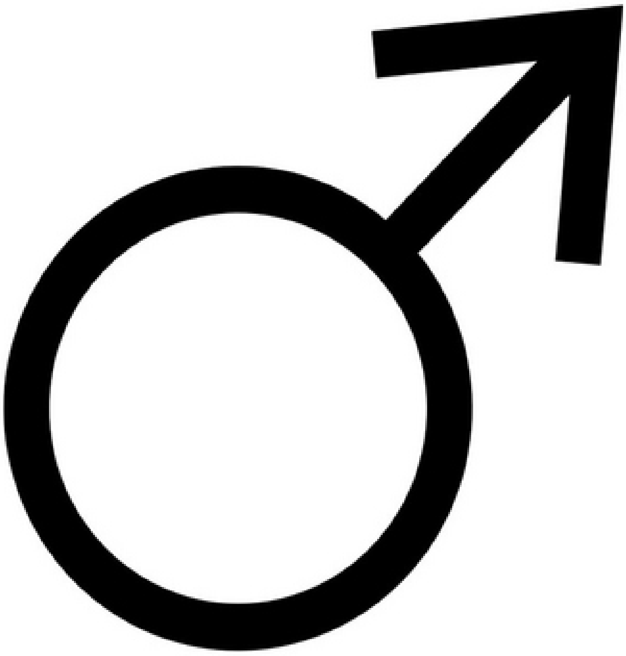

The Origin of the Sexual Divide in the 'Genetic Filter' Function: Male Disadvantage and Why It Is not Perceived

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The sexes properly understood from biological principles interact not in terms of dominance/submission but male deference to females in recognition of the female as the 'limiting factor' in reproduction through being the principal direct investor in offspring. The corresponding function of

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the male is to act as the 'genetic filter' to purge accumulated deleterious genetic material. This entails males necessarily contesting intrasexually for dominance rank as a measure of "good genes" (the criterion of male attractiveness), the relative lack of which leaves most males subject to "policing" by both sexes in order to restrict their sexual access to females. Added to the costs incurred in fierce competition, this amounts to a serious disadvantage for most males. The polarisation in specialism stems originally from a small size difference in gametes. The distinction between the sexes is not "sexual conflict." Competitiveness is entirely intrasexual and much stronger in males. The sexes have starkly contrasting though fully complementary sociality. The implications of this analysis for the social sciences and politics are wide-ranging.

Keywords: males, genetic filter, sexual conflict, dominance, mate value, male disadvantage

The Origin of the Sexual Divide

How the distinction between the sexes arose is a question separable from the major debate as to how sexual reproduction evolved in the first place and how it persisted without falling foul of selection pressures. All three questions have become entwined with the realisation that sexual selection on the male is the key. Differential male mating success purges genetic mutation from the gene pool so well that it compensates for sexual reproduction requiring two parents to make each offspring rather than just the one needed as in asexual reproduction. Actual data show this,[1] as previously modelled.[2] This is the famous 'twofold cost of sex'. The evolution of sex and the evolution of the sexes may well be as much of a chicken-and-egg affair as is the persistence of sex. For simplicity of exposition this complex dynamic is glossed over here.

The thorny question about the evolution of sex had in any case roughly settled down to an acceptance of two theories that are not mutually exclusive, being opposite sides of the same coin. Sexual reproduction is required primarily to deal with the accumulation of gene replication error, that is, deleterious mutations and genetic recombination and also, conversely, to produce and retain mutations and genetic recombination that are enhancing to the organism in the context of changed selection conditions driving new adaptation. The accumulation of replication error is self-evidently the crucial problem facing any system of iterated replication, as the case in photocopying where if each successive print is used as the new original very quickly the print becomes unreadable. Clearly this is the foundational problem for any biological system, relying as it has to on genetic coding that must be copied at each new generation. Inasmuch as sex deals with this, there is a paradox in that the process of genetic recombination dilutes the deleterious genetic material so well that the great majority of individuals neither die nor malfunction sufficiently to be unable to reproduce. Sex would seem actually to exacerbate the problem of accumulating 'bad' genes in the gene pool.[3]

Here is where the distinction between the sexes is vital, albeit not why the sexes arose initially. I will address the latter question first. It is thought that the sexes originated through an amplification of a random small size difference in gametes, the sex cells that fuse to form a zygote (fertilised egg). The larger gamete is the one by definition denoted female. Ancestrally, so far as can be deduced from phylogenetic data, gametes were isogamous (all the same size). That is, there were no distinct mating types, so there was no male and female. Indeed, there are quite a number of extant 'primitive' life forms that are now known to show isogamy. Anisogamy (different sized gametes) has been assumed to be the result of some form of 'sexual conflict' (either intra-genomic or a 'parasitism' of male gametes on female), but it is now shown in models to produce increased fitness for both resulting mating types. Anisogamy evolves if large zygotes are favoured and the difference in gamete sizes maximises the encounter rate between gametes and hence the number of zygotes produced.[4] This would be the usual condition: large zygotes were favoured because this shortens the time taken to grow into an adult, and the gamete encounter rate is maximised in an equilibrium where one gamete type is both highly numerous and motile, to complement the other relatively sedentary gamete type containing the tissue and resources required to produce a large zygote.

There is an alternative new theory that the sexes existed (and in some species still exist) despite there being no size distinction between mating types. This is the theory advanced notably by Nick Lane of mitonuclear co-evolution,[5] whereby sex precedes isogamy rather than being a result of isogamy giving way to anisogamy. Note that this is not incompatible with the anisogamy theory given the separable, complementary questions of the persistence of sex as opposed to its origin, and chicken-and-egg dynamics. Mitonuclear co-evolution stems from the unusual separation of mitochondrial genes (those controlling and coding for organelles within the cell that are responsible for meeting the energy requirements of the cell) so that most are in the cell nucleus and the rest in the cell cytoplasm. The crucial need for these to work in tandem necessitates (for reasons beyond the scope of the discussion here) their inheritance through one and not both sexes. This explains why it is that mitochondrial genes are always passed down the female line. Just as with the anisogamy theory of the origin of sex, mitonuclear co-evolution explicitly contradicts the earlier notion of sexual conflict.

