Massai Tribeswomen

ONLY MALE GENITAL MODIFICATION IS 'CONTROL'; THE FEMALE FORM IS COMPETITION BY WOMEN

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ABSTRACT

Genital modification functions proximally in both sexes to denude sexual sensitivity, reducing propensity to engage in sex; impacting specifically extra-pair sex. Here distal function diverges: male GMo is controlling (lowering young males' competitiveness with high-status males for young females), whereas female GMo is 'honest signaling' of future fidelity (in contest for high-genetic-quality pair-bond partners). Only FGMo originated as a benefit for 'cut' individuals. FGMo is both performed and advocated overwhelmingly by females, and does not serve alpha males (in that they can have few concerns about partner fidelity), actually dis-benefiting them (because of impaired sexual receptivity of current and potential pair-bond and extra-pair sex partners). With no basis for male imposition ('male control') to explain FGMo, it can only be intra-sexual.

Keywords: genital modification, genital cutting, genital mutilation, MGMo, FGMo, extra-pair sex, male control, sexual sensitivity, honest signalling

As is well understood by evolutionary biologists, a bodily structure directly involved with reproduction (the most crucial function of all) must have evolved to be highly efficient, and continues to be particularly strongly selected. Genital (especially male genital) morphology, being concerned directly with fertilisation efficiency, is subject to keener pressure to adapt than is any other morphology (Eberhard, 1985, 2010; Hosken & Stockley, 2004). In consequence, any such structure that has remained essentially unaltered and very similar across a wide range of species clearly cannot be vestigial and instead must have a honed adaptive value; and any crude surgical modification is bound to produce dysfunction, let alone no improvement. This is very much the case for the foreskin (the male prepuce); its being ubiquitous across not only all hominids but all primate species and all mammals (bar two egg-laying anomalies). This applies likewise to the clitoral hood (the female prepuce), which develops in-embryo along parallel lines to the foreskin in the male, as a most highly innervated sheath for erectile tissue essential for sexual sensitivity; the two structures being homologous (Cold & McGrath, 1999). Other structures involved in more extreme GMo[1] (which occurs for both sexes) likewise are homologous. Yet almost all of the various suggestions for the origin of (male) 'circumcision' (and the forms just as extreme or more so than female types) fall foul of this basic logic, especially in respect of putative dysfunction in the case of the male prepuce. Logic, though, is not to be expected, either in the case of 'traditional' peoples or those in developed societies adhering to a religious doctrine or ideological line. The strong motivation to provide explanation for what is psychologically needed and to avoid 'cognitive dissonance' understandably tends to produce implausible rationalization. This very much applies in respect of the practice introduced in modern times in the UK, USA and other developed nations, but which uniquely is still normative in the USA.

Common to how those within traditional and developed-world nineteenth century (and some within even contemporary societies) view(ed) MGMo – and how some academics view from outside – have been various claims that the foreskin causes hygiene problems: by trapping

[1] The expression *genital modification* is here used in preference to the pejorative *mutilation* or still slightly loaded *cutting*, in accord with an emerging scientific convention to resist what had become usual inappropriate moral / ideological imposition into what should be objective study.

particles of dirt or facilitating infection (whether specifically sexually transmitted or by more general bacteria or viruses). These arguments are not mirrored with respect to the albeit much smaller female prepuce. It is understandable, though, how originally there was perceived a need to surgically intervene in respect of (if not to ablate) the foreskin, in that boys normally are born with the foreskin tight and non-retractable (phimosis) (e.g., Shahid, 2012), and only in the course of development does it become retractable. Usually this occurs between the ages of five and ten (British Association of Urological Surgeons, 2017), and though in some cases much later, the prevalence of adult phimosis is only two percent (e.g., Gairdner, 1949). [Most of these cases are of a tiny remaining piece of tissue causing adhesion at one point of the glans to the foreskin, in which category is the author, whom as an adult was offered the very minor procedure of a simple tiny cut just of the adhesion-causing tissue, but advised that there was no need, given no discomfort of any kind (quite the opposite)]. That the age range for the onset of retractability is wide indicates an adaptation that it is not necessary to be precise; rather for the change simply to be more age-appropriate than neonatal, in preparation for and well ahead of when sexual activity would be anticipated to commence. Staged development extending well beyond that which is in-embryo to delay something until it becomes more age-appropriate is a standard aspect of development, but there is often failure to understand this even today. Failing to understand that phimosis is usually temporary (and often not a problem, and in any case usually easy to rectify) may well lead to pathologising the infant stage of the foreskin as supposedly a permanent problem. This then can lead to notions of entrapment of particles or infective agents, or difficulty in what otherwise would be natural removal of secretions that could remain in situ and, it may be supposed, cause infection.

