wages and Business Income, by Gender, Tax Year 2009. IRS Data. http://www.irs.gov/uac/SOI-Tax-Stats-Special-

Studies-on-Individual-Tax-Return-Data#gend

Recent US data compiled by the international monetary fund shows that for most income measures men still are paying substantially more overt taxes across all age ranges than women and women are still receiving more in benefits (additional graphs can be found in that paper).[262] In other words, the general pattern discussed in great detail in the paper on the New Zealand population is broadly similar to the pattern which currently exists in the US and presumably all high tax, high benefit nations.

Virtually no quantitative indicators show that women as a population have any real capacity for being truly independent. They are heavily dependent on being subsidized by male taxpayers, husbands, and ex-husbands. The obvious conclusion that can be drawn from gender differences in taxation and benefits is that this data clearly demonstrates that modern "equality" is largely fraudulent. Women are no more independent now than they were when they were restricted to being housewives. The main difference between traditional societies and today is not that women are more independent, but that they are less directly dependent and more indirectly dependent on the productivity of men. They are, as a group, heavily reliant on state mediated wealth transfers from men.

In the past, men were only responsible for providing for their own wives and children. This constituted a fair and reciprocal symbiotic relationship between men and women. Men produced surplus to support their wives and children, and in return wives provided various household services and produced children for their husbands. Today, the once symbiotic relationship has morphed into a parasitic relationship where women depend on the coercive power of the government to extract wealth from men while providing little to men in return; both directly from fathers through child support and alimony that comes with easy divorce and indirectly through

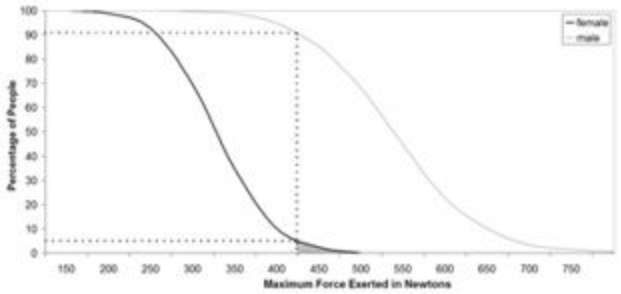
socialized healthcare, welfare, and retirement benefits. Maintaining this false, superficial equality requires an absolutely massive wealth transfer. The result is that working age men have substantially less wealth to afford forming families of their own. This combines with the increasingly well-known costs of frivolous divorce to men to discourage marriage and disproportionately decreases the fertility of especially productive men relative to the less productive. Productive men have more that can be stolen so they take precautions to limit what can be taken by the state or potential future ex-wives. Given the genetic heritability of psychological traits, this drop in fertility guarantees that future generations will progressively have smaller and smaller proportions of productive men who can keep the current system solvent.

Physical Strength

Though the focus of this work is not on differences in strength and endurance between genders, it is important to address this issue briefly because lack of acceptance of the greater physical ability of men has as much or more negative impact on the careers which require it as refusal to accept the innate cognitive differences does in the fields which require a minimum level of intelligence. If anything, the problem is even worse because while male and female intellectual differences are salient at the population level to those who look carefully, they can also be quite subtle at times.

Differences in physical strength, endurance, and athletic proficiency are an order of magnitude more striking. The average woman has only 52 % of the upper body strength and only 66 % of the lower body strength of the average man. Similar numbers are found when comparing muscular endurance. Another way to consider this difference is to look at the overlap in strength distributions between genders. When such a comparison is made, it turns out that only the strongest 2.5–5 % of the female distribution overlaps with the male mean strength. Mirroring this, only the weakest 2.5–5 % of male distribution overlaps with the mean female strength.[263, 264, 265] One study which measured hand grip strength found that 90 % of females had less hand grip strength than 95 % of male group. The strongest control group female was surpassed by 2/3rds of the male control group. In the same study, female athletes who specially trained for sports they played were also considered. Even these athletically elite females only managed to reach the 25th percentile of untrained males on average.[265] Seemingly though, cognitive dissonance knows no bounds because there are feminists who would deny this reality in the face of unambiguous and overwhelming evidence; not to mention plain common sense.

Percentage of Males and Female with a Given Handgrip Strength or More



The graph above compares maximum male and female grip strengths. At any given strength level the percentage of males or females who were able, when exerting maximally, to reach at least that minimum level of force or greater is shown. For example, all volunteers could exert more than 150 Newtons worth of force so 100 % of males and females could exert that level of force or more. As the minimum required force increases, progressively fewer people have the strength to exert that force. Dotted lines are used to compare the strongest 5 % of females (shaded area) to the male curve. It can be seen from this comparison that just over 90 % of males are stronger than 95 % of females. In other words, the strength differences between males and females are so large that their distributions barely overlap even at the tales. Neither males nor females in this group engaged in special athletic training.

Data from D. Leyk, D., Gorges, W., Ridder, D., Wunderlich, M., Ruther, T., Sievert, A., Essfeld, D. (2007) Hand-grip strength of young men, women and highly trained female athletes. *Eur J Appl Physiol.* 2007, Vol. 99, 415–421. DOI 10.1007/s00421-006-0351-1.

From an evolutionary perspective, it was men who achieved status both to each other and to potential mates through physical competition and prowess; say, for example, through hunting. It is true that some men would profoundly lose in such competitions, and many probably died as a result. However, as was discussed previously, the species could accept increased mortality in males since the remainder could easily make up for those lost in terms of fertility.

Becoming an alpha female has never depended on raw physical strength to any great extent. In fact, the risks attendant with roles that require enhanced physical strength would likely serve to reduce female

evolutionary fitness by increasing the chance of incurring fatal injuries; should she be physically capable of doing them. Since such risks present little advantage to females in terms of increased fertility, it is understandable why they would not evolve enhanced strength or why they might even move towards less strength to encourage increased outsourcing of provisioning and physical labor to male partners. With different pressures at work, males and females have understandably diverged with respect to their physical aptitudes. The main regulatory molecule which facilitates this is of course testosterone. However, muscular genes show a similar pattern as intelligence and spermatogenesis genes in that they also appear to be disproportionately X linked;[78] strongly implying that strength is an evolved sexually dimorphic, and possibly sexually antagonistic, trait.

The consequence of gender differences in strength is most obvious and unavoidable in the setup of our athletic competitions and games. There is no professional level or league which can be co-ed. Women simply are not physically capable of competing at the same level as men and must have separate leagues that virtually no one is interested in watching. This is not surprising because people are generally interested in watching the best compete, and that means men. Male athletic competitions are also more interesting because it is a method by which men can demonstrate their evolutionary fitness and relative level in social hierarchies. Athletic competitions do not serve this same purpose to any appreciable degree for women.

Comparison of the Hand Grip Strength Distribution between Typical Males, Typical Females, and Elite Females

The graph above compares maximum male and female grip strengths. At any given strength level the percentage of males or females who were able, when exerting maximally, to reach at least that minimum level of force or greater is shown. For example, all volunteers could exert more than 150 Newtons worth of force so 100 % of males and females could exert that level of force or more. As the minimum required force increases, progressively fewer people have the strength to exert that force. Dotted lines are used to compare the strongest 5 % of females (shaded area) to the male curve. It can be seen from this comparison that just over 90 % of males are stronger than 95 % of females. In other words, the strength differences between males and females are so large that their distributions barely overlap even at the tales. Neither males nor females in this group engaged in special athletic training.

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A notable example of direct competition that demonstrates the gulf between men and women was the tennis competition between Karston Braasch, who was ranked 203 in the professional men's league, and the top ranked Williams sisters. Braasch won both games back to back with scores of 6 to 1 and 6 to 2. He was a decade and a half older than the sisters and past the physical peak age of his twenties. His preparation for the matches included smoking a pack of cigarettes and drinking several beers; yet the competition wasn't even close.[266]

The same pattern of differential suitability between genders in athletic competition is also true of physically demanding careers such as police officer or fire fighter. Ask yourself this, if you were caught in a fire and

your life depended on a firefighter coming into the building, smashing down doors or walls with an axe, and then carrying you out, all while wearing extremely heavy protective gear, would you prefer a man or woman be the one sent to get you? If you have any interest in actually having your life saved, then the answer is obvious.

Similar arguments can be made for police officers who must have the physical ability to subdue criminals as part of their jobs. The idea of a female officer being able to physically subdue a fully grown male criminal is laughable. In one well publicized example, prisoner Bryan Nichols, a large black male, over-powered an older female officer, took her gun, and went on a killing spree. False beliefs in gender equality in the case of firefighters and police doesn't just result in wasted money or general inefficiency as in high IQ professions, it costs lives. Yet millions of taxpayer dollars are spent to accommodate the small number of women who are barely able to meet the physical standards of those professions; say by retrofitting fire stations to have female specific locker rooms and bathrooms which largely go unused.[267] And even if they are able to meet modern physical standards, that is only because the current standards have been relaxed compared to what they were in the past just so that more women could be placed in these roles. The actual physical demands have not decreased along with the standards.