The Male 'Genetic Filter' Function

However anisogamy arose, the adult larger gamete producers (adult female organisms) will expend more effort and resources in gamete production, and by extension provide more effort and resources once their gametes are fused with the smaller gametes as zygotes. The implications of this are profound when it comes to the problem of how to rid the organism of accumulated gene replication error (deleterious mutation and recombination).

Being so encumbered, the adult females are unavailable or much less available to deal with the accumulation of gene replication error and, conversely, to deal with the business of retaining beneficent mutation and genetic recombination. An elimination/retention mechanism is essential, and therefore just as the adult females specialise in producing gametes and nurturing zygotes, so it would seem, the smaller gamete producers (adult males) are obliged to specialise in the vital function of combating gene replication error. Just as any size differential polarises, so did these specialisms.

This function has to be in effect quarantined on the male side of the lineage, and has been dubbed the male 'genetic filter'[6] or 'mutational cleansing'.[7] It would appear to be the essence of being male, and is evident in what we can call a principle that across species there is always more selection acting on males than on females. This was long regarded as being obvious and not an empirical question, and there is plenty of indirect evidence for it.[8] Methodological issues had to be overcome in order to test it, but data now confirms it is the case.[9] New modelling reveals that sex cannot persist at all unless there is more selection on males than on females.[10]

The defining feature of the male therefore appears to be not small size but the 'genetic filter' function, making this the male principle. It has been thought that what demarcated the sexes is the Bateman Principle, which is the rule that it is always the female that directly invests the most in offspring. There are well-known apparent exceptions. Some species seem to have evolved 'sex reversal' in that the male has evolved to be the nurturing parent, as in many ground-nesting bird species and seahorses. This is because in these species there is a particularly serious predation risk for offspring and collaterally the mother, thereby requiring a lot of extra energy by the female to invest in egg production in anticipation of heavy attrition. The extra investment here is a further burden on the female, which already is the sex that is the 'limiting factor' in reproduction. It makes sense to offload onto the male some or most of the energy expended in parenting. In turn, males become choosy about their partners, and females evolve the brightly-coloured sexual display normally the preserve of males. Even so, it is still the case that the female is the major direct investor in offspring. Bateman's Principle still holds.

Either way, there is no problem here for the 'genetic filter' model, there being no requirement that the investment function of the female invariably be in effect quarantined on the female half of the lineage to correspond to the 'genetic filter' function of the male. If there are circumstances whereby some of the offspring investment burden can evolve to be transferred to the male as part of increasing selection pressure on the male, then this is simply to extend the scope of the 'genetic filter' function, thereby serving overall reproductive efficiency (see below). If it turns out that there are exceptions to Bateman's Principle, then it would be an imperfect generalisation, and an approximation to what is a principle, namely, that there is always more selection overall on the male than on the female.

In the operation of the 'genetic filter' it is imperative that those males carrying deleterious genetic material are eliminated from the local reproductive group, taking their genes with them out of the gene pool. Given a particularly heavy loading, males either do not survive or are so malfunctional as to be incapable of reproduction. But most males will be capable of reproduction notwithstanding a significant loading. The problem is that inherent in the recombination process, which is a key part of sex, is a great dilution of deleterious genetic material. For the reproductive group to properly achieve reproductive efficiency, a 'genetic filter' mechanism is required that is not merely an all-or-none simple elimination threshold. It needs to impact on most if not virtually all of the local male population through the mechanism itself producing a gradation of reproductive potential (the levels of physiological fertility and sex-drive) corresponding roughly to the individual loading of deleterious genetic material.

Note that there is no invocation of group selection here. Though it is beyond the scope of this discussion to unpack, a proper understanding of the situation would be from a population genetics perspective of the whole gene pool and over time, through the operation of 'lineage selection',[11] which works by exploiting the architecture of the selection process itself, such that when selection favours opposing traits on two different time scales, the longer time scale wins out. This occurs not through selection acting on the trait itself but on genes that act to 'suppress' the trait that is to the short-term benefit (but long-term cost) to the individual. This depends on lineages being sufficiently distinct, which is what occurs in models of population structure supporting co-operation.[12]

Implications for Social System and Dynamics

The 'genetic filter' mechanism would seem to be the basis of sociality in general (beyond mere corralling against predation) in dominance and for the resulting self-organised dominance hierarchy. Inconsistencies in data reveal that the operational model of dominance and dominance hierarchy (that the function is to minimise conflict or to apportion resources) is in error, in that trying to ascertain dominance rank through one measure of access to resources does not correspond to another,[13] with the dominance hierarchy being evident in sparring completely at odds with any ascertained in respect of access to resources.[14] The function actually is narrower: to skew sexual access according to mate value. This appears to be what is achieved in dominance hierarchy being inextricably bound up with differential reproductive self-suppression through mediation by the stress hormone cortisol.[15] Males in effect self-suppress to an appropriate degree their own propensity to seek sexual access.[16] Males within the reproductive group are intrinsically motivated to compete with same-sex others for rank, and the resulting stress from losing contests produces higher basal cortisol levels. These varying basal levels in individual males in turn differentially depress sex drive and the physiology of fertility correspondingly. The stress that causes sustained cortisol levels fully impacts on low mate-value males, but not on males of high mate value, because although the competition to attain high rank is itself stressful, in high-status males some of the types of brain-located cortisol receptors are blocked.

In reinforcement, female mate choice keys into dominance hierarchy through preferencing high-status males. Rank in the dominance hierarchy is in effect a summation of indicators of an individual's loading with (or, conversely, freedom from) deleterious genetic material. So it is that male mate value is said to be in terms of 'good genes' rather than 'fertility', as it is for females. This stark distinction in the basis of attractiveness according to sex is beautifully illustrated by recent findings[17] regarding MHC (Major Histocompatibility Complex), which is the key factor in immune response. It is now shown that a woman seeks a man whose MHC is highly heterogeneous (heterozygous), indicating her partner's MHC hybrid vigour and therefore his immunocompetence. On the other hand, a man seeks a woman who possesses MHC contrasting with his own so as to maximise offspring immunocompetence. The female is looking for MHC diversity within the male not MHC dissimilarity between herself and her prospective mate, as the male does. Thus, the female is selecting 'good genes', whereas the male is selecting according to 'fertility' criteria in order to provide a reliable vehicle for his 'good genes' to get through to the next generation.