If infection or abrasion risks ever were salient, then the foreskin would have evolved to counter them, and it is to be expected that the foreskin indeed may in part have evolved to serve such function. And in being an 'outer skin', it hardly could not protect against damage to the skin integrity of what it sheaths. The snug-fitting mucosal membrane of the inner foreskin protects the glans from dirt and abrasion, keeping it bathed in a fluid, smegma, with anti-bacterial and anti-fungal agents (Van Howe, 1998; Fleiss, Hodges & Van Howe, 1998; Prakash et al, 1982). Hygiene claims have long been discounted, as Wilson (2008) reviews and adds further referenced arguments, pointing out that a supposed protective function of MGMo is contradicted by the procedure almost always being delayed until adolescence; that despite the

universal issue of contaminating particles, most societies do not have MGMo ; and that in those species where, through promiscuity, STIs pose the greatest threat, the male prepuce actually is most highly developed. Hygiene claims, then, are highly implausible, and appear to be thinly veiled translation of sexual disgust and/or usual contempt for the male rooted in biological 'policing' of male sexual access (see below). [This applies not least to the notion that 'circumcision' somehow protects against rather than facilitates HIV transmission, which was a predictable resurrection of the idea a century earlier re syphilis, and is no more worthy of affording space to consider.] There is anyway no conceivable way that much positive difference could be made by crude surgical removal of part of an organ; and the very notion otherwise itself betrays justifications for GMo to be bizarrely hopeful rather than rational.

Some of the beliefs held by those undergoing MGMo in 'traditional' cultures are clearly standard magic ideation, and are just as transparently rationalization. Cutting as a form of sacrifice to placate a deity or to 'ensure' fertility – echoing female shedding of menstrual blood, or the part(s) of the sexual organ held to be symbolic being used as an item of sympathetic magic – or to render the individual more surely male (or female) in removing parts that oddly are taken somehow to be attributes of the other sex. These appear to be latter-day explanations for a lost origin: secondary in aetiology, in the wake of the practice becoming ubiquitous (maintained in terms of a frequency-dependent advantage), with either no relation to the founding purpose or at most an interesting distortion of it. This is also the case with any notion of the 'circumcised' penis being used to signify group identity (as an 'in-group' marker) – a particularly strange idea given that in almost all cultures, in the past as today, the penis normally is hidden. Hardly an account of an origin, but nonetheless it may be an indication of an aspect of the origin, providing a useful clue; as might be the usual appreciation of MGMo as a rite of adolescent passage despite, in some societies, the procedure normally is neonatal.

As a scientific hypothesis, it has been suggested that MGMo is an 'honest signal' of commitment to male-female co-operation in the willingness of the individual to endure the pain of the procedure (Rowanchilde, 1996), but it is a somewhat bizarre notion in more than one respect. It is difficult to see that ablation of a key part of the anatomy concerning reproduction, the most vital function of all, would be simply to cause pain, rather than that the pain is just a by-product of the operation. Why instead would the pain not be generated by sacrificing non-

functional sensitive visible body parts, such as (for males) the nipples? Then there is a question of why there might be a shortfall in co-operativeness by the male pair-bond partner, when regular sex is the main feature and 'glue' of pair-bonding; and notwithstanding how possibly it would be addressed by reducing his sexual sensitivity, and in turn his interest in sex with his pair-bond partner. Rowanchilde's suggestion might make more sense regarding co-operation within the group as a whole, or intra-sexually within the male hierarchy. The obvious context is warfare, where total co-operation between warriors, whether in defense or attack, is vital to survival.

This was proposed by Sosis, Kress & Boster (2007), as part of a general hypothesis to explain the various forms of body scarification, on the grounds that it would be important to prevent men from defecting to another group. Yet this is another strange notion, when one considers that ancestrally (and in many places even in historic times) males would anticipate that individually encroaching on a rival group's territory would risk injury if not death, such was the hostility between neighbouring groups through the standard pattern of males raiding for females and even to kill all the males so as to take over all of the women – the pattern famously discovered in chimpanzees (Nishidsa, 1979), thought also to be the basis of human warfare (Chagnon, 1968). [The human species necessarily is patrilocal (that is, males stay for life within their natal community) (Murdock, 1967; Korotayev, 2003), with male sociality being whole-group inclusiveness and at the same time antipathy to other groups (for a review, see Moxon, 2016).]

To test the hypothesis, sixty small-scale 'traditional' societies were examined for correlation between the presence / absence / extent of permanent visible marks – scars, piercings and MGMo – and, on the one hand, mating intensity, and on the other, frequency of warfare. Sosis et al found that frequency of warfare was the better fit. However, in examining their data, Wilson (2008) found a clear association in respect of scars and piercings but not regarding MGMo ; pointing out that MGMo hardly would be a viable identifying mark with its being neither displayed nor specific to just one local group. In running a test of his own data, Wilson again found that the distribution of MGMo is not predicted by the frequency of warfare, even though other forms of male scarification do conform to this model. An explanation of MGMo in terms of 'honestly signalled' group solidarity therefore appears not to be supported and not to be viable.