Strength isn't the only problem, either. Gender differences in bravery and risk-taking also matter. John Derbyshire, in his book *Face to Face with Race*, digresses from the general focus of the book to discuss the story of a female fire lieutenant who was hired and then promoted, in complete disregard for any sensible, merit-based physical standards. The hiring and promotion of this woman, like most female fire fighters, was done by the fire department to meet politically inspired quotas. When her crew arrived to a fire, instead of doing the standard procedure of dragging the heavy hose

into the house, breaking down the door to the room on fire, and putting it out, she became afraid and reminded the crew that she was in command and ordered them not to enter. They were to try to put it out from the outside. Of course this didn't work and it wasn't until a male chief from a different crew showed up, relieved the cowardly woman of command, and ordered the firefighters to do the correct thing that the fire was put out. Later, the female fire fighter had a nervous breakdown as a result of her now widely known incompetence among the other fire fighters. She was reported to have started hitting herself repeatedly as part of this. She also became enraged at the fire department and sued them for "discrimination."

Perhaps the most documented physically demanding career for which unsuitable women have been allowed to invade is the military. Quite literally, physical strength can mean the difference between life and death. In the chaos of battle, it can still sometimes be necessary to fight hand to hand in close combat situations. Even without actually resorting to the problem with females attempting to engage in hand to hand combat with men (let's say that only guns are used), combat soldiers are still required to carry 70–100lbs of gear on long marches and into battle. This amount of gear tests the limits of male strength and endurance.[268] How can it be expected for women, with only 50 to 66 % of the strength of men, to carry this much? It can't. The only way to put women into combat positions, which is the current object of feminist penis envy, is to lower standards and require less equipment. But the question is, what should female soldiers not carry? Should they have less armor? Less ammunition? Less food and water? How about less medical supplies? All of the things a soldier carries are potentially lifesaving, and without them that soldier and her fellow troops are at greater risk.

In addition, even cases which are, at first glance, seemingly beyond the need for physical strength can rapidly become physical tests of endurance.

For example, it is quite possible for an airplane which comes under attack to lose engine and/or hydraulic power. In such a situation, making an emergency landing requires a great deal of strength and endurance from the pilot. Most men would be able to handle this situation better than most women for purely strength related reasons.

There has been a large and foolhardy push for more women to be in the military and in combat specifically; which recently met with success. The only way to accomplish this is to lower standards for everyone, or simply expect less from women. Essentially, make it so women are paid the same for less work and ability. For example:

> At the time of enlistment, a seventeen-year-old female is expected to do thirteen push-ups, compared to thirty-five for males, while for forty-one-year-olds, the numbers are six and twenty-four, respectively. A seventeen year-old girl is expected to run two miles in nineteen minutes, forty-two seconds or less, which is twelve seconds more than a forty-one year old man gets. A forty-one-year-old woman has to "run" two miles in twenty-four minutes and six seconds, almost five minutes more than a man receives.[269]

More than 50 % of female trainees in the marines are unable to do even three pull-ups. Instead they are required to do a "flexed arm hang" for a minimum 15 seconds; a much less stringent requirement.[270] Over all age ranges, women can only do about one third the number of pushups compared to men; 30 vs. 10. Men average 2–4 fewer minutes per mile on long distance running tasks (7 vs. 10 minutes for a 1 mile run and 16 vs. 20 on a 2 mile run). Women can only do 40 sit ups on average compared to the male mean of 60.[271] Female recruits also tend to be less physically fit on average (i.e., they are fatter). One of the most remarkable reductions in standards is the lowered minimum throwing radius expected of women throwing grenades. Women are only expected to be able to throw a grenade 25 meters compared to 35 meters expected of males and many can't even throw it that far. What happens if a female combat troop muffs her throw

and gets everyone around her killed? That incurring this level of increased danger to troops is accepted is incomprehensible, and yet that is how things are actually done today.[272]

Male soldiers who are directly confronted with female military personnel are quite aware of the lower standards for women. In interviews, one soldier described the situation as follows:

> Today all you hear in the Army is that we are equal, but men do all the hard and heavy work whether it's combat or not.[272]

Another soldier stated:

> The majority of females I know are not soldiers. They are employed. Anything strenuous is avoided with a passion. I would hate to serve with them during combat! I would end up doing my job and 2/3 of theirs just to stay alive.[272]

Clearly, the soldiers who actually experience women in the military are under no illusion that the competency or efficiency of the institution is being improved by their presence. This is concordant with what we know about male and female differences in physical aptitude.

Beyond simply having less physical strength, the female body also appears much less suited to strenuous physical exertion. Multiple studies have all found similar results: Women are consistently and significantly more likely to be injured. During basic training, it can be expected that 50 % of female recruits will develop some sort of injury compared to 27 % of men (i.e., they are 1.8 times more likely to be injured). Women are 2.5 times more likely to develop injuries that lead to significant time loss from training. More than 50 % of women are prevented from ever completing their training because of some sort of injury. This pattern has been stable since the 1970s.[271, 273, 274, 275]

Women are several orders of magnitude more likely to incur some specific injuries. For example, 1 in 367 female military personnel can be

expected to suffer a pelvic stress fracture compared to only 1 in 40,000 men. This is unsurprising given that the female pelvis has evolved to accommodate childbirth, not heavy load bearing or other stresses. More generally, stress fractures occur about 10 times as often in women than men in the military. Depending on the study, ACL ruptures are between 2.4 and 9.7 more likely in women than in men. Overuse injuries, defined as an injury that results from extended, repetitive use of a specific body part, occur in 68 % of women compared to 48 % of men. The cumulative result of all of these injuries is that women must go to the doctor and seek medical care at 9.2 times the rate of men.[274]

All these extra injuries constitute a huge additional immediate cost to military operations and can be expected to increase with additional female involvement in the military. However, the extra costs do not end in immediate medical costs. Injuries which cause sufficient damage result in physical disability discharges. Such discharges entitle the person who receives it to financial benefits ***for the rest of their lives***. Consistent with their higher rate of injuries generally, women are 64 % more likely to receive a physical disability discharge. And this was without them ever being intentionally exposed to combat situations at the time these studies were done. One year saw female disability discharge be as high as 140 per 10,000 female military personnel.[276] In the same year, male disability discharge was only 80 per 10,000 male military personnel, despite the fact that they are more commonly exposed to dangerous and/or physically demanding tasks. Disability costs take up an absolutely staggering amount of the military budget. In 2001, 21 billion dollars was paid out in compensation to disabled military service personnel when all services are considered. 25 % of this disability compensation budget is made as direct cash payments and this was the level of payments before the recent Iraq and Afghanistan wars even took place.[273]

Not to be misinterpreted, it is ethical to compensate soldiers who risk their lives and become disabled as a result of service. However, considering that women are so much more naturally prone to being disabled and that any individual woman can be expected to contribute less than any individual man on average, it makes little sense to have women in the military at all. In this case, women are definitely not equal in terms of what it costs to accommodate them.

Female Attrition and Opt-out in the Military

Similar to the greater female attrition rate from the civilian workforce, women allowed into the military also leave at rates much higher than men both after completing the initial term of service and as a result of opting out before the full term of duty is completed. The later is by far more expensive than the former, however. A detailed study which explores overall attrition rates for women was published by the Navy in 1999.[277] With the exception of discharge due to disciplinary reasons, women have greater unplanned attrition rates for all categories defined by the Navy. These categories include loss for medical, disciplinary, pregnancy, family care, and honorable discharge for other reasons (this includes personality disorders and failed physical examinations). For the one exception of disciplinary discharge, men contribute only an extra 1 % (4 % vs. 3 %). For every other category, all of which show greater female attrition, the differential is substantially higher than 1 %. Over all categories considered together, women have 2.5 times greater unplanned attrition than men (25 % vs. 10 %). Though narrowing to lower ranks only, female attrition can range up to 33 %. In 1998, there were a total of 1,960 unplanned female losses, 900 of which were due to pregnancy.[277] Similar trends are found for women in all other branches of the military, of which 14 % overall are women.[278, 279, 280]

As the numbers above indicate, one of the most important sources of personnel loss which can only affect women is those losses resulting from pregnancy. Despite only making up 14 % of the Navy in 1999 (women make up 16 % of the navy today), 6 % of all losses, male and female, had resulted from pregnancy. 11 % of all women are eventually lost from the Navy due to pregnancy and that figure has remained consistent to the present day. These “unintentional” pregnancies are more common than

occur in the general population.[281] Considering only shipboard duty specifically, 14 % of unplanned losses were due to pregnancy even though only 6 % of sailors at sea were women.[277] Pregnancy can serve women as essentially a ‘get out of jail free’ card in that any woman who decides she no longer wants to serve, or at least doesn’t want to be assigned to a ship, can use it to shirk her obligations and women frequently use pregnancy in this capacity. In a pattern similar to what occurs with regards to marriage (70–90 % of divorces are directly or indirectly caused by women), women often decide to shrug off their commitments in the military with zero or minimal consequences. Just like the rest of society, the navy allows them to do so. It is hard to say what would be the better strategy with regards to female attrition: do you cut your losses and get rid of the women who would have been less efficient anyway or force her to stay to fulfill her obligation. If you choose the later, you are forced to deal with the problems women cause, but at least forcing women to accept responsibility has some semblance of justice. The obvious sane solution to these problems is not to allow women in the Navy to begin with. Our ancestors had enough common sense to adopt that policy.