In common with females of all species, human females function essentially as vessels for male genes. To be an effective 'gene-vessel' little is needed other than youth, and all females are youthful for a stage of their lives. This lack of markers of worthiness vis-a-vis fellow 'gene-vessels' might be expected paradoxically to fuel the sort of internecine conflict seen between political groups whose mutual enmity seems to be in direct proportion to how nearly identical they are (as famously for many decades in university 'broad Left' coalitions). To an extent this is evident. Women compete with each other to attain 'size zero' and vastly overuse expensive cosmetics, but competitiveness requires a motivation to compete, and the members of political groupings have this in being mostly male. Females have a much reduced basis of mutual competition in comparison to males. Not only are they not part of the 'genetic filter' mechanism, but males are not at all in limited supply. Males are not a limiting factor in reproduction as are females, given that males have the ability to impregnate large numbers of females almost simultaneously, whereas females can be impregnated only once before then being reproductively 'off-line' for several years during pregnancy, gestation and lactation.

Necessary Male Disadvantage

The whole system described works to ensure locally the maximisation of reproductive efficiency (this apparently being the trajectory of evolution—non-teleological, of course), but within this system most males are 'losers' to a greater or lesser degree, with only a small minority being particularly successful. As is evident in any human culture, many men are left entirely without any access to sex, with many others restricted to a single short-lived or sham monogamous partnership with a low mate-value female. Even this is achievable usually only by responding to demands of provisioning and fidelity. What is more, great costs are incurred in the fierceness of male intrasexual competition and these impact even on the minority of males who succeed in achieving high status (notwithstanding that a physiological effect of elevated rank is the blocking of some types of cortisol receptor), but in particular impact on all males 'losers'. A minority of men are rewarded with the lion's share of access to females through serial monogamy and multiple simultaneous mating ('mistresses', 'affairs', and 'casual' partners). For the majority of males there is the combination of relative lack of success with high costs of competition. By contrast, females are not skewed between 'losers' and 'winners' to anything like the same extent. In particular, very few females are consigned to reproductive (sexual) oblivion. Females in various ways share the minority of high mate-value males, and/or impose costly demands on males below this echelon, whilst eschewing all males of low status, even to the extent, in the case of human females, of intentionally becoming non-pair-bonded mothers (single parents) imposing support costs on the whole reproductive group through using the redistributive tax/benefits system to burden the very males they entirely reject. Females do not suffer the sort of costs of competition males sustain.

That the costs shouldered by males in carrying out the ‘genetic filter’ function are spread across all males helps to explain why they are not apparent. Humans have no problem seeing the costs to females of rearing offspring, despite childcare usually being perceived by the females themselves as a benefit and not a cost. There is no corresponding view that males incur costs through competition despite apparent readiness to thus engage. Furthermore, males have no option but to compete, often on territory on which they hardly stand much chance of succeeding and cannot show any reluctance to compete without losing face and thereby status.

The upshot of this is that the sexes are incomparable to an extent that despite some females being ‘losers’, it makes little sense to talk of females in such male terms. And this begs the question (to which I will return) of why we perceive the sexes in an upside-down and far too generic fashion: as all males being ‘winners’ and all females being ‘losers’. It is a comprehension of social reality that hardly could be more false.

Sociality of all forms is effectively a co-operative breeding system whereby all individuals of both sexes collude in the interests of the long-term fecundity of the local population, even to the extent, in the case of males, of accepting individual genetic oblivion if required. This makes sense as mentioned above in terms of lineage selection. No group selection model is implied. At root, rather than competition there is co-operation. Competition is evident on the surface and necessarily is entirely intrasexual. There is no basis of it being intersexual that could have any biological function. A more pejorative view would be a conspiracy, as it were, between females generically and a minority of males against the bulk of the male population. Such a view would be in keeping with a contemporary mindset of power relations, and from such a perspective hardly could be more obvious. Yet the current dogma is that the social system is based overall in a supposed oppressive relationship between the sexes, although on what competitive basis is never made clear. It is presumably an oppression perpetrated by (what is said to be clear from the data on outcomes in education, employment, health, life expectancy, suicide, homelessness, loneliness, and so on) the major disadvantaged sub-group, males, more specifically the bulk of necessarily lower-status males.

This extraordinarily implausible proposition is facilitated by an understanding of social system in terms of the distribution of resources, which is a failure to understand the primacy of reproduction and goes against a proper understanding of the nature of dominance and dominance hierarchy as outlined above. Resources are instrumental and very much secondary to reproduction, mere indicators of male mate value rather than having inherent value. Given that, for males, rank gained through contest to determine the degree of sexual access entails the sort of intrasexual competitive ability that would confer access to and control over resources, then resources effectively denote status, the criteria of male mate value. Resources cannot denote female mate-value, given that the criterion here is with respect to fertility (in human terms, youth and beauty), which has nothing to do with resources. Of course, a woman can utilise the resources of her pair-bonded partner to indicate her own mate value, just as a man can indicate his own mate value through the youth and beauty of the woman ‘on his arm’. But in both cases the indication is only indirect, and is of less use in the female case, given that female attractiveness is much the more immediately apparent. It is simply appearance, which is assessed by males in a split second. A woman can make use of resources to put herself in the path of high-status males, but given that the female and not the male is the ‘limiting factor’ in reproduction, men will very actively seek out the sort of women they desire and with whom they have a realistic chance of pairing. Using resources in this way is likely to only marginally improve a woman's mating prospects. There is, therefore, little basis for females to be motivated to acquire resources, and every reason that males are just so motivated. Females have consistently sexually selected males who can thus signal their possession of 'good genes' and females can latterly then exploit this as the basis of male provisioning, obviating much of the need to acquire even basic resources by their own efforts. So another question is begged as to why we express concern if women do not have resources in similar amounts to resources possessed or controlled by men.