The premise has been that the supposed minor physical or significant cultural benefit MGMo confers is not outweighed by the implications of removing the foreskin; which, therefore, has to be presumed to be inconsequential. On the contrary, the disbenefit of MGMo (just as with FGMo) is readily apparent in the very procedure itself, especially in ancestral times before any understanding of pathogen transmission, the danger of fatal infection in the tropical / semi-tropical climes where MGMo has been traditionally practised is as it would be for incision anywhere on the body, and cannot but have precluded its arising in the absence of more substantial utility than any to which MGMo usually is ascribed. More particularly, sexual function hardly can be other than compromised in some way by surgical intervention on the normal organ – with an impact on the female partner as well as the male owner (see below). This could not be better asserted by advocates themselves of so-called 'medical' 'circumcision' in developed nations in the nineteenth century, when an avowed basis of the procedure was to limit or prevent masturbation (Darby, 2003). Indeed, it is transparently from the involvement of the foreskin in masturbatory pleasure that the notion of physical uncleanliness in retaining the foreskin arose.

There is now ample research regarding the properties and function of the foreskin in terms of its sexual functioning, to establish that it's essential to the penis' normal working and to sexual intercourse. Most importantly, the penilocavernosus reflex, crucial to sexual excitability and orgasm, recently has been found to be rarely experienced by 'circumcised' men, confirming previous observations. The author of the paper writes that the reason is "the elimination of the most sensitive part of the penis (ie, the foreskin), and to a lesser extent, desensitization of sensory receptors in the penile glans" (p. 584) (Podnar, 2011). The latter seems to be due to what is routinely attested anecdotally by 'circumcised' males to be the 'drying up' of the glans known as 'keratinisation', as a result of permanent non-sheathing by the musocal inner surface of the foreskin; though the experimental difficulties of longitudinal study appears to have left the phenomenon devoid of formal research. There is no such problem regarding the elimination of the foreskin: it has long been known to be the most highly innervated part of the penis (Winkelmann, 1959; Moldwin & Valderrama, 1989), and more recently this was found to be because the foreskin, unlike the glans, contains fine-touch receptors (Taylor, Lockwood & Taylor, 1996). That these receptors and their confinement to the prepuce is the main basis of penile sexual sensitivity has been confirmed (Sorrels et al, 2007). This results in 'circumcised'

men having decreased sexual pleasure, lower orgasm intensity, and discomfort, pain, numbness or other unusual, unpleasant sensations of the penile shaft, as well as needing more effort to achieve orgasm (Bronselaer et al, 2013). This effort—the penis being thrust harder, deeper and being pulled out of and back into the vagina—takes out vaginal lubricatory secretions, causing excessive, uncomfortable penile-vaginal friction and dryness; in comparison to sex with an 'uncut' male, when what is in effect an outer skin of the penis (the foreskin) stays much more with the vaginal wall whilst the penal shaft slides in and out of what is its own skin, as it were (O'Hara & O'Hara, 1999). This results in 'circumcised' males having problems regarding orgasm and their female partners frequently experiencing a range of sexual difficulties: an overall sense of incomplete sexual needs fulfilment, notably through failing to achieve orgasm and dyspareunia (pain during intercourse) (Frisch, Lindholm & Grønbæk, 2011).

That the locus of penile sexual sensitivity is in the foreskin is amply researched sufficient to be conclusive, notwithstanding detracting papers. The controversy over 'circumcision' in the USA, given that it remains a normative practice, is so fierce that studies may be predicated on false or poor understanding, that either inadvertently or by design feature major methodological flaws. Specific areas or cell types other than what are the actually sensitive ones may be tested, or what is tested is relevant but inappropriate properties may be measured; non-applicable measures may be taken, or testing is done when the penis is non-erect; etc. The upshot can be that conclusions do not follow logically from the results, and/or abstracts do not fully follow from conclusions. Publications taking issue with MGMo causing sexual dysfunction can now expect direct denunciations within the same journal. No less than four attacking letters from fellow researchers were published in *The Journal of Urology* to greet the publication in the same journal of Bossio, Pukall & Steele's 2016 paper, 'Examining Penile Sensitivity in Neonatally Circumcised and Intact Men Using Quantitative Sensory Testing' (Frisch, 2016; Rotta, 2016; Van Howe et al, 2016; Morris & Krieger, 2016). The fierceness of the controversy stems from the 'cognitive dissonance' in the pro-'circumcision' mindset needing to be salved: the great irony that the contemporary denial that 'circumcision' denudes sexual sensitivity is to try to prevent the falling into disrepute of a procedure that was instigated over a century earlier for the express purpose of denuding sexual sensitivity, so as to curtail masturbation.

A theory of MGMo origin based on reduced sexual sensitivity was put forward twenty years

ago by Immerman & Mackey (1997, 1998). In the abstract of their first paper they describe MGMo 's function as "lowering excitability and distractibility quotients – sexual arousal – of pubescent males, i.e., biasing young males more toward increased tractability which would enhance group efforts and less toward individual goals of amorous exchanges."

Neurological data presented in the study shows that the neonatal procedure over time leads to atrophy or reorganization of brain circuitry concerned with sexual excitement, thereby greatly compounding the effect of the procedure. The authors alternatively state their position as that 'circumcision' functions to render the male "less sexually excitable and distractible, and, hence, more amenable to his group's authority figures". Further expanding, in their second paper, Immerman & Mackey state (again, in the abstract) that FGMo renders "young men of a social group (a) to be slightly more tractable in executing corporate activities beneficial to the community and (b) to be slightly more restrained sexually and more cooperative in the pair bond". This is an hypothesis of imposition, without individual advantage. There may or may not be problems with such a conceptualization, as will be explored in due course; but the more immediate problem with Immerman & Mackay's position – just as with Rowanchilde and Sosis, Kress & Boster – is that it does not address the reproductive implications, which would be expected to be primary in the case of the involvement of a sexual organ.