Losing personal unexpectedly at sea is hugely expensive. It requires diverting ships to the nearest port with a US base which results in long delays and massive expenditures in terms of additional fuel and supplies. It also requires the lost sailor to be replaced by another who often must be expensively retrained for the role they are taking over and they also must be flown into the port. The average cost of an unplanned loss is 12,000 dollars and can range up to 80,000 dollars for highly trained personnel, such as technical staff. The annual cost of unplanned losses in the years immediately preceding 1999 was 180 million dollars per year, implying the current cost is even greater.[277] Similar to the consequences of increased rates

of injury among women, greater attrition incrementally makes women yet more expensive still.

Affirmative Action and the Effect of Female Presence on Men in the Military

A 2012 Rand Institute study strongly implies that affirmative action plays a large role in promotions in the military; at least up until the mid-levels. Despite the problems with serving women previously described, women are more likely to be promoted to commissioned officer status than men. 17 % of women are commissioned compared to only 15 % of men.[278] In other words, any given woman is more likely to be promoted to commissioned status than any given man. Affirmative action also considers race in these promotions. In promotions from the O5 to O6 ranks white women are only 3.4 % more likely to be promoted than white men, but Hispanic women are 13 % more likely to be promoted than white men. “Other minority” females (their term), a category excluding blacks and Hispanics, are most benefited by affirmative action with a 16 % greater likelihood of being promoted from O5 to O6 than white men.[278] Black women do not seem to be benefited by affirmative action like other groups of women with them being 7.7 % less likely to be promoted than white men. Previous rounds of affirmative action may have already brought black females up to proportional representation making further social engineering unnecessary. 31 % of females in the military are black compared to only 12 % of the general population.[279] Considering that the military could check off both the black and female check boxes with one promotion, and that there have always been plenty of black women to choose from relative to other groups, this makes them a convenient early target for biased racial preferences in promotions. Since racial groups other than white and black women make up an extremely small proportion of the military, targeting them for affirmative action is probably more difficult because there are smaller numbers of

women to choose from those groups. There are thus a smaller absolute number of women from those groups who can superficially appear plausibly qualified. This could explain the on-going high rate of affirmative action for these groups.

When you combine affirmative action favoring female promotion to officer status and the high rates of female attrition at all levels, the result is a less stable hierarchy structure. Women themselves are not substantially affected by this instability among upper management; it only increases their already high attrition rate by about 3 % from 22 % to 25 %. Men, on the other hand, are very strongly affected by instability among their commanding officers. Unplanned losses for men increase from 3 % to 14 % when the commanding hierarchy is unstable.[277] In light of this, the fact that only 7 % of high level military positions, admirals and generals, are female should be viewed positively. Increasing female presence leads to a large assortment of large negative side effects among the men who must actually fight and do most of the work in the military. This is yet an additional, if indirect, incremental increase in the cost of including female military personnel.

Unstable hierarchies aren't the only negative influence female presence can be expected to have on male military personnel. The high rates of pregnancy among military women imply that in general they engage in substantially more sexual activity than non-military women. Self reports by female military personnel seem to confirm this. For example, 27 % of military women reported having more than one sexual partner in the 90 days preceding one survey. Additional confirmation comes from the almost doubled rate of STDs in military women. Chlamydia, for example, is almost twice as common among military women as among the general population (14 % vs. 8 %). Related to this high rate of STDs is the fact that only 36 %

of military women reported using a condom during their most recent heterosexual encounter.[282, 283]

Prostitution is also anecdotally reported by both officers responsible for discipline and enlisted men to be common among military women, though exact figures are seldom or never released by the pentagon since this would serve to undermine the push by progressives for more women in the military.[270] Former assistant secretary of the Army for Manpower and Reserve Affairs Lisa Listor explicitly stated that the military does not publicly acknowledge these problems because "those subjects quickly become fodder for conservatives seeking to limit women's role in the Army."[272] Indeed. Covering up the problems inherent to allowing women in the military is far more politically and ideologically expedient than dealing with the criticism from the sane portion of society that would result from honesty.

For many of the problems that can be expected to result from allowing women in the military, it is difficult to quantify the exact costs. This is made even truer when military brass is reticent to release the figures which would make such quantification easier. Still, it is possible to address these problems qualitatively. As far as the high rate of female sexuality in the military, it can be expected to break unit cohesion. Men in such situations must form a team which has a high degree of trust with one another and general camaraderie in order to work together effectively. When you introduce women into the situation, team work towards a collective goal instead reverts to intra-sex mate competition; a natural and inalterable part of the human condition. This is magnified by the fact that there are so few women relative to each man which necessitates that the competition become fiercer. The men who fail to win this competition, and mathematically the large majority must, can be expected to be jealous and resentful of those who did win. Even the men who succeed can be expected

to eventually experience even worse jealousy and resentment as the relatively promiscuous and fickle women they once had serially move across multiple male mates. These mating patterns can be expected to generate a great deal of drama and conflict amongst personnel and can be expected to seriously undermine effective team building.

Some might argue the solution to the gender imbalance is to get more women in the military. However, as was already shown, most women are not physically suited to military life and that includes the women who are currently being allowed in. Even now 50 % fail out of boot camp. Not to mention the astronomical cost increases that would result from all the additional injuries and disability claims. The current female membership in the military doesn't even make sense without a strangely conceived political ideology; it is in no way practical to increase female participation up to 50 % when the current cohort of women isn't even very well suited. Presumably, the women most attracted to military service voluntarily already constitute the most suitable women in society by self-selection and even this more select group isn't very suited to service. Besides, there is little reason to expect more women would decrease drama to anything smaller than occurs in a typical high school.

In addition, men tend to form competitive systems and status in such systems is dependent on them providing rigorous and fair standards that apply to all men within it. When men observe that the standards are too low to allow for them to distinguish who in fact is the best or that different types of people are held to different standards they can be expected to become disillusioned from it. The system is in effect meaningless. Getting women into the military system requires one or both of these manipulations. It is hard to imagine a male marine having respect for a female superior officer who was never held to the same high standards he was and has weaker or no combat experience. And in fact, there is no good reason to expect him to

respect her. She has not earned his respect. Allowing women into more combat roles will not change this because as was shown previously women are not physically capable of performing at the same level as men even when given the opportunity to do so. In this case, giving that opportunity increases the risk of death for both the women and the men they would serve beside. In general, all of these things can be expected to have a large negative impact on group cohesion.

Rape and Sexual Harassment Allegations

Perhaps the biggest problem that results from women in the military, in terms of both absolute cost as well as drama, comes from rape allegations. An early study of rape allegations in the military found that half of accusations of rape were ambiguous enough that the reviewers, being very conservative in ascribing falseness to an accusation, could not determine whether the allegation was true or false. Of the remainder, a further 27 % were unequivocally false because 1 in 4 women eventually admitted that the accusation was not true. To address the ambiguity in the 50 % of cases that were indeterminate, the initial study authors looked to a series of independent reviewers. The reviewers, who were not in contact with each other, were given personality profiles and other traits of the women who did admit to making false allegations so they could use that information to evaluate the more ambiguous cases. If all the reviewers unanimously agreed that a case was false, then that case was categorized as such. With this evaluation system in place, it was estimated that fully 60 % of rape accusations were false.[284]

This finding has to be taken with a grain of salt, of course, since it is somewhat dependent on subjective interpretations by reviewers. However, their number is in broad agreement with other studies in the civilian sector, which makes the conclusion more believably accurate. For example, one study which evaluated false rape accusations in two medium sized cities also found that about 50 % of accusations are false.[284] Similar work which focused solely on universities also found that about 50 % of accusations on campus are false. Lastly, another study which tracked rape accusations in a small metropolitan community for 9 years found that 41 % of rape allegations in that area during that time were false. This study also

concluded that the three major functions of women making false claims is that it provides an alibi for promiscuity or cheating, allows women to get revenge on someone they dislike, and allows women to obtain sympathy and attention.[285]

The evolution of the legal system with regards to sexual harassment allows the addition of a fourth reason: financial gain. Since the 1970s, there has been a massive expansion of what is defined as a sex "crime" and in the size of financial awards that results from successful lawsuits. This expansion is somewhat remarkable because before "sexual harassment" was invented by feminists in the 1970s, it didn't even exist as a legal concept.[286] Though an extremely limited version of the concept may have some value, such as if an employee is fired for refusing advances, what it has morphed into and how much money people are entitled to as a result of violating it is well beyond unreasonable and absurd. One article author describes the situation:

> In the eighties, successful claims often brought damages in the $50,000 to $100,000 range. After the explosion ignited by the Hill/Thomas case, not only the number of claims but damage awards have skyrocketed. A clothing store cashier successfully sued her employer for $500,000. Employees of Stroh's Brewery claimed that the company's commercials, which showed the "Swedish Bikini Team," constituted harassment and sued for damages ranging between $350,000 and $550,000. In the famous locker room harassment case, Lisa Olson was reported to have received a settlement ranging between $250,000 and $700,000. Damage claims — and awards — in the millions are becoming more common.
>
> In some cases which were later proved to be false, the financial stakes were particularly high. One lawyer was charged with coaching six of his clients to "embellish or lie" about some of the incidents on which they based a sexual harassment case. They had asked for $487,000 (Gonzales, 1993). Eleven women from the Miss Black America Pageant, after claiming that Mike Tyson had touched them on their rears, filed a $607 million lawsuit against him. Several of the contestants later admitted they had lied in the hope of getting publicity and cashing in on the award money which would have given them around $20 million each.[284]

However inappropriate grabbing an unwilling woman's bottom may be it hardly seems an offense worth millions of dollars; let alone hundreds of millions of dollars. As a result of the steady increase in the number and size of payouts, claims of sexual harassment have hugely increased in the last few decades. In the period between 1976 and 1996, sexual harassment allegations increased by 2200 %.[286] Despite, or perhaps because of, 50 % or more of allegations being false, the military spends huge amounts of money each year dealing with accusations. In 2010 alone, 872 million dollars was spent on dealing with accusations of sexual harassment and this is excluding the costs spent on "victims" who remained in the military.[287] Unsurprisingly, the overwhelming majority of accusers are women. 872 million dollars was spent even though women only make up around 14 % of the entire military. Imagine how much more that would have been if 50 % of the military was female.