The Myth of Intersexual Dominance and Submission

That the male oppression notion is erroneous is confirmed by multiple sorts of evidence. In line with the profound functional distinction between the sexes and the male 'genetic filter' function being manifest notably in dominance and dominance hierarchy, human sociality from toddler age on exhibits a complete partitioning between all-male coalitions and dominance hierarchy and all-female personal networks of twosomes and threesomes, with cross-sex play a rarity.[18] This breaks down only when adolescent cliques or crowds are formed to facilitate sexual pairing, and here the only dominance apparent is signalling co-opted for courtship purposes. Given that dominance is a key male attribute females find attractive, the courtship ritual has evolved to employ dominance, but this is not dominance behaviour per se, just the amorphous signalling of it. Keying into dominance hierarchy, male in-group psychology in being readily evoked by any symbolic grouping[19] appears to have evolved in the service of defending the whole natal community, given that it facilitates identification with any symbolic grouping, taking on board all members of the group. As this occurs irrespective of sex, it can include in addition to all of the males in a hierarchy all associated women and children. And far from this being dominance based, research reveals that in-grouping is more about in-group 'love' than out-group 'hate'.[20] In any case, if in-grouping could be the basis of any intersexual hostility, it can only be in the female-to-male direction, given that whereas male in-grouping features no same-sex preference, female in-group psychology features a fourfold same-sex preference.[21] Female in-grouping psychology by contrast to its male form would seem to be based on the evident female personal network in being a chain of extension from family and/or friends and appears to function to share assessments of male mate value (the 'good genes' complement of individual males) and perhaps also (given human female exogamy) to facilitate bonding with stranger females within a female's non-natal community of her pair-bonded partner.

Dominance is no more apparent in cross-sex competition scenarios, which in any case have to be contrived, given that they do not appear to occur naturally in earnest. Sports are always sex-segregated, and workplace competition is formalised rather than being interpersonal per se. Research on this in behavioural-economics[22] is hidebound by social science frameworks of interpretation, notably 'stereotype threat' theory, which in a first-ever review of all studies is shown to be without any foundation.[23] Freed of these, sense easily can be made of the data (that in the presence of the opposite sex, male performance is improved whereas female performance is depressed) in terms of sexual display and the psychological non-salience of intersexual competition. Boys tend to up their performance above what it would be competing with fellow males, especially if the competition mode is male-typical, such as a sports track/field event, so as to effectively communicate the possession of 'good genes' to the female co-competitor. It is hardly an expression of dominance to the female. Correspondingly, female performance dips, and not just for female-atypical activity such as sports track/field events (in which the female body cannot be sexually displayed well), but in pretty well any competition scenario, given that competition generically is female-atypical. This is hardly to express submissiveness to the male.

If there was any such thing as psychologically salient intersexual competition (competition in earnest) then there would have evolved underpinning neurohormonal mechanisms similar and to a similar extent in both sexes. But testosterone- and cortisol-based mechanisms in males are not the same as in females. The scenarios and patterns in which they rise/fall/remain elevated, differ.[24] For females, what is salient is the task; for males it is the opponent.[25] Where for males the challenge is achievement, for females there is instead perceived risk of failure.[26] Males are biologically engineered (as it were) for competition, but females are not, or nowhere nearly as much. This is not to say that females do not compete, but that they compete in different, usually less intense ways, and, of course, intrasexually rather than intersexually.

Experiments reveal how human males non-consciously communicate status information between each other immediately upon first meeting, using non-verbal signalling[27] and by sub-speech vocal signals[28] in regulating the male hierarchy, so much so that if you filter out these sounds in a laboratory, then males have great difficulty communicating.[29] There are no data showing that males thus communicate with females, nor females with each other. The brain centre involved is the so-called 'mind's eye',[30] which is known to process how one compares to another individual, and is therefore the obvious candidate brain region for processing in regard to dominance hierarchy. Not only dominance, but deference (non-engagement in dominance/submission terms) is also communicated. Some data[31] suggest interpretation in terms of deference rather than dominance/submission being communicated by males to old people and women.

Most compellingly, there is experimental work showing that the core behaviours of sex and dominance are diametrically opposed and controlled as such according to an algorithm whereby the basic default behaviour is not dominance/submission but sexual (specifically, male agentic sexual). Dominance/submission behaviour is never engaged in without first sexing (that is, identifying the sex of) the other individual encountered, so as to ensure that the appropriate behavioural mode is engaged, specifically so that a dominance/submission mode is not engaged unless the other individual encountered is of the same sex. This makes it impossible to display dominance (or submission) across sex.

In 'gene knockout' studies,[32] silencing the expression of a gene denoted TRP2 renders individuals incapable of sexing any conspecifics encountered, prompting invariable failure to engage in a dominance/submission mode and always to engage in sexual behaviour. All other individuals encountered are treated as being female, regardless of the sex of either of the parties. Whether male or female, an individual who is unable to sex another encountered conspecific individual, attempts sexual mounting, even if the other is a male. Males and females with TRP2 'knocked out' behave in the very same way (even females actually engage in male sexual mounting behaviour), and both to fellow females and to males. Males attempt to mount fellow males as well as females.

This starkly reveals the controlling decision rules for any and every individual to be the following: default initiation of male-agentic sexual behaviour, unless either (a) I am myself male and the other individual is also male or (b) I am myself female, whereby if (a), then I engage the dominance/submission behavioural mode, or if (b), I then engage in the female sexual mode (an arched-back receptive posture to facilitate sexual penetration).

This is clearly so foundational that it must be highly conserved across species but overlaid, obviously, with other behaviour and cognition in higher mammals and primates. The problem that experiment necessarily for ethical reasons is restricted to relatively lowly mammals (as here, if you had not guessed, on the mouse) is little obstacle to the wider applicability of the findings. And it is no matter that TRP2 presumably is not the only gene involved. Likely it is one of many integrated in a hierarchy of regulatory and coding genes, and possibly at some remove from the genetic nub but connected as some necessary but hardly sufficient component. So what we might term 'the sex/dominance modes algorithm' could be uncovered by manipulating other genes singly or in combination. The point is that we now know that the algorithm exists as a basic platform of sociality. It makes perfect evolutionary sense given that sex is the most important behaviour, and it is male behaviour that is key in male-female encounters, given that females can conceive simply by being inert, whereas males must accurately locate the female genital opening and actively penetrate with a penis.