Given the strong evidence for the negative impact of MGMo on both male sexual sensitivity and female partner satisfaction during sex, then it follows that there is likely to be not only a diminution in the propensity of both the 'cut' male and a female partner to engage in sex, but in turn that this would tend to reduce the likelihood of impregnation and consequent reproduction. This might be expected to differ according to context; the type of sexual encounter. For pair-bonded partners, where sex may be initiated freely by either partner and be a matter of routine, and given that younger (if not also older) couples have sex far more regularly than is required to ensure conception; then a lower inclination to sex probably will not have much of an impact on conception rate. With anyway the female rather than the male pair-bond partner being the likely limiting factor regarding sex, then a diminution in male (or mainly in male) ardour may have little impact. Extra-pair sex is a very different matter, in that it often takes far more effort to secure, and may well require secrecy, involving real, sometimes major potential risk, thereby considerably raising the threshold of the level of temptation required to

either initiate or accept (in comparison to sex within a pair-bond). A reduced level of general inclination to engage in sex that would be quite enough to prompt responding to or initiating pair-bond sex, may then not be sufficient in respect of extra-pair sex, taking into account the difficulties. The lowering of sexual inclination may be 'the straw that broke the camel's back', as it were. The upshot is that reproduction circumventing pair-bonding is undermined, leaving reproduction through pair-bonding bolstered.

A different hypothesis concerning extra-pair vis-a-vis pair-bond sex is put forward by Wilson (2008) (in the same paper as he dismissed the hypothesis that MGMo serves to honestly signal co-operation). He sees MGMo as producing not a reduction in extra-pair sex, but a lower rate of conception through lessened efficiency of insemination and impaired sperm competition; both as a result of the change in penis morphology that is MGMo. In other words, MGMo increases the ratio of copulations to impregnations (fertilisations). Wilson then argues that this in effect disproportionately reduces extra-pair sex because whereas within marriage men can easily compensate by copulating more frequently, this is not the case with respect to extra-pair sex, given the high marginal cost of finding more extra-pair sex opportunities (as outlined above). Here, it is not that the rate of extra-pair sex decreases; it's that the rate of sex within marriage *in*creases. However, this requires that males would have some implicit mechanism to fine-tune their frequency of copulation to accord with some set level of reproductive output – and this having nothing to do with experiencing a reduced sexual sensitivity (which Wilson does not discuss, cite or even mention). That's implausible, and there is no scientific evidence for such a mechanism. An outlandish aspect to an hypothesis, such as this is, suggests an attempt to salvage an argument too far. It might be speculated that as Wilson was writing a decade ago, at a time before the impact of MGMo on sexual sensitivity was scientifically conclusive, then he may have chosen not to base hypothesis on what then perhaps was perceived to be a controversial line of argument. If, instead, Wilson had done so, then using the insight that inherent in the different circumstances of pair-bond as against extra-pair sex, a factor serving generically to lessen motivation to have sex will disproportionately reduce the extra-pair manifestation; Wilson presumably would have arrived at the simpler position outlined above. As it was, Wilson was obliged to develop an additional layer of theory, and thought he had a viable hypothesis in terms of insemination efficiency and sperm competition.

Unfortunately, this relies on the assumption that any alteration to penis morphology likely will have this impact, when it is clear only in the case of rarer, extreme forms of MGMo (the only forms re which Wilson cites evidence), not the simple ablation of the foreskin as in 'circumcision'. Wilson relies on a general conclusion that the shape and evolved accoutrements of the penis must serve sperm competition, and therefore that any damage will impede this. However, specifically the foreskin has clear functions not concerning sperm competition. According to Gallup, Burch & Mitchell (2006): "As a consequence of removing the foreskin the circumference of the shaft posterior to the glans may be slightly reduced, causing the coronal ridge to be more pronounced and creating a larger area for semen to collect where it could be scooped back away from the cervix" (p15). In this way 'circumcision' would actually *enhance* sperm competition, the opposite of Wilson's contention, which would have the effect, in turn, of increasing the likelihood of impregnation specifically through extra-pair sex. Still more, with the absence of the intense sexual sensitivity produced by the glans being sheathed in the prepuce, as cited above, there is much more and longer thrusting in the case of the 'circumcised' organ (O'Hara & O'Hara, 1999), removing correspondingly more semen; again furthering sperm competition – and, again, the opposite of Wilson's contention, having the effect of increasing the chance of conception via extra-pair over pair-bond sex. This is in line with the finding that men (that is, men generically, not excluding the 'intact') thrust more vigorously and deeper in sex with a pair-bond partner in reaction to suspicion of her extra-pair sexual activity; the only feasible interpretation of which being that this serves to displace the competitor's sperm (Pham, DeLecce & Shackelford 2017).