Of course, despite the high rate of false claims, sexual harassment costs civilian government and businesses astronomical amounts of money as well. A 2010 survey by the society for human resource management indicates that claims are a consistent and large problem companies have to deal with.[288] More than one third of all companies reported that in the two years proceeding 2010 they had to deal with sexual harassment claims. Almost half (46 %) of publicly traded, for-profit companies were forced to deal with allegations. The larger the company, the greater the risk of claims with 62 % of large companies with many employees having instances of sexual harassment claims. 80 % of all such claims come from women.

Even as far back as the late 1980s, which was succeeded by much more extreme sexual harassment hysteria (and monetary inflation), in federal government offices turnover and lost productivity resulting from sexual harassment claims was estimated to cost upwards of 287 million dollars per year. A 1992 study had found that federal agencies had spent 139 million

dollars in the previous two years just processing claims of sexual harassment. This does not include lawyer's fees or payouts. All of this came before the notorious 1994 "Violence Against Women Act" which accelerated this trend by wasting millions more dollars to enhance the impact of claims, substantial numbers of which are false, and to strip men of their rights to presumed innocence until guilt is proven and due process.[284]

Unsurprisingly, this change in legislation has resulted in substantially increasing the growth of claims and payouts. Lawyers today advise companies that if a claim is brought to court, they can expect to blow through at least 100,000 dollars even if the claim is frivolous and they win. Federal courts limit payouts to 300,000 thousand dollars if the plaintiff wins, but state courts are far more generous.[289] Sexual harassment lawyers boast of 7 and 8 figure payouts. For example, one company was forced to pay 10.6 million dollars to a sales clerk who claimed to be harassed.[290]

In 2011, the Equal Employment Opportunity Commission (EEOC), a government agency whose main purpose is to enforce political correctness on businesses, received 11,500 sexual harassment claims. 1400 of these claims were settled for a cumulative 52 million dollars.[289] Not only does the cost for the presumably reasonable cases seem extremely excessive, but the number of cases which were dismissed implies that an absolutely staggering number of frivolous claims are being made by women each year.

Knowing the true overall cost of sexual harassment claims is actually quite difficult because most companies faced with a claim, frivolous or otherwise, opt to settle out of court to make the claimant go away and avoid bad publicity. Most of these settlements are confidential and never become part of public knowledge.[291] Of course, the largest beneficiaries are the sexual harassment lawyers who bring cases against companies and win large payouts. However, the climate of massive liability companies now

face has unsurprisingly led to a massive expansion of the largely feminist sexual harassment training industry and in sexual harassment liability insurance. Nationally, the employment law training industry is estimated to be worth at least 5 billion dollars annually. Though this includes topics outside of sexual harassment, it makes up a substantially large fraction of this industry. In California specifically, with its larger host of extreme feminist laws, it is estimated that the sexual harassment training industry costs businesses into the hundreds of millions of dollars annually.[292] Helping to balloon these costs, lawyers and consultants typically advise the creation of full-time salaried positions devoted solely to mitigating the possible occurrence of sexual harassment claims.

Even with all of this money spent on training employees it is not enough to reasonably expect to avoid all accusations given the looseness of the definition of sexual harassment and the tendency for women to use sexual harassment hysteria as an ancillary to their primary Machiavellian goals of revenge and financial gain. Since a company can be reasonably sure they will eventually face such an action, liability insurance is also essentially mandatory. During the 1990s, the number of companies purchasing such insurance doubled every year, and has continued to increase at high rates in the years since. Perhaps the most notable and ironic case of such insurance proving valuable was the sexual harassment claim against Bill Clinton, who signed the Violence Against Women Act into law. His sexual harassment liability insurance reportedly shelled out 900,000 dollars to cover his accusation case. The premium for such insurance policies ranges from 1,500 to 25,000 dollars annually and covers between 250,000 and 25 million dollars for court and other costs, though not necessarily any punitive damages.[286]

The sheer scope of wasted money spent by business and government because of sexual harassment claims by women, many of whom are lying,

is maddening. Even in the case of true accusations, however, the real problem is including women in masculine roles for which they aren't suited even without considering sexual harassment. In the military especially, incurring the risks of sexual harassment liability is particularly absurd. Combat and war making (and maintenance of advanced technology) are male activities, which men are mentally and physically better at performing. That is reason enough not to allow women in the military. The tendency of women to be expensive and create drama, especially through false allegations, severely undermines the argument for women to be included in the military; as if their physical weakness and proneness to injury weren't enough.

Even legitimate allegations that result from the proneness of young, libidinous men to act rashly constitute an additional reason not to allow women in the military. The young men who make the best warriors do so because of their elevated primal nature. It is this same nature which also induces them to have strong carnal desires. You cannot have one without the other. We need strong fighting men in the military for it to function; we do not need and have never needed women in the military. If all women were kicked out of the military tomorrow, things would go along just fine or, more likely, better. Since unguarded women may indeed be legitimately at risk around large numbers of such men, and such men are irrevocably necessary to successful fighting, the only solution is to keep women out of the way. If women weren't in the military, there is no chance they would ever be harassed there.

Flirting with women is a normal and natural male instinct that cannot be suppressed because it is one of the most important instincts for procreation. Pre-mating phase signaling behavior in males is fairly common and indispensable in vertebrates. Flirting by male humans, sometimes aggressively, is completely analogous to the songs of male birds, or the

head butting in male rams, and traumatic insemination in some insects. In the latter case, males of some insect species have evolved a spear-like penis that can puncture the abdomen away from the vaginal cavity of female insects to forcefully inseminate them. This mating behavior evolved, despite great harm to the female, to get around a now defunct sperm storage organ which allowed the female not to use some males semen for conception. This is an especially illuminating example of the evolution of sexually antagonistic traits.

Human men have evolved to flirt and be the direct sex. The species could not propagate without this behavior. Anti-sexual harassment laws criminalize normal male behavior which is indispensable to the reproductive patterns of human beings. Since only men with this behavior can be expected to contribute children to subsequent generations, problems with "sexual harassment" are thus inevitable, unavoidable, and impossible to ever fully get rid of and it is folly to try.

Moreover, the only difference between sexual harassment and flirting is a woman's subjective appraisal of the particular man doing it. The same behavior from one man would be appreciated flirting, and thus wouldn't be reported, while from another is deeply offensive. How does a woman decide whether flirting is desired or not? In a word: hypergamy. High status and charismatic men can largely continue on in a business as usual way with regards to flirting, albeit more carefully, because most women enjoy being fancied by high status men and will not object. However, that doesn't preclude revenge eventually becoming a motivation even in these cases.

More socially awkward males, however, are severely punished for what is essentially just a personality foible or idiosyncrasy. That is, they do not craft their flirtations particularly well; a problem, to be sure, but not one of great import. To a large extent, what sexual harassment laws mean in practice is the criminalization of normal male behaviors in men colloquially

known as “nerds” or “betas.” In other words, men whom women tend to view as low status and sexually unattractive. The problem with criminalizing these men is that their labor and contributions are several orders of magnitude more valuable than the contributions of the women who make allegations. Civilization requires the hard work of these men; it is indispensable. Meanwhile, civilization has always got along just fine, if not better, when women were confined to the home. Again, since “harassment” by “betas” is largely unavoidable, and they are irrevocably required for any real work to be done, the sensible solution is to not allow women in the same work environment if they really are so delicate and easily offended because society doesn’t really need that labor from women anyway. The loss of the small minority of high contributing women would be massively outweighed by the avoidance of large costs attendant with the overall female population.

The complete exclusion of women from work generally does not seem, on the surface, as necessary as with the military. It is very true that the physical requirements of the military, the police, and the fire department are not typical of many jobs so they should not be a factor. If “harassment,” more accurately described as flirting from subjectively undesirable males, was treated in a manner proportional to its fairly trivial impact (i.e., resulted in scolding rather than lost jobs and million dollar payouts) then the costs to business of having female employees wouldn’t be nearly as costly, and thus this particular argument against mass female employment wouldn’t be so strong.