The complete dissociation between sexual and dominance/submission behaviours is also evident in ethological studies. In species where both males and females are in a dominance hierarchy, it is usually noted that there are separate same-sex hierarchies, but for a few species it is sometimes stated that the sexes are together in one unisex hierarchy, though with all females subordinate to all males. This conclusion stems from observing juvenile males apparently first besting females before beginning to tackle adult males, but this is to ignore the more obvious and simpler interpretation in line with all of the other evidence, that it it merely play fighting and not actual dominance contest. Similarly, a small minority of species are claimed to be 'female-dominant', but investigation reveals that apparent male submission is only in the context of feeding and that therefore there is not submissive behaviour at all but deference (best understood as the signalling of non-engagement in a dominance/submission mode) by males to females to facilitate female feeding priority,[33] in line with the female being the limiting factor in reproduction.

The female sex cannot be wholly dominant to the male sex in any species if indeed it is dominance at issue, because the attributes that would tend to confer dominance are very much male attributes and therefore most males, if not the overwhelming majority of males, would outrank most females. Conversely, in the great majority of species that by the same rationale would be deemed 'male-dominant', it would be expected that at least a few females would outrank a few very lowly males. That the skew of one sex to high rank and the other to low rank supposedly is always so total that it is 100%, immediately indicates that what is at play is something entirely other than dominance/submission. The total separation must be inherent in what distinguishes the sexes, more than strongly suggesting that dominance/submission is an erroneous interpretation of intersexual interaction.

Intersexual Violence as Mate Guarding

The supposed quintessential arena of an intersexual dominance interaction in humans is domestic (intimate partner) violence, but the common perception of it in no respect accords with its actual nature.[34] Most is not male- but female-perpetrated. If unilateral, then more than twice as likely,[35] or three times, and if the violence is serious, then the sex differential is threefold more likely female-on-male,[36] or even sixfold.[37] A giveaway as to the reality is the near parity rather than a sex-differential in injury rates: only slightly greater (1.5 times greater) female than male injury,[38] or at parity.[39] In respect of serious injury the sex differential actually reverses and profoundly so.[40] There is no trace of the skew expected given the combined factors of much superior male upper body strength facilitating powerful hitting, coupled with female body frame weakness rendering an extreme susceptibility to injury. If the sexes were even equally responsible for domestic violence and of similar levels of seriousness (never mind if it were the predominantly male violence as routinely portrayed) then the disparity between the sexes in injury rates should be a whole order of magnitude greater or 20:1.[41] That it is not leads to the only possible inference that perpetration must be largely by women. If domestic violence is to be taken as indicative of an intersexual dominance interaction, then its direction is the opposite of what would be expected.

Even the data on the tiny subset of domestic violence that is spousal homicide does not contradict this conclusion, because not only is the sex differential still well under what would be expected (just 2:1),[42] but it would appear to be in part an artefact of the failure to include the bulk of mariticide (husband-murder), this being largely undetectable. Whereas uxoricide is typically overt in the extreme, with the husband usually or often also killing himself and therefore unavoidably detectable, perpetration by women typically is either indirect via third parties (lover, male friend, male relative or 'hit-man') or by subtle methods at some remove (notably hard-to-trace poisoning), both modes reflecting sex differences in modes of aggression and serving to maintain the family otherwise intact (complete with the murdered husband's assets).

The deep biological principle of the female being the 'limiting factor' in reproduction manifests itself in a major way in an intimate partner context in the very well-attested inhibition felt by normal, non-psychotic men and the demonstrable absence of inhibition felt by women. Recent research shows this to be even stronger than is popularly supposed, in that whereas men lower their aggression, women are not merely uninhibited but actually raise their levels of violence. That in respect of non-violent behaviour there is no sex-differential reveals it to be intentional. Men act to minimise physical harm to women while women act deliberately to physically harm men.[43] Taking together all forms of intersexual violence (to include the non-intimate) the direction is predominantly female-to-male by a margin again so wide as to be a multiple.[44]

Domestic violence does not fit a dominance/submission model at all, because the basis of any negative interaction between sexual partners is what researchers dub 'control', which is exercised by both sexes equally according to some researchers,[45] although in using male modes of 'control' as the only criteria, female modes are ignored, thereby greatly under-stating female 'control'.

The ‘controlling’ partner typically is the female according to other researchers[46] (this being in 90% of couples in the USA).[47] ‘Control’ is mate guarding in biological terms, which is the appropriate terminology in that the phenomenon in all its aspects can be made sense of only in biological terms, and that mate guarding as the basis of domestic violence is confirmed.[48] Mate guarding has no connection to dominance/submission, and that it is predominantly carried out by women is understandable given the very different trajectories of mate value according to sex, men’s status typically rising and usually at worse flat-lining whereas women’s attractiveness falls steeply with age. In the wake of recent findings regarding mate guarding, this would appear to be the basis of human pair-bonding.[49] Clearly, women employ mate guarding to try to prevent partners from straying, but in general terms, across the animal kingdom the problem that mate guarding appears to have solved for females is to counter the receipt of unwanted sexual interest from low mate-value males. Females would seem to acquire consorts and pair-bonded partners perhaps not so much to acquire over a longer term the ‘good genes’ of a male individual as to displace the ‘bad genes they otherwise risk acquiring from low-status males.

The Notion of ‘Sexual Conflict’

With dominance/submission and mate-guarding despatched as respectively not existing at all and being female-on-male rather than the other way around, there remains the notion that some more general conflict between the sexes is primitively foundational. But this hypothesis is destroyed by the new model for the evolution of anisogamy (and also ‘mitonuclear co-evolution’) described above. Contrary to what hitherto had been assumed, no ‘sexual conflict’ (either intragenomic or in a ‘parasitic’ relationship between different mating types) is required to explain anisogamy.