In the light of this contra evidence and a lack of supporting evidence for Wilson to cite, then MGMo – or the most common form of it, at least -- does not produce a significant difference along the lines Wilson suggests. There are no observations within Wilson's paper (in respect of how MGMo relates to polygyny or geographical distance between co-wives; the public nature of the procedure, and that there is no family involvement) that are not alternatively consistent with MGMo causing reduced sexual sensitivity, which in turn, without any additional mechanism, causes a disproportionate reduction in the likelihood of engaging in extra-pair sex, as outlined above. It would anyway be more parsimonious, then, to leave Wilson's speculation to one side, though to agree that the upshot is that MGMo reduces extra-pair sex conception rates, but that this is simply through reduced sexual sensitivity necessarily producing a reproductive

skew away from that via extra-pair sex, because of the different conditions pertaining to extra-pair vis-a-vis pair-bond sex. This is more straightforward, mechanistically, and is well evidenced.

The next question is of what putative advantage there may be to individuals to compensate for their loss of sexual impetus and likely consequent reduction in overall reproductive output (fertility). In this regard, Wilson posits in his abstract that "men who display this signal of sexual obedience may gain social benefits if married men are selected to offer social trust and investment preferentially to peers who are less threatening to their paternity". As possible benefits, Wilson suggests "respect, status and access to weapons, shelter or tribal lore" (p. 158).The scenario Wilson envisages is that of young males albeit with high genetic quality, but as yet not fully assessed and tested in a way that translates into stable high rank (or much in the way of rank at all) in the male status hierarchy. In the absence of rank-passported sexual access, these young males, Wilson presumes, may attempt and perhaps even succeed in subverting hierarchy through extra-pair sex with the pair-bond partners of high-ranking males. The proposition is that married males established high up the hierarchy in some way 'buy off' the younger males about to start ascending it, who then bide their time until their access to sex is legitimate, as it were. Yet it is hard to imagine a form of assistance that would not manifest directly or indirectly in the upstart males more quickly gaining rank, thereby feeding the very problem that the attempt supposedly is to starve. Perhaps a compromise would ensue, along the lines of the political argument that it's preferable to have your half-foe / half-friend on the inside of the tent excreting out, as it were, than vice-versa.

The bigger problem with this rationale is that effectively un-ranked or low-ranked young males, who are only at best potential high-rankers of the future (and, therefore, perceivable merely as potentially of high genetic quality), are unlikely to be of interest as extra-pair sex partners to females who, in being pair-bonded with high-status males, must correspondingly be of very high fertility. [Unlike men, women raise their criteria for sexually selecting an extra-pair sex partner (Szepsenwol, Mikulincer & Birnbaum, 2013). This is because it makes no sense, when normally impregnation would be by the pair-bond partner (whom the woman selected expressly for his high genetic quality), for the woman then to be impregnated by another male who does not possess still higher genetic quality. That this is a profound, biologically based phenomenon is indicated by the same phenomenon apparent in females of other species (e.g., Cochas et al,

2006; Kempenaers et al, 1992). The wives of apex males hardly are likely to risk the integrity of their prized pair-bonds for extra-pair sex unless there were very clear benefits of being impregnated by the extra-pair partner, and here it would be very unlikely that there would be a benefit at all, let alone a substantial one].

A compensatory advantage to undergoing MGMo there most certainly is, albeit a 'negative' one, in the avoidance of being sanctioned for non-compliance; but this cannot come into play until MGMo is already well established. It is a frequency-dependent property, and therefore cannot account for the emergence of the practice.

More fundamentally, it may be mistaken to posit the need for a compensatory advantage at the individual level. Recent advances in theoretical consideration have transcended the long stale debate over group versus individual level selection, and quite apart from the reformulation of group selection by Nowak, Tarnita & Wilson (2010) to address the clear objection to its 'naive' version, which Dawkins famously and rightly argued. There is no need to accept even reformulated 'group selection'. Now-standard 'population genetics' models (Keller, 1999), alternatives involving population structure (Powers, Penn & Watson, 2011; Lion, Jansen & Day, 2011) and 'lineage selection' (Nunney, 1999) are all mathematically equivalent, and, therefore, empirically interchangeable with each other and a 'levels of selection' analysis, to straddle the conceptual divide between selection acting on the individual and 'population genetics'. This is an appreciation of 'inclusive fitness': that selection acts in effect at between the 'individual' and 'group' levels (see Okasha, 2008), through the genetic similarity of individuals within the local population in their being (usually) distant (if not closer) relatives. [As to which theoretical line (or combination thereof) is adopted is a matter of philosophy rather than science.] This understanding supersedes the controversy in the wake of the arguments popularised by Dawkins in *The Selfish Gene* that served as a significant corrective to wayward thinking about evolution at the time the book was published, almost half a century ago. Furthermore, even the polarisation between the various mutually non-exclusive 'inclusive fitness' models and reformulated group selection (that the publication of the Nowak, Tarnita & Wilson paper sparked) appears to be reconcilable (Birch, 2017).