However, it is in no way clear that the current unaffordable state of affairs was anything but inevitable once women started working en masse. Women have a long history of being the main driving force behind hysterical cultural movements that seek massive top down control of behavior. The temperance movement has a lot of similarity to the modern

rape and sexual harassment hysteria that exists today, for example. In the past, this hysteria was considered a female specific mental disorder; women seem to be especially susceptible to the combination of highly emotional, frenetic and illogical thinking characteristic of hysteria. Political correctness has resulted in the rejection of using this terminology in psychiatry and medicine, but it is a convenient descriptor of the often observed type of mental instability that seems recurrent in and specific to women. Mass hysteria is usually related in some manner to cultural regulation of female sexuality and likely results, in a fundamental sense, from the sexual trade union instinct of women. Since women have this instinct for extreme emotion (mainly disgust) at anything perceived to increase promiscuity in other women, whether alcohol or flirting at work, it is natural that the mass entanglement of men and women at work and the resultant increase in flirting would trigger the trade union instinct. Once triggered, that instinct would push women to create society wide codes of conduct that are enforced by costly punishments to violators. Women have always done this and can be expected to always do this; and effectively given their enhanced Machiavellian reasoning. In the same way flirting is a natural male instinct that makes them more evolutionarily fit, so too does the sexual trade union instinct serve a similar role for women and so it can always be expected to be selected for. It isn't going to go away. However, if imposing such costs on businesses really is a natural and unavoidable consequence of female instincts, then it is hard to justify women working en masse because there is little that can be done to prevent or curb the excessively burdensome rules women can be expected to call for, and for which their direct contributions can not cover the costs of. The costs they have imposed are much greater than the value they contribute as a group.

When you consider the massive costs female "liberation" imposes on society created by current wealth redistribution schemes, lowered standards

in various organizations, affirmative action, increases in employee turnover and absenteeism, and increased drama, describing women as having a parasitical relationship with men and society in the modern age strikes pretty close to the mark. They are heavily dependent on being subsidized by husbands, ex-husbands, male taxpayers, government enforced quotas, and government make-work jobs. Entitlements, education, and work programs that superficially appear to be gender neutral are in practice heavily skewed to benefit women, in some cases to exclusively benefit women such as the Obamacare requirement for men to carry maternity coverage.

In the military specifically, for every additional woman allowed in, costs can be expected to increase at least 2 to 3 times what they would be if a man had been admitted instead all while also contributing less than that man would have back to the organization. Even in the cases where individual women can be said to pull their own weight in the world of work, their value is completely negated and then some as a result of the increased risk of impractical regulations and subsequent frivolous lawsuits that they present. What all of this adds up to is that progressively larger amounts of money is being taken directly from the pockets of men to pay for a largely ungrateful and ever more demanding population of women. This is wealth that productive men should be spending on their own families and children. The lesson from the exploration of innate and fiscal differences between genders is clear. There are huge direct and indirect costs from putting women in fields they aren't suited for and huge opportunity costs associated with de-incentivizing and displacing men. However, the financial burden of women working en masse is not the only problem that needs to be considered. More worrying still are the biological and genetic costs of diverting the most intelligent women away from motherhood.

The Extinction of Feminism

Many feminists expect to be handed positions of authority and/or high status regardless of whether they or other women are the most qualified or have paid the costs associated with achievement in terms of time devoted, raw ability, or risks taken. In the same way that achievement isn't real in the social sphere unless the associated costs are actually paid, they can not expect to have the same level of intellectual potential as men without paying the associated biological costs or, more accurately, incurring exposure to the biological risks inherent to the male intellectual distribution. Whereas the social environment might be amenable to cheating and social manipulation in the form of corrupt practices like affirmative action and quotas, biology is not so easily subverted. Even if it was so desired, it is impossible to alter human nature to confer the benefits and risks of hemizygous exposure on women. No amount of whining, agitation, or cries of oppression can change this. Moreover, natural selection promises to exact a high price on the intellectual capacity of women for prioritizing other pursuits above motherhood.

Diverting women away from motherhood disproportionately and negatively impacts the fertility of the most intelligent women; the most intelligent women being the ones most capable of successful careers and high incomes. Tradition minimized the shredding of intelligence traits that passed through women to some degree by prioritizing reproduction even for capable women. Traditional environments (i.e., patriarchy) thus increased the equilibrium frequency of sexually antagonistic intelligence genes by pushing the point of stable equilibrium higher. Prioritizing reproduction prevented high IQ women from wasting their most fertile years by pursuing education or careers and thus partially protected their evolutionary fitness

from the harm caused them by higher intelligence. Even if some individual women can make great contributions by advancing in careers, it is almost guaranteed given the effects of testosterone on brain development that any sons she might have would be capable of making even greater and more important contributions. This effect would be compounded by each additional son she produced; thus even for very smart women their greatest value is in what they contribute to the next generation rather than what they physically do themselves.

The removal of traditional gender roles for women has thus changed the environment in such a way as to increase the harm caused by sexually antagonistic intelligence genes. That is, it has increased the detriment to benefit ratio of the genes. The short term consequence will be a decrease in the average intelligence of the whole population as the frequency of intelligence genes moves towards a new and smaller equilibrium better suited to the current environment (i.e., the net harm to female fertility is reduced). But as was shown in the mathematical treatment of sexually antagonistic genes, it is very unlikely that the equilibrium will ever move all the way to zero for male biased recessive intelligence alleles; especially since income, and therefore intelligence, is indispensable for fertility in men even in this distorted environment.

With recessive intelligence promoting alleles on the X stable at above-zero frequencies, a strong pressure develops to promote sexually dimorphic expression. The current environment will create an even more exaggerated version of humanity of smart men and dumb women, which is already true to an extent, as mechanisms evolve to safeguard sexually antagonistic intelligence genes while they temporarily pass through females.[1] Expression modifiers promoting lameness of mind in women will develop as a protective measure against loss in fertility. In fact, testosterone already appears to play this role to a substantial extent based on its effects on brain

development and it can be expected to gain additional function in this direction as a result of intensified selection against female intelligence, though it need not be the only source of modified expression.

Feminism has thus stripped the fitness protection offered by traditional societies away from the most capable women. The selection pressures set up by feminist policies and cultural norms will ironically create a population of feeble minded women physiologically unable to live up to the ideals of feminism. As sexually dimorphic expression mechanisms evolve, higher equilibriums will be established enabling the intelligence of men to climb back while leaving women at an inferior intellectual position than was the case before the feminist revolutions. It is one of the greatest ironies of all time that feminism, nominally in favor of female emancipation, independence, and achievement of high status, will end up constituting perhaps the single greatest set-back for female intellectual and professional potential in all of human history. The long term consequence of feminism, and perhaps the greatest irony among great ironies, is the development of near-absolute female dependence on males for wealth and provisioning as they evolve to become intellectually incapable of self-support. This biological incapability being the only means left, now that cultural means are off limits, of ensuring that women reproduce rather than work in our liberalized culture.

One way or another, the days of feminism are numbered. Natural selection is much more powerful than social forces and any movement or culture that works at odds to natural selection will be utterly crushed by it given enough generations. Evolution cares not about our material success, happiness, or comfort; though these things might be a pleasant side effect of the process in some environments. The unconscious process of evolution rewards only survival and reproductive fitness. Idealism and happy talk will not alter the consequences of disregarding this natural fact. Though the

dysgenic trend is clear, we still have choices. We can either willingly volunteer to put an end to feminist influences on society and adopt a more traditional culture which prioritizes motherhood for women, therefore preventing a further increase in biological disparity between male and female intelligence, or we can allow natural selection to drag us away from our folly kicking and screaming the whole way.

Unfortunately, the increased disparity between genders that will result from continuing human evolution in the modern environment will likely bring on even more cries of discrimination and demands for artificial social engineering rather than serve as a wake call to change the dysgenic evolutionary pressures. Ultimately, this will result in the further erosion of merit based systems in our institutions and businesses to the detriment of productivity and efficiency of our society; with a concomitant increase in social disorder and instability. Regardless of what we choose, feminism will be destroyed as the women who follow and promote it fail to leave children for future generations. The future belongs to those who show up.

[1] Though male and female means would be expected to diverge in this direction, hemizygous exposure in men would still be expected to produce more men at the low intelligence extreme.

The Extinction of Western Civilization?

The fate of feminism is sealed by the inexorable march of natural selection and this would be true even if the West, the most feminist culture, was completely isolated since one of the main effects of divorcing women from motherhood in whole populations is the drastic reduction of reproductive fitness (birthrates) which subsequently manifests. In order for a population to remain stable in size, it must have a birth rate of 2.1 children per woman. One child to replace both the father and mother; plus a bit extra to account for sterility and premature death. In nearly every Western country, and a lot of Asian countries as well, the birth rate has fallen below this minimum. Some examples include 2.01 in the United States, 1.43 in Germany, 2.08 in France, 1.90 in the United Kingdom, 1.86 in Norway, 1.59 in Canada, 1.43 in Austria, 1.33 in Poland, and 1.77 in Australia and these figures are representative of virtually all Western countries.[293] For ethnic Europeans specifically, the numbers are inflated as a result of the inclusion non-European immigrants in the calculations. Were enough time allowed for these trends to continue without outside influences, the population of these countries would eventually dwindle to nothing and they would cease to exist.