‘Sexual conflict’ is a concept widely invoked and currently fashionable in biological sciences, possibly to curry favour with social scientists in the attempt to render biology more amenable to them. Whenever it is employed, however, it is immediately apparent that the phenomenon at issue resolves to intrasexual competition. Indeed, intrasexual competition is explicitly included as part of ‘sexual conflict’,[50] rendering the concept a misnomer. Another reviewer concedes that “the extent to which these behaviours are adaptations to intra-male competition or to conflict with females over mate choice is not clear”.[51] Intrasexual competition is a full and more parsimonious explanation that leaves ‘sexual conflict’ superfluous and a conceptual error, a pejorative understanding all too apparent as an inappropriate importation to science from contemporary politics.

Supposedly there is an intersexual ‘arms race’ in respect of adaptations that one sex in some way attempts to circumvent the mate choice criteria of the opposite sex and the other sex tries to counteract this. But the supposed ‘arms race’ actually is a progressive ratcheting up of overall reproductive efficiency of the reproductive group as a whole, which as previously mentioned, is a proper understanding in terms of population genetics and ‘lineage selection’, not ‘group-selection’. Models (sometimes explicitly) are given in terms of individuals because of a mistaken assumption that otherwise a naïve ‘group-selection’ cannot be avoided.

Any adaptation that confers some advantage to males in terms of sexual access/reproductive output inevitably is a focus of competition between males and competitive selection by females. It is in the female's interest to mate preferentially with those males possessing such an advantage and to effectively compete against other females in this respect. That an adaptation may be seen as some form of 'cheating' ('dishonest signalling') does not alter this, because the very facility to be able to thus circumvent opposite sex mate choice criteria itself is a quality requiring the very kind of attributes that are an expression of male 'good genes', even if it is just an indication of a pugnacious and fearless attitude. In any case, females hardly lose out through selecting males with successful new adaptations, given that the genetic underpinning is passed on to offspring males who will in turn be more successful in mating. Females compete with each other to better detect 'dishonest signalling'. Males can respond by refining the 'dishonest signalling' so as to compete with other males. The ratcheting up of 'dishonest signalling' and corresponding 'dishonest-signal detection' is a merry-go-round that requires such refined qualities in both sexes that mate-choice actually becomes ever more discerning, ever more an accurate assessment of male 'good genes'.

There is no possibility of adaptations that confer mating success becoming dislocated from indicating 'good genes'. The most famous case of 'runaway' sexual selection well illustrates this. The peacock's cumbersome and all too visible train of feathers continues to be fully a display of male 'good genes', because a peacock has to be very well genetically endowed: first, in order to invest the energy and material to produce such a seemingly wasteful adornment; second, for the feathers to appear in good condition and to be vigorously displayed in comparison to rivals; and, third, to be able to avoid the greatly increased risk of predation that such an unwieldy sexual ornamentation entails. The peacock's tail hardly is an attempt by males to circumvent female mate-choice criteria. On the contrary. That indicating male 'good genes' has become 'meta' is no undermining of indicating male 'good genes'. To imagine such undermining would lead to an argument that male dominance rank in being but a crude summation of various parameters of 'good genes' is something of a fraud to circumvent female mate-choice criteria. But again, far from undermining it, it facilitates female mate-choice. As is further discussed below, female mate choice necessarily entails great redundancy in a parallel and overlapping assessment. Any new form of display by males in widening the scope of assessment serves to assist females in determining 'good genes' from 'bad'.

This perspective is recognised by reviewers of the 'sexual conflict' perspective at least to an extent. Mulder & Rauch realise that:

> More fundamentally, of course, the identification of winners and losers is a flawed pursuit. There are winners and losers in each sex. . . . Furthermore, the costs and bene?ts of mating systems are not distributed homogeneously within each sex; some males are big winners and others are big losers. . . . Generally, we should think of sexually antagonistic contests as dynamic and ongoing. In this view, neither sex "wins," at least not for more than a short spell . . . winners being individuals who are particularly successful not only in manipulating or controlling the behavior of the other sex, but in competing with their own sex.[52]

Gorelik & Shackelford likewise start to get there in the end, when they state that “as the coevolutionary arms race between men and women advanced, enhancement of deceptive tactics placed women under selection pressure to be attracted to men who were skilled at deception (as these men were more likely to sire reproductively successful offspring). In this way, instances of sexual conflict may sometimes evolve into instances of sexual cooperation”.[53]

Reviewers have come to realise that in moving away from a snapshot view there is a balance between the sexes, yet they persist in the view that there is intersexual rather than intrasexual conflict in failing to drill down further to the underlying dynamic that the outcomes mirror.

Sex Dichotomy and Overlapping Variance

That clearly there is no such thing as intersexual dominance/submission and that the very notion of ‘sexual conflict’ is a figment of analysis exposes these notions to be a facet of the pro-female/anti-male mindset also evident in the assumption that in everything men are advantaged and women disadvantaged. Though the sexual divide (from the separate male ‘genetic filter’ and female direct offspring-investment functions) looks more a dichotomy the more it is examined, being reflected in every facet of male-female cognition and behaviour, there are also sex differences only of degree. These are cited in support of a notion of a male-female continuum, with the oft-mentioned fact that there is often more variation within than between the sexes. But many apparent sex differences in degree are conflations of sex dichotomies that should have been separately teased out or conflations of a sex dichotomy with what is indeed a continuous variable across sex. In either case there is obscured the sex dichotomy that is the foundational factor rather than what may overlay it. Yet even in the case of a continuum, a sex dichotomy is nearly always evident, because of the male ‘genetic filter’ function driving fierce male intrasexual competition.

Almost any outcome that can be measured reflects male intrasexual competition, and not only does this indicate a spread of loading of ‘good genes’ but also the decisions of males regarding where to place their efforts. Rather than spreading effort across the board and risk succeeding in no arena, males appear usually to select particular arenas suited to them individually and reduce effort in or withdraw completely from what they find to be unfavourable pasture. This can be through experience, but also males can avoid prospective loss in status by not even beginning to compete unless they have good reason to believe they will be successful. This selectivity in effort is facilitated by a male ‘cognitive style’ to focus,[54] underpinned by almost order of magnitude sex differences in IQ-related white and grey matter, females having far more brain ‘connectivity’ tissue (white matter) and males far more brain ‘processing’ tissue (grey matter), in this respect.[55] The sex dichotomy in competitiveness thereby manifests strongly as a sex-dichotomous variation (distribution) of almost any outcome that can be measured.