This aside, a problem is not only that regarding each individual male MGMo seems nothing but a particularly unwelcome imposition, but neither is there any immediately apparent

basis for such imposition, with the phenomenon not being of use – indeed being a distinct disadvantage -- even to the alpha male, never mind lowly men. He wouldn't gain from the other males being further inhibited from obtaining extra-pair sex, because the most fertile females would not have any sexual interest in other males, in that all would be of lower genetic quality than himself. To reiterate: women raise their 'standards' regarding extra-pair sex, given that sex is pointless with men of the same or lower genetic quality than that of their pair-bond partner (see above). Furthermore, this is reinforced in that the very act of extra-pair sex very seriously threatens the integrity of the pair-bond, which is vital to the female. Pair-bonding in effect projects forwards in time the woman's peak attractiveness (fertility), thereby to maximise fertility (reproductive output in terms of maximum genetic quality and number of offspring) (Moxon, 2013). Perhaps higher-ranking though sub-alpha males in coalition might be able to impose MGMo as a universal reduction in the propensity to obtain extra-pair sex? This would counter their vulnerability to their pair-bond partners having extra-pair sex with the alpha male. It would in turn make sense for a whole stratum of sub-apex males vulnerable to their wives having extra-pair sex with a cluster of apex males above them. In time, with the fluidity of ranking, as formerly sub-dominants gain alpha status and the sons of top-rankers not infrequently fail to arrive at the pinnacle themselves, it would not be long before all males in the inter-marrying group were 'circumcised', and the road would then be set for 'cutting' to acquire secondary (frequency-dependent) function (such as an 'in-group' marker) to sustain it as a whole-group practice in perpetuity. The problem remains, however, of how such a development would begin if it were not in – and instead were actually against – the interests of the alpha male. The alpha likely is in place himself through coalitional strength, and it is even more unlikely that a cabal of lowlier individuals could take on a number of apex males.

Alternatively, if the utility of MGMo is more collective, then this would be in line with dominance hierarchy (and the associated differential reproductive suppression); a mechanism all too apparently in collective rather than individual interest. Indeed, MGMo would make sense as an extension of dominance hierarchy – a further 'extended phenotype' of what is itself an 'extended phenotype' (to use Dawkins' conceptualisation). This would entail a return to the mutually complementary modelling just outlined transcending the now stale 'levels of selection' quandary.

Briefly to outline regarding dominance hierarchy: in consideration of the function of the male, as 'genetic filter' (Atmar, 1991) / 'mutational cleanser' (West-Eberhard, 2005), males are ranked in terms of genetic quality in a dominance / prestige hierarchy. Each male correspondingly is both differentially reproductively suppressed and subject to female sexual choice according to his position in the hierarchy (Moxon 2009, after many authors). In this way, most males are in some way(s) prevented from reproducing much or at all, and fail to pass on and instead take with them to the grave accumulated gene replication error, which thereby collectively is purged from the local gene pool. Additionally, there has to be 'policing' so as to reduce the likelihood that males may try to circumvent the social structure in order to try to obtain otherwise unobtainable sex (Cummins, 1996, 1996b, 1996c, 1999a, 2005, 2013). This is achieved by biological mechanism (in-built deep psychology of 'cheater detection' mechanisms directed towards males, to be ultra-sensitive to the slightest anomaly), which also would be available to underpin cultural manifestation in MGMo.

Nevertheless, it might be thought more satisfactory – parsimonious in scientific theory – if MGMo were understandable in terms of an obvious compensatory benefit to all participants individually and not just one to a minority in the context of a whole-group overall utility. Wilson's proffered social benefits may fit the bill (without his sperm competition and insemination inefficiency hypothesis). The still more straightforward likelihood, though, is that MGMo both originated and became established as an imposition by high-status males that low-status males were in no position to resist, and therefore there was never required any benefit accruing to most males to 'buy' their cooperation. With the dynamics of hierarchy naturally rendering MGMo ubiquitous over time, the procedure would then be maintained for all males merely through the costs of non-compliance to a custom.

A picture now emerges in line with both practise in traditional culture and in how 'circumcision' was adopted and became widespread in 'developed' societies in the nineteenth century; the latter when famously there was a profound concern with male sexuality per se – as revealed by an obsession with masturbation, which, in wild imagination, widely disseminated and believed, was falsely held to cause a myriad ills. This was an overt concerted attempt to curtail the sexuality of adolescent and early-adult males generally, to engender pro-sociality, pointing up what is highly likely to be a parallel in the traditional practise. To couch in terms of

hierarchy, it would serve to channel the very high energy of male youth into legitimately gaining rank rather than trying to circumvent the social order in premature sexual activity and inappropriately competing with stable-ranked males for sexual access. On the face of it, this is what Immerman & Mackey (1997) argued, but the problem MGMo addresses needs to be better specified.