Unfortunately the West is not isolated, which means its people do not have the luxury of slowly recognizing the problem before trying to implement counter-measures. Thanks to a religious level of adherence to the principles of the twin false idols of multiculturalism and egalitarianism, the West has opened up its borders to a wide array of human groups with drastically different cultural beliefs, intelligences, and fertility; all of which are at least partially hereditary in origin.[294, 295] In so far as immigrants are selected based on performance in high skilled jobs, a good proxy for

intelligence, this isn't so bad for the Western country they move to; though their exit from their home country likely harms that country's ability to advance economically and socially. However, most of the recent immigration to Western countries is by low IQ immigrants with relatively high fertility. If native fertility were higher than that of immigrants, the population could effectively absorb the new groups without much change in character, but that isn't the case.

Placing ethnicities with different cultures and values in close geographic proximity creates a situation of direct evolutionary competition both culturally and biologically. It is clear from western birth rates that the culture and values of the west are not currently fit to meet this competition. This lack of fitness is a direct result of the specific form of expression of egalitarianism that is feminism and the consequent drop in population fertility. The problem is most dire and urgent in Europe where the immigrants are mainly low IQ Muslims from the Middle East.

Countries like the United States, which have significantly less immigration from Muslim countries, still face the problem of overall lowering of IQ as a result of large scale immigration and the degrading of social institutions that will result, but the cultural values of its immigrants are much less drastically different to native ethnic-European populations. In this way, it is likely that the evolution of sexual antagonism will play the major or at least an equal role in its cultural and biological evolution as between-group competition.

In Europe, however, the demographic transition promises to happen so fast and replace current attitudes with such a radically different set of beliefs that such a biological mechanism will likely have insufficient time to occur. According to Pew Research, there were 30 million Muslims in Europe in 1990, 44 Million in 2010, and it is projected that there will be 58 million by 2030. A large source of this increase are the suicidal liberal

immigration policies, but a substantial fraction is also due to the higher birth rates of Muslim women. The birth rate of Muslim women in Europe is 2.2 children per woman compared to an average of about 1.5 children per European woman.[296]

Helmuth Nyborg, in his excellent paper *The Decay of Western Civilization: Double Relaxed Darwinian Selection* persuasively estimates the future population composition of Denmark that will result from current trends. Based on immigration levels and relative birth rates, he estimated that ethnic Danes will only constitute 36 % of births by 2072 compared to 97 % in 1979. Similar displacement could be expected in other European countries as well since they have similar patterns of immigration. The consequence of this trend is that there will be gradual replacement of native Europeans with a lower IQ Muslims. As the population of Muslims grows relative to Westerners, the values of the West will diminish in influence and will be replaced by the values of the ascendant group. In Europe, this means anti-feminist values more extreme than has probably ever existed historically in the West eventually becoming law. Democracy is intended to manifest the will of the majority and once Muslims become a majority their desired cultural structure will be forced on everyone. Feminist egalitarianism will be a thing of the past. In yet another way, the seeds of the destruction of feminism were ironically sowed by feminism itself; with help from other, closely related, forms of egalitarianism.

The unfortunate part is that the Western cultures and races as whole, at least in Europe, also have a high probability of being destroyed by close association. So insidious are the effects of policies de-prioritizing motherhood that any culture that implements them is patently suicidal. Reversing the dire consequences of feminist inspired polices and cultural beliefs thus constitute an urgent and existential imperative for the West if it is to survive. If action is taken relatively quickly, forced refocusing of

women's priorities to be more traditional could be done while still preserving more than a modicum of other freedoms.

What is certain is that if Westerners don't do this, then no liberal attitudes towards women will survive the demographic transition from ethnic European to other groups. Mirroring the non-ideal biological choices with regard to female intelligence, in Europe the cultural choice isn't between complete freedom for women or some restriction; it is between benevolent and relatively light restrictions characteristic of the historical West or the totalitarian restrictions of Islam. It is clear what constitutes the lesser of two "evils." Reality (evolution) will not allow us to choose a path or way of life that does not result in an increasing, or at least a stable, population. And stable is only practical when there isn't a close proximity of highly fertile groups with strongly opposed cultural values.

Preserving Western Civilization

The drop of fertility rates across the West and the concomitant decline in Western civilization that will result can be blamed to a significant extent on the misallocation of life priorities among Western women by their own poor choices, and at the irresponsible prodding of the progressive culture. Humanity as a whole will return to traditional gender roles because the groups where women prioritize motherhood will displace the groups that don't through demographic increase, displacement, and eventual subjugation. This is true for both intra-ethnic competition (conservatives and reactionaries out-breed liberals) and inter-ethnic competition.

The real question is whether or not the West will have a place in the future. The West can either accept that harsh biological reality has allotted motherhood as the primary raison d'etre of women, or it can be displaced by less advanced and less benevolent cultures who haven't forgotten that reality. Considering that it was the people and culture of the West who almost single-handedly brought humanity into the modern age, the loss of the Western races and subsequently Western culture would be a very sore blow not only to those people, but to humanity generally.

The only morality is the advancement and continuance of civilization, and unfortunately the unpleasant truth is that substantial female enfranchisement is dysgenic and destroys civilization. Since prioritizing anything but motherhood for women works against civilization, it is by definition immoral and any sane polity will take every necessary step to minimize women, and especially intelligent women, from making anything other than motherhood the primary devotion of their life. To preserve Western culture, motherhood in a patriarchal context must be reinstated. It is often complained that such an arrangement is unfair to women. In reality,

the demands the patriarchal system makes on men are and always have been much more challenging than those it makes on women, as is evidenced by the 5–7 years shorter life expectancy for men. Providing for a family generally requires long hours of very unpleasant work, and is often physically grueling. Far from being unfair to women, the advantages that go to women from sacrificing careers are many and include a guarantee of male attention and provisioning into ages past optimal physical attractiveness, freedom and time to pursue any sort of interest or hobby such as writing, not to mention a great deal of time actually spent with their children.

Making motherhood the primary devotion of women's lives does not mean the only devotion. Modern technology created by men greatly decreases the necessary housekeeping efforts required to maintain a home and advances in robotics will likely continue this trend. As such, women will be afforded much opportunity and freedom, if general Western attitudes are maintained, to pursue virtually any interest once the necessary child rearing duties are performed.

However, some care will need to be taken by neo-patriarchs to guarantee that there is ample opportunity for women to find meaning and purpose in their lives once their motherly responsibilities are complete. For the most part, this is likely a spiritual question as women are significantly more attracted to spirituality than men,[297] likely owing to their increased use of empathetic (i.e., agentative) reasoning in understanding and interpreting reality. That is, they are more likely to see any given event as the action of an agent with goals rather than the input-operation-output of an unconscious system. The latter form of reasoning probably accounts for the mirror phenomenon of more men being atheist: 70 % of atheists and 75 % of agnostics are men.[298] Aesthetics, arts and culture also seem like

especially promising candidates for pursuit; though these pursuits should not be tied to expensive programs like those offered by universities.

What can't be neglected or forgotten is that the environment that gave birth to modern dysgenic feminism was a large population of idle housewives, easily lead astray by a small minority of militant lesbians, and their relatively weak husbands. Women have an innate tendency to organize and enforce cultural norms between each other generally as a side effect of the sexual trade union instinct. With nothing of great importance to occupy them, they will collectively nag, complain, and otherwise agitate for various ill-conceived reforms that appear to benefit them, at least in the short-term. In the long term the opposite is more commonly true. For example, women were happier prior to the feminist revolution compared to the men at that time and compared to women today; whereas now the gap has reversed and women are less happy on average than men.[299] Women are so unhappy in the modern world that 1 in 4 of American women are on psychiatric medications compared to only 1 in 7 men.[300]

The fact is that for most people careers suck and don't increase well-being. A recent gallop poll demonstrated that fully 70 % of workers either dislike or are disengaged from their jobs.[301] Expecting men to be the bread winners has always been a burden, not a boon. In addition, the innate instinct of hypergamy is less easily satisfied if women are earning wages because the pool of men earning more than them, which is who they prefer to mate with, is relatively decreased for every increase in salary achieved. The intra-sex competition for the highest earning men becomes much fiercer, making it less likely that any individual woman will be able to actually get one to commit to her, and which ultimately stifles her ability to be happy. H.L. Mencken, in his book *"In Defense of Marriage"* described the situation succinctly:

The average woman is not strategically capable of bringing down the most tempting game within her purview, and must thus content herself with a second, third, or nth choice. The only women who get their first choices are those who run in almost miraculous luck and those too stupid to formulate an ideal—two very small classes, it must be obvious. A few women, true enough, are so pertinacious that they prefer defeat to compromise. That is to say, they prefer to put off marriage indefinitely rather than to marry beneath the highest leap of their fancy. But such women may be quickly dismissed as abnormal, and perhaps as downright diseased in mind; the average woman is well-aware that marriage is far better for her than celibacy, even when it falls a good deal short of her primary hopes, and she is also well aware that the differences between man and man, once mere money is put aside, are so slight as to be practically almost negligible. Thus the average woman is under none of the common masculine illusions about elective affinities, soul mates, love at first sight, and such phantasms. She is quite ready to fall in love, as the phrase is, with any man who is plainly eligible, and she usually knows a good many more such men than one. Her primary demand in marriage is not for the agonies of romance, but for comfort and security; she is thus easier satisfied than a man, and oftener happy. One frequently hears of remarried widowers who continue to moon about their dead first wives, but for a remarried widow to show any such sentimentality would be a nine days' wonder. Once replaced, a dead husband is expunged from the minutes. And so is a dead love.