There is a sex-typical distribution pattern whereby males tend to inhabit the extremes whereas females tend to cluster around the median. This reveals major sex differences even in respect of measures where there may be no aggregate sex-difference, although on almost all measures there is an aggregate sex difference, which even if it is a minor one greatly amplifies the polarising effect so that it becomes the overwhelming feature of the distribution.

Overall intelligence is a case in point. There is debate as to a small IQ sex difference in favour of males (though possibly much greater, owing to the construction of IQ from its inception to obviate any sex difference), but ignoring this and also that the components that make up general intelligence are themselves bound to be sex-dichotomous (as in 'cognitive style'), nevertheless what we see are far more males classed as 'genius' but also far more males who fall into the 'dunce' category. Of course there are more males in the rest of the distribution, nearer the median than at the poles, but not overwhelmingly so as we see with females.

This male-polarised/female-centring pattern is behind why males are regarded as advantaged and females disadvantaged. In focusing on the highly visible, highly over-represented male high performers, low-performing males are ignored. Likewise, the absence of low-performing females is ignored, and focus instead is on the absence of corresponding female high performers, and their clustering in the mid-range.

'Policing' Males

A pervasive misperception to the detriment of males would be expected to stem from the need to 'police' (to use the term as employed in biology) males to ensure they do not try to subvert the extent of sexual access they have by virtue of their ranking according to their place in the skew produced in the operation of the male 'genetic filter' function. Cummins[56] recognised the need for a 'violation detection' mechanism to operate specifically regarding dominance hierarchy, and developed theory and found evidence of a 'violation detection' mode of reasoning that was implicit (being fully apparent even in early childhood), applying only in social scenarios. Here, instead of a simple weighing up of conflicting evidence, reasoning changes to the seeking of exception, so that notwithstanding the weight of evidence in support of a target individual, a single piece of counter-evidence switches the conclusion. This has been dubbed 'deontic reasoning'—reasoning about the obligations, permissions and prohibitions that are part and parcel of membership of a dominance hierarchy.

Cummins' work fits within a large literature on 'cheater detection', which is shown to be activated more in respect of low-status individuals,[57] specifically males of low status[58] (which was dismissed in a later paper making a counterclaim on the spurious grounds that it was inexplicable by any theoretical position), and specifically by other low-status males.[59] There is a volume of literature on the very early emergence of seeking out rule violation in young children[60] who do not display such cognitive facility when it comes simply to ascertaining truth rather than compliance.[61]

Controversy bedevils one area of this research, namely, much claiming and counter-claiming that there is greater recognition of the faces of 'cheaters'. This may be resolvable in terms of considering a particular (less specific) mode of memory. The debate is too complex to briefly review, save to point out that the theory framework here may be awry, not merely in that it is not obvious whether the 'cheater' or the 'cooperator' would be expected to be the better recalled but in that the whole notion of the 'cheater' (or 'defector') is framed in the context of the large body of experimental work seeking the basis of cooperation to overcome self-interest, thereby to explain the evolution of 'altruism'. Aside from 'altruism' being a misnomer (given that any instance appears to be 'enlightened' self-interest, that is, selfishness over the long run), the assumption is that there is no pre-existing fundamentally biological social structure and dynamics that encapsulate cooperation. Yet it is clear that this is very much what evolved early in animal evolution to be conserved up until and including the human species, as outlined here. The crucial need to take into account the already existing social structure and dynamics is the very issue Cummins addresses as her starting point.

A 'policing' psychology does not (necessarily) have to manifest very much in detecting and punishing actual transgressions, because a dynamic of 'policing' males likely would evolve for it to be internalised, so that low-status males avoid the costs of transgression ever arising. Individuals surely in the main 'police' themselves. After all, it is apparent that individuals differentially self-suppress their fertility and sex drive, as outlined above. Furthermore, transgression can be headed off by all of the individuals within the reproductive group adopting a prejudicial attitude to males whose low status renders them candidate transgressors. It is simpler to evolve an in-built prejudice towards low status males. And given that what is at issue is sexual access, then the obvious form this can take is for such males to be regarded as unattractive. This is precisely what is found (and showing large effect sizes) in studies in respect of memory of the faces of 'cheaters' and individuals of low status.[62]

Assessment of attractiveness linked to a 'looking for the exception' style of reasoning about evidence is surely to be expected, given that the most critical judgment is mate choice by females. For this to be effective there must be assessment of not one but several (if not very many) indicators of male mate value that cover different and overlapping qualities. Information redundancy is a requirement here, because multiple cross-checking would reliably throw up any anomaly there might be, thus revealing the male's quality as not what it otherwise seems, enabling the female to avoid making a mistaken mate choice. It would appear that this is what the research on 'cheater detection' may have been uncovering. The actual psychological systems may well not fit the conceptualisations in behavioural economics. Researchers can have the wrong focus on the phenomena they are uncovering, so that they find small if statistically significant effect sizes that are taken to be in support of a social constructivist orientation, when actually this is a confound with what would be far bigger effect sizes if the phenomena were properly understood with non-confounded biologically based parameters teased out.

The Biological Level of Analysis

It is often countered that a biological analysis of human affairs is inappropriate, being too 'reductionist', but this is scientifically and philosophically illiterate. Attempts at 'non-biological' understanding posit 'social conditioning' as if somehow this could be separated from biology and does not beg the question of an infinite regress to biology in asking who or what in turn socially conditions the 'social conditioning' if it isn't the biology. The standard riposte that culture (and explicit psychology) is the level of analysis trumping any other is not merely empty but has it backwards. Culture is the manifestation of implicit psychology and as such is no less a part of biological evolution than is the biology underlying it, culture evolving as very much part of biology to function to feed back so as to fine-tune and reinforce it.[63] Culture consequently never flies off at some novel tangent to escape biology. Alternative terminology does not change this insight, for example, when culture is dubbed niche, as in 'niche-construction theory', which the European Science Foundation concluded is simply a restatement of Dawkins' concept of the 'extended phenotype',[64] the definitive notion that all is biology. Culture is falsely envisaged as if it were some separate environment with major independent causal impact, showing noncomprehension of Information Theory, whereby instead of the organism being seen as at the mercy of the environment, it is properly understood to actively seek out what it has evolved to consider relevant stimuli. This goes for the environment generally, not only that part of the environment the organism has itself constructed.