It would be a lazy assumption that the issue is of upstart males trying to obtain extra-pair sex with the wives of high-status men. Not only would there be prohibitive sanction, but (as discussed above with respect to Wilson's position) the high-fertility pair-bond partners of high-status men would have little interest in such males. The real problem is instead one of young males attempting to compete with high-status males for *young* females. High-status males can acquire young females as additional, that is, polygynous (or serial-monogamous or clandestine-polygynous) pair-bond partners, or simply for extra-pair sex. Young males, notwithstanding their as yet lack or absence of status, can markedly disrupt this in that they may have multiple attributes denoting genetic quality that will be detected by females, even though this can't show up in the genetic-quality 'ready reckoner' of status for ease of assessment. Being within the social milieu of young females, young males are likely to take many of them out of the marriage market as well as swamping the sexual marketplace generally with attempts also to acquire extra-pair sex; significantly displacing attention and activity by high-ranking older males. Anything which can dampen down young male sexual voraciousness would well serve the socio-sexual order, thereby improving the reproductive efficiency overall of the reproductive group. Hence their hobbling by MGMo, which readily can be seen to make sense from both biological and cultural perspectives.

That hitherto this has not been well understood (or understood at all) is perhaps surprising, but then the origin of MGMo has been a much neglected question, as can be gauged from the paucity of theory papers above cited. Of the very few published, most are dated 1907 or earlier, after which the issue seems to have been regarded as impossible to reconstruct from prehistory, until, almost a century later, the ascendency of evolutionary perspective prompted fresh approach. Even so, there have been just three theory papers -- Rowanchilde (1996), Immerman & Mackey (1997) and Wilson (2008); four if the paper by Sosis et al (2007) is included, albeit this dealt only in part with MGMo. Of these, Wilson's is the one comprehensive

effort, and it is in answer to points arising in that paper, utilising more recent findings, that the present formulation has been made; and now at last there is a good prospect of the function of MGMo becoming a settled question.

Turning to FGMo, a main question is whether or not it is essentially the same phenomenon as MGMo, and, in particular, whether or not it is male imposition. Given that it is the much less widespread and more recent practise (Gollaher, 2009; Davis, 1976), with only MGMo occurring in every continent bar Europe and represented in paleolithic cave paintings and sculptures (Augulo & GarcÍa-Diez, 2009), and with no geographical occurrence of FGMo in the absence of MGMo, then the female procedure may well be derivative of its male counterpart. If that is so, then it would be expected also that its proximal function is similar; but with the fundamental distinction between the sexes in overall function (see Moxon, 2016, for a full outline), then the distal function oFGMo nevertheless may diverge profoundly according to sex.

With FGMo, unlike MGMo, not being a contemporary 'medical' established practise in the USA, there have not been corresponding outlandish notions as to function. In striking contrast to the case of MGMo, regarding FGMo there has not been resistance to accepting the obvious diminution in sexual sensitivity – not in Western nations, that is. As with MGMo, evidence of reduced sexual sensitivity and increased sexual dysfunction is provided by many researchers. Formerly, it had been to an extent mixed (likely because of methodological issues, arising especially from research by nationals of countries where FGMo is the norm, either inadvertently or through a desire to uphold the procedure); but not so today. Most recently, Rouzi et al (2017), Biglu et al (2016) and Anis et al (2012) all found that for 'cut' women sexual dysfunction was much higher across all domains – desire, arousal, lubrication, orgasm and satisfaction – except pain during sex, which only Biglu et al reported. Two other research teams publishing in 2012 found that FGMo results in little or no sexual desire or satisfaction, and also either pain during sex (Berg & Denison) or that it significantly reduces women's sexual quality of life as a whole (Andersson et al). Older surveys of 'cut' women returned that half of them do not enjoy sex at all (Hosken, 1983; 1989). There is plenty of further evidence from male partners, who complain that sex is far less enjoyable with 'circumcised' women because they are at best passive, if not actually suffering (Sæverås, 2003). Lightfoot-Klein (1989) observed that men sought non-FGMo wives on the grounds that they enjoy sex; even to the extent of seeking European women.

Shandal (1967, 1979) most interestingly investigated the preferences of men who had multiple wives, only some of whom had undergone FGMo, and to varying degrees; finding that nearly all the men preferred their non- FGMo wives, and of their FGMo wives they distinguished in favour of those with the less severe forms.

The real question, though, if FGMo is akin to MGMo, is the impact specifically on extra-pair sex. This is not indicated in the abstract of what to date is only a conference presentation (Howard & Gibson, 2017) of a forthcoming paper on the impact on sex of FGMo, and would seem either not included or not separated out, though with no available methodology this is impossible to say. The findings are that FGMo "is not a significant predictor of reduced sexual activity either before or within marriage for the majority of women", but that's not inconsistent with FGMo causing a reduction in extra-pair sex, and the authors state (personal communication) that indeed extra-pair is the operative form of sex. As above-outlined with respect to MGMo, it would not be expected that there would be a decline in sexual activity other than extra-pair. The first study to directly address the relation between reduced sexual function and extra-pair sex is that by Onyishi et al (2016), who report that for individuals who have undergone FGMo, willingness to engage specifically in uncommitted sexual relations is more restricted across all domains examined: in terms of attitude, behaviour and desire. This comprehensive result reveals that in terms of proximal function GMo indeed appears to be the same in females as in males.