One of the results of all this is a subtle reinforcement of the contempt with which women normally regard their husbands—a contempt grounded, as I have shown, upon a sense of intellectual superiority. To this primary sense of superiority is now added the disparagement of a concrete comparison, and over all is an ineradicable resentment of the fact that such a comparison has been necessary. In other words, the typical husband is a second-rater, and no one is better aware of it than his wife. He is, taking averages, one who has been loved, as the saying goes, by but one woman, and then only as a second, third or nth choice. If any other woman had ever loved him, as the idiom has it, she would have married him, and so made him ineligible for his present happiness. But the average bachelor is a man who has been loved, so to speak, by many women, and is the lost first choice of at least some of them. Here presents the unattainable, and hence the admirable; the husband is the attained and disdained…

…Not one woman in a hundred ever marries her first choice among marriageable men. That first choice is almost invariably one who is beyond her talents, for reasons either fortuitous or intrinsic. Let us take, for example, a woman whose relative naivete makes the process clearly apparent, to wit, a simple shop-girl. Her absolute first choice, perhaps, is not a living man at all, but a supernatural abstraction in a book, say, one of the heroes of Hall Caine, Ethel M. Dell, or Marie Corelli. After him comes a moving-picture actor. Then another moving-picture actor. Then, perhaps, many more—ten or fifteen head. Then a sebaceous young clergyman. Then the junior partner in the firm she works for. Then a

> couple of department managers. Then a clerk. Then a young man with no definite profession or permanent job—one of the innumerable host which flits from post to post, always restive, always trying something new—perhaps a neighborhood garage-keeper in the end. Well, the girl begins with the Caine colossus: he vanishes into thin air. She proceeds to the moving picture actors: they are almost as far beyond her. And then to the man of God, the junior partner, the department manager, the clerk; one and all they are carried off by girls of greater attractions and greater skill—girls who can cast gaudier flies. In the end, suddenly terrorized by the first faint shadows of spinsterhood, she turns to the ultimate numskull—and marries him out of hand.
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> This, allowing for class modifications, is almost the normal history of a marriage, or, more accurately, of the genesis of a marriage, under Protestant Christianity. Under other rites the business is taken out of the woman's hands, at least partly, and so she is less enterprising in her assembling of candidates and possibilities. But when the whole thing is left to her own heart—i.e., to her head—it is but natural that she should seek as wide a range of choice as the conditions of her life allow, and in a democratic society those conditions put few if any fetters upon her fancy. The servant girl, or factory operative, or even prostitute of today may be the chorus girl or moving picture vampire of tomorrow and the millionaire's wife of next year. In America, especially, men have no settled antipathy to such stooping alliances; in fact, it rather flatters their vanity to play Prince Charming to Cinderella. The result is that every normal American young woman, with the practicality of her sex and the inner confidence that goes therewith, raises her amorous eye as high as it will roll. And the second result is that every American man of presentable exterior and easy means is surrounded by an aura of discreet provocation: he cannot even dictate a letter, or ask for a telephone number without being measured for his wedding coat.[302]

The female sense of intellectual superiority Mencken refers to is primarily that skill of Machiavellian social manipulation and navigation so exemplified in many women, and which is arguably tied to their sex advantage in verbal and so-called "empathizing" reasoning. Though how much actual empathy is associated with it is questionable. It also refers to the abundance of men below the mean in intelligence that results, unknown to Mencken, from hemizygous exposure. Hypergamy, left to its own considerable imagination, has thus always presented a substantial problem to the attainment of female happiness even before the "liberation" of women into wage slavery. Its potential to make mischief is only compounded by female engagement in the workforce.

The greater social acuity in women often does not result in their increased happiness, but in increased dissatisfaction in their lives; and especially in their romantic lives. That they are keenly aware and constantly comparing and contrasting the men who make up their potential partners even with fictional characters leaves many women in a state where they simply cannot be fully satisfied with whatever man they happen to actually be able to attach themselves to. This is a moral failing which many, if not most, women are susceptible. Through most of the book, Mencken regularly highlights the greater cunning most women demonstrate in their social dealings, but the implication is that these gifts are used in devious and disingenuous ways; Machiavellian ways that cause problems for both the men and women involved and for society at large. More often than not, women are just as much a victim of their own cunning and deception as the idealistic men that get manipulated.

In short, the reforms advocated by feminists (i.e., idle women) and achieved through social manipulation have had a large negative impact on the West, and even for women who were supposed to benefit. Feminism is only the most destructive consequence of the female tendency to invent fictitious problems when in the state of boredom that occurs when they have no real drama in their lives. The temperance movement is another obvious example. More productive outlets for this energy will have to be found to ensure a return to patriarchy and traditional marriage is sustainable and long lasting.

Of Madonnas and Whores

The old standards of marriage were to a large extent designed to mitigate the hypergamous tendencies of women since they often extend past the point of pragmatism into irrationality and immorality; these abstractions being defined in reference to a preference for and promotion of civilization. Specifically, what may look good in the short term, or may be good for some individual women can be very damaging to the continuation of a culture and thus women generally in the long term. Even to the women who commit frivolous divorce it can sometimes be damaging since older women are (rightly) less desirable to men and their chance of getting remarried is much reduced.

As is readily apparent by the divorce rates and laws that exist today in the West, it is quite clear that women can't be depended on to act loyally towards their husbands, all of which are "second raters" compared to flights of fancy, or for them to willingly accept the weight of responsibilities that should be concomitant with their vows of marriage. 50 % of marriages currently end in divorce, though this may reduce in the future as all but the most certain men refuse to marry. 70 % of divorces are formally initiated by women,[303] though some estimates push it up to 90 % if you include husbands coerced into filing. My own brother was a victim of this scenario; his ex-wife cheated and generally made his life hell until he was left with no other choice but to file defensively despite sincere and exhaustive efforts to salvage the marriage. Acting in accordance with the herd animals women are,[304] if a woman's friend gets a divorce the idea spreads like herpes and increases her probability to divorce by 75 %, and 33 % if a friend of a friend gets a divorce.[305]

After divorce, women are often entitled by the state to receive large amounts of cash and prizes paid for by the usually unsuspecting husband. Women are awarded custody 82 % of the time, and are about 20 % more likely to get child support than the few men awarded custody. Compared to the small number of men who actually get child support, women usually get more money in terms of absolute numbers of dollars. Women are the beneficiaries of 90 % of all the dollars awarded for child support.[306]

One particularly egregious example of female greed and self-centeredness is embodied by democratic politician and feminist Wendy Davis who, after convincing her older husband to cash his retirement with severe penalties to pay for her expensive Harvard education, promptly divorced him. Even more despicably, she abandoned her children to him to pursue her career in "victim" politics even though he wasn't even their biological father. Can behavior from and financial entitlements like this for large numbers of women be described as anything but parasitical? Yet to the average democratic voter and media she was lauded as a fine example of the modern have-it-all woman. Is it any wonder that more and more men are refusing to marry, have children or that the freedom of women with regards to divorce was so heavily curtailed in the past?

So how do the moral failings of women play out in terms of the whole society and evolutionary mating strategies? There is much discussion in the movement popularly referred to as the "manosphere" or the "red pill" about the Alpha/beta dichotomy. The concept is taken directly from theories in evolutionary psychology and is a description of instinctive female mating strategies.[307] All physiologically normal women want to have children by and investment from the top tier, highest quality men as a result of their innate hypergamy.[1] All women having children by top tier men is more or less feasible, but all women gaining investment and commitment from the same is mathematically impossible.

Women who, for whatever reason, aren't able to secure the commitment of a top tier man must employ a compromise strategy if they want both commitment and good genes for their brood. They will get impregnated by the top tier man, but secure investment from a second rate man. This can involve the outright deception of persuading the provider male to believe another man's child is actually his (i.e., paternity fraud). Alternatively, if a woman is unable to hide this from the provider male because the children are already born, she may also have some children by him to sweeten the deal. However, his resources will be more or less equally spread over all her children including the ones that aren't his, which is a bad deal for him. Ideally, a man would only spend his resources on his own children. In short, alpha equals good genes combined with low commitment and beta equals bad genes combined with high commitment from the unconscious perspective of the medium to low quality women who employ the strategy to get the best of both types.

Men have a mirror dichotomous mating strategy. The mating strategy is called the Madonna/whore dichotomy. Understanding the concept of a whore should be fairly obvious. A man can never be sure a child of a whore is his since she sleeps with so many different men, so he has a high probability of wasting his resources by investing in her children. A man will bed whores because it doesn't cost him much to give her his seed so long as he can make himself scarce afterward. Men shouldn't marry or commit to a whore, ever, because those that do usually lose the evolutionary game. This is so important that men have naturally evolved the instincts to objectify and even feel disgust towards such women as a mechanism to prevent commitment. Lust might push a man to sleep with a whore, and stop him from engaging in suppression of her sexuality, but after all is said and done men often can't wait for the whore to get as far away from them as possible and never return. This isn't an accident. Men are protected from wasting

their resources on children that aren't their own by these feelings of anti-commitment. Contrary to popular opinion, disgust toward the idea of commitment to whores is the correct attitude for men to have and it should be encouraged.