There are no social phenomena requiring a supra-individual level of analysis,[65] and therefore culture is always resolvable to biology in a way that is not the 'greedy' reductionism of which Dennett warns,[66] the notion of irreducible 'social fact' being merely an assertion by Durkheim. So whereas a 'bottom-up' understanding from biology is reliable, a 'top-down' attempt from 'sociological' constructs is usually an ideological exercise in tautology. By starting from a complex elaboration of biology rather than with the root biology, there is then no escaping any evolved self-deceptions and blind spots that are bound up with the very phenomena at issue.

Being, in effect, machines to reproduce, humans are conscious of only a very tiny fraction of brain neural processes, and consequently have no explicit context by which to assess the actual nature of the very little of which they are conscious. It is not just that the brain is built on a 'need to know' basis, as it were, but that it is instrumental that humans evolved not to cognise in ways that might be counter-productive. It is not merely that the brain has to be capable of deceiving others, which as the most effective form of deception entails self-deception. Inherent contradictions in motivations and how they are manifest, and the sheer complexity of neural processes, require a profound opaqueness if not self-deception to see how the brain cannot but function. It would be counter to any individual's interests to be aware of, overwhelmed with and embarrassed by the nuts and bolts of the modes of intrasexual competition, for example, or the contrived, staged nature of courtship. Conscious reflection on these psychosocial phenomena is, in one way, an overarching explicit internal 'debate' at such remove as never to be on the 'inside' of such phenomena, as it were. At the same time (as we know from systems biology) the brain is a complex whole system without any locus of control, meaning that there is no separation between the workings of the brain and the brain's self-examination. Furthermore, consciousness is not at all as it seems: it is not efficacious. Given famous experimental work showing that decision-making precedes awareness of it, consciousness would appear to be nothing more than an epiphenomenon of the integration of complex neural processing. Moreover, this seeming facility to 'debate' within the brain itself in being a biological product has evolved, like culture, to feed back and fine tune and reinforce the underlying biology, which hardly, then, would be undermined or transcended.

Philosophical Failure

A philosophical failure to grasp this ‘hall of mirrors’ is at large in the tenor of the times that somehow we are finally escaping biology, by which supposedly we were somehow ‘unnaturally’ hidebound up until now. That this is an unsustainable position is highlighted by the philosopher John Gray,[67] but it is a trap into which several key evolutionary thinkers (Dennett, Pinker and Dawkins) have fallen.[68] Even putting aside the self-contradiction and the scientific and philosophical illiteracy behind such an aspiration, the manifestation of this complaint as some imagined ‘war of the sexes’ is to say the least implausible in regarding only one sex as ‘trapped’ and the other sex (or essence of that sex) as somehow being the very agent of that ‘entrapment’, as opposed to a dance in which both sexes are equally engaged. With males necessarily evolving largely through female mate choice, and vice-versa, the sexes hardly can be other than complementary. The conceptualisation that costs and benefits are polarised so that females sustain all of the costs and males enjoy all of the benefits is based on the assumption that all costs arise from direct investment in offspring, when this is clearly false. As outlined above, the sexes have radically different key functions, with the male functioning as the ‘genetic filter’ for the whole lineage. It is not that female direct investment in offspring is mirrored but weakly by males. The profoundly different functions of the sexes are both forms of heavy investment in offspring, albeit indirect in the case of the male. All biology ultimately is investment in offspring. There are all too obvious major costs in being male, and all too obvious major benefits or cost avoidances in being female. The question is begged as to why we are or have become blind to these, even to the point of the blindness becoming an ideology.

Ideology, in itself also being part of biology, is ideation distorted to further biological ends, which can only render still more extreme any inherent prejudices in mutual reinforcement with their biological base. The contemporary political pro-female/anti-male mindset, with the notion that there is an entrenched historical or still more in-built opposite anti-female/pro-male prejudice that must be combated, cannot but have very deep biological roots. It is never explained how it can be that suddenly, at last, humanity supposedly has become enlightened. There is obvious confusion here. The supposed entrenched anti-female/pro-male mindset entails a prior mindset that is its opposite (or at least ‘gender [sic] neutral’) to which supposedly we are returning. More plausibly, of course, it was ever thus and what we see today is a manifestation of usual elitism (the very biologically based social dynamics that are denied) now couched in an “I’m more ‘progressive’ than you” one-upmanship. The problem is that the biological roots of all this, by virtue of their depth are opaque to our awareness and thinking. As we cannot know what they are directly, then we can only deduce from the various lines of evidence. It cannot be assumed that anything is as it seems. As I have outlined, all most clearly is not as it seems. There is anything but an in-built anti-female/pro-male prejudice. It is indeed in ideological imagination by way of manifesting the very biologically based social dynamics that a social constructivist orientation purports to not exist or to be so overlaid culturally as to be irrelevant.

A Proper Synthesis

Space permits only the briefest outline, from one or two angles, to skim the surface of a perspective on the sexes from biological principles, congruent with the converging lines of cross-disciplinary evidence, instead of the tight internal consistency with no external validation and a stubborn data-proof denial that is the standard social science model. This new perspective applies neatly to any and every interface between the sexes to facilitate a comprehensive theory of male/female interaction transforming understanding of all aspects of men and women. It can be used to more fruitfully review the many specific topics merely touched on here, and thereby inform new research directions and whole new programmes. Much research in psychology effectively is of little use through predication on bogus assumptions about 'power' as being about resources, and the sex of subjects and targets as being irrelevant, within an unfalsifiable social constructivist model. The failure to engage with a tenable, deep biology based theory of social structure and dynamics denudes it of the empirical foundation such a theory deserves as it continues to look superficially unpromising at the side of an orthodox edifice of self-fulfilling prophecy. But the richness of insight already starting to be provided on ground softened up by the flowering of evolutionary psychology more than hints that in the offing is a major new direction, that if not a 'paradigm shift' is a proper synthesis of mostly what has long been known viewed in a new light.

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