The Madonna on the other hand is quite rare, at least in the wake of the sexual and feminist revolutions. A Madonna is a chaste and loyal woman who a man can be reasonably sure will bear his own biological children. Men instinctively know that their children stand a better chance if they stick around and provide resources, but they can only risk staying around for a woman of high moral character. A Madonna gives him the opportunity to invest in his children with low risk of paternity fraud. This is a good opportunity for him because the chance of successful reproduction of his children in turn is much higher if he directly invests in them. If a man meets a woman who he perceives to be a Madonna, he will correspondingly develop feelings for her and try to commit since among all the possible mating strategies that gives his genes the greatest chance for further reproduction in the next generation. A possible exception to this rule might be the small numbers of cads who are able to successfully mate with many women and thus win out through sheer, overwhelming quantity over quality, but for most men this is beyond their talents. In short, Madonna equals high paternal confidence combined with high commitment whereas whore equals low paternal confidence combined with low commitment.

Humanity benefits greatly when most men engage in the Madonna mating strategy. A man's investment in his children is not affected by the law of diminishing returns. The more he can invest, the more evolutionarily fit his children are. Therefore, he has a very strong incentive to be much more productive than he otherwise would be and to look for any method or technology that might increase that productivity further. Married men tend to earn 20–50 % more than their unmarried counterparts even after

controlling for IQ, education, experience and racial group.[308, 309] This boost in income is generally called the *marriage premium* by economists, and that may be true from the perspective of tax collectors, but to the individual men who are actually doing the extra work it is more accurately considered a cost of successfully implementing the Madonna mating strategy. Working all those extra hours isn't desirable in and of itself. The increased productive labor and technological development of the entire population of men pursuing the Madonna mating strategy combines synergistically to create a whole that is greater than the sum of its parts. And it is only possible for men to do this due to the particular profile of their intellect and the nature of their production. Everyone benefits from a productive and prosperous civilization that can only result from the combined cooperative efforts of all men.

Tension arises between the contrasting Alpha/beta mating strategy and the Madonna/whore strategy because whores gain tremendously if they are incorrectly perceived as Madonnas. Deception in mating thus offers a very large reward to individual women and results in a population sized prisoner's dilemma. Everyone benefits significantly if women as a population are faithful to whatever man they can actually get to commit. However, individual women can gain tremendously on top of the benefits of civilization if they can have children by a high quality man while convincing another to invest in them. The problem is should a large enough percentage of women cheat (figuratively and literally), men eventually figure it out culturally and/or biologically evolve to be more reluctant to commit. Without commitment, the number of men working past their individual needs dwindles and civilization falters. J.D. Unwin surveys a number of past civilizations in his 1934 book *Sex and Culture* and found that past civilizations displayed a remarkably similar pattern of sexual restraint reformed to sexual liberation. He concludes:

The same changes were made successively by the Sumerians, Babylonians, Athenians, Romans, Anglo-Saxons, and Protestant English. These societies lived in different geographical environments, they belonged to different racial stocks, but the history of their marriage customs is the same. In the beginning each society had the same ideas in regard to sexual regulations. Then the same struggles took place, the same sentiments were expressed, the same changes were made, the same results ensued. Each society reduced its sexual opportunity to a minimum and, displaying great social energy, flourished greatly. Then it extended its sexual opportunities; its energy decreased and faded away. The one outstanding feature of the whole story is its unrelieved monotony. I have summarized these changes in matrimonial law so that the whole matter may be discussed from an impressionistic point of view. From a superficial study of the available data it might be thought that the questions of female subjection and parental power are indissolubly allied to that of female continence; but actually their alliance in the past has been due to the chance factor that sexual opportunity has never been reduced to a minimum except by depriving women and children of their legal status.

It is historically true to say that in the past social energy has been purchased at the price of individual freedom, for it has never been displayed unless the female of the species has sacrificed her rights as an individual and unless children have been treated as mere appendages to the estate of the male parent, but it would be rash to conclude that sexual opportunity cannot be reduced to a minimum under any other conditions. The evidence is that the subjection of women and children is intolerable and therefore temporary, but we should go beyond the evidence if we were to conclude from this fact that compulsory continence also is intolerable and therefore temporary. Such a statement, indeed, is contradicted by the tenor of the whole story…

…It is in this manner that the behavior of these societies was controlled by their methods of regulating the relation between the sexes. In no case was sexual opportunity reduced to a minimum unless married women, and usually unmarried women also, were compelled to suffer legal and social disadvantages. The manner in which the marital and parental authorities were modified was the same in each society. In every case the same situations arose, the same sentiments were expressed, the same changes were made, and the same results ensued. The history of these societies consists of a series of monotonous repetitions, and it is difficult to decide which aspect of the story is the more significant: the lamentable lack of original thought which in each case the reformers displayed, or the amazing alacrity with which, after a period of intense compulsory continence, the human organism seizes the earliest opportunity to satisfy its innate desires in a direct or perverted manner. Sometimes a man has been heard to declare that he wishes both to enjoy the advantages of high culture and to abolish compulsory continence. The inherent nature of the human organism, however, seems to be such that these desires are incompatible, even contradictory. The reformer may be likened to the foolish boy who desires both to keep his cake and to

> consume it. Any human society is free to choose either to display great energy or to enjoy sexual freedom, the evidence is that it cannot do both for more than one generation.[310]

In essence, this is a free rider problem in which women want the benefits of civilization, but do not cooperate with the needs of the group to make civilization possible. Addressing the problem of female free riders, and the cads they sleep with, has thus been universal to all human cultures that have developed civilization. Usually the prescriptions for chastity and commitment have come associated with religious or spiritual belief. Religious and moral systems are the cultural solution to an intractable biological problem (though these systems may also be utterly reliant on underlying biological mechanisms). Since the reward for cheating is and always will be high for individual women in a civilized culture, there is no scenario in which evolution could naturally eliminate the trait entirely, therefore cultural methods for suppressing free riders must be omnipresent and strict. Ironically, the evolution of the female sexual trade union instinct probably made such institutions more likely, and implies that it is mainly the responsibility of women, rather than men, to enforce traditional values on other members of their own sex. It is through self-restraint, then, that women make their main contribution to the development and sustainability of civilization. Anything less than harsh suppression of female sexuality causes civilization to become unstable. It is interesting to wonder if Eve's part in tempting Adam in the book of genesis is an allegory for the sequence of events that culminate with the destruction of civilization. First women fail to cooperate, then men refuse to participate, and finally we are all thrown out of Eden…

What we experienced in the 20th century was the triumph of the free riders over civilization because people legitimately believed we could have our cake and eat it too. The culture that was indispensable for suppressing the free riders was hijacked and turned on its head. Not only does culture

now fail in its primary pro-civilizational mission, it actively discourages women from cooperation and makes it as easy as possible for them to cheat their responsibilities. “No fault divorce” combined with asset division, defining fatherhood as something other than biological, and banning paternity testing (as they do in France) all allow free rider women to commit paternity fraud with minimal amounts of deception, as well as gain undeserved resource extraction from men. Redistribution policies to mothers, especially single mothers, allow free rider women to do away with any pretense of cooperation entirely. Such policies coerce all productive men into being de facto cuckolds. The near universal desire by modern women to advance the feminine imperative without regard to the consequences is nothing less than the collective failure of women to resist the greedy temptation to eat of the forbidden fruit. The cost of this failure is civilization itself and there can be no greater price to pay than Eden.

If there is any hope of restoring the cultural potential for an expansive and prosperous civilization, society must be optimized such that a maximum number of men willingly engage in the Madonna mating strategy. For men to be willing to do this, marriage must be made appealing to men. To be appealing, men have to be unambiguously made the authority of the household and must be legally immune to financial ruin resulting from the incorrigibly capricious nature of women. In addition, humanity must culturally frustrate the evolutionary potential of free rider mating strategies. Social exclusion and refusal of the state to subsidize women, and single mothers especially, should provide sufficient punishment and disincentive. [2] The divorce laws need to be biased to favor men by default. If there isn’t clear evidence of extreme wrongdoing on his part, then the wife must be given a raw deal for breaking her vows. Is this unfair to women? It doesn’t matter. The only morality is civilization, and civilization is only possible when men are willing to marry because it works in their favor.

[1] High quality is determined by instincts and evolution, not conscious reasoning or preference for civilization. Resources can indicate high quality and is most important in times of resource scarcity, but so can great charisma be indicative of good genes, as well as physical attractiveness. The instincts of women seem to consider all such traits holistically and prioritize them relative to the needs of the current environment. The only thing that is important from an evolutionary standpoint is the potential for the children of these men to inherit the traits that enable them to reliably reproduce themselves. Different male mating strategies, i.e. cadding vs. dadding, can both increase fitness depending on the environment.

[2] Widows whose husbands died untimely early deaths could be excepted.

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