The utility of FGMo – its *distal* function – is generally agreed by academics to be 'paternity certainty' for males in the face of the risk of being cuckolded. This was first suggested by Hartung (1976), and then taken up and developed by many others, eg, Ericksen (1989). The World Health Organisation states that FGMo is: "to ensure premarital virginity and marital fidelity … believed to reduce a woman's libido and therefore believed to help her resist extra-marital sexual acts" (WHO, 2014). In the same text, the WHO then falls in with the usual presumption of male imposition rather than female initiative, but this is to extend beyond evidence and logic, based on nothing more than an ideological perspective; which is disputed, not least even by feminists themselves (most notably Germaine Greer, 1999).

The notion of FGMo as helping to ensure 'paternity certainty' pertains not just within the developed world and academia, but also within the societies where traditional FGMo occurs,

though in terms of its corollary: an attribute for females in obtaining marriage partners. It may or may not be intuited to be of use to males re 'paternity certainty', but by all accounts 'cut' women universally accept that without undergoing the procedure they will not be able to find a husband, or at least would have severe difficulty in this regard; and often they do recognise that this stems from a reduction in sexual sensitivity. For example, FGMo women told Hosken (1983, 1989) that it would be impossible for women to control their own sexuality and remain faithful to their husbands without 'cutting' to reduce interest in sex. And Lindner (2008) found that both young women and their relatives believe FGM curbs sexual desire, 'purifying' the girl into a 'treasure' to make a chaste wife for an eligible man.

Although in such societies there is some rationalisation paralleling that for MGMo -- including regarding cleanliness and also removing part or parts that may be considered somehow redolent of opposite-sex genitalia – the prevalent reason by far given for undergoing the procedure is marriageability (Ross et al, 2016), or at least it's the most common one, notwithstanding the very wide variation of the practise across many dimensions (Hadi, 2006). Ross et al divide the range of justifications provided into three categories: re marriageability, 'heterogeneous', and tradition; but explain why all of those in the latter two categories should be considered to varying degrees more proximate considerations linked to marriageability, however indirectly. This is fully in line with other researchers surveying across FGMo societies, who cite preserving family honour and safeguarding female sexual purity along with enhancing marriage chances as clearly being facets of the same ideation (eg, Shell-Duncan & Hernlund 2000).

The alternative perspectives of the advantage to the male partner of assuring 'paternity certainty' and the female advantage of a bargaining counter to secure a better-quality pair-bond partner, are often denied in the West through the usual feminism-derived understanding that there is no female advantage. Instead, the advantage is held to be only for the male. This is an extreme ideological partial view predicated on the notion that all matters male-female involve male 'oppression' and female victimhood. Females here are deemed to have 'internalised' what is in male interests to falsely cognise and/or intuit that the interests served are their own. But if females did act actually against their own interests, it is hard to see how this would be a matter merely of 'oppression' by further degree rather than in some way qualitatively different. As well as being a non-parsimonious and thereby inherently implausible explanation, there is

comprehensive evidence against 'internalised' male interest, both generally and with respect to FGMo specifically. In a major review, many separate lines of evidence converge to show that the range of phenomena that are subsumed under a 'male control' theory of female sexuality, instead are accounted for by female intra-sexual competitiveness (or what may be dubbed in mirror image, 'female control'). Baumeister & Twenge (2002) conclude that:

> "The male control theory was repeatedly contradicted. In view of these data, it would take a considerable amount of new and strong evidence even to make the male control theory plausible again. The female control theory, however, appears to provide a good fit to most of the available evidence". (p. 189)

The authors go on to address the issue of possible male influence other than the proximal:

> "... there are two important reasons to be skeptical of the view that men in general have conspired to exert indirect, distal influences to suppress female sexuality. The first is the fact that when we did find evidence of male influence over female sexuality, it was generally in the opposite direction. ... [and, second] when the sex ratio is unbalanced in favor of men, the result tends to be more sexual activity. These findings suggest that if men really could exert direct control over female sexuality, they would opt for more of it, not less. To maintain a belief in male suppression of female sexuality, it is necessary to believe that men directly influence women toward greater sexuality while indirectly exerting influence in the opposite direction." (p. 189)

Although now fifteen years old, the review has not been countered by any paper other than one (Rudman, Fetterolf & Sanchez, 2013) purporting to take issue with Baumeister & Twenge's overall conclusion but actually addressing only attitudes to what is anyway the slippery itself ideology-laden concept of the 'sexual double standard', which attitudes themselves change under ideological influence. On this sub-topic Baumeister & Twenge used mostly data preceding the hegemony of feminist ideology for the very reason of avoiding such contamination. It is, therefore, a poor basis of criticism; especially in claiming to be valid in respect of the overall conclusion that the 'female control' and not the 'male control' model fits the data across all of the male-female phenomena where there is apparent or there might be 'control' by males.

In a 'male control' model it would be expected that FGMo would correlate clearly with what supposedly are the most obvious facets of a male-controlled or 'patriarchal' society: polygyny (the form of polygamy where there is one male pair-bonded separately with each and every one of a multiplicity of females) and formal hierarchy in a large-scale society manifesting

as 'social stratification'. Yet comprehensive cross-cultural review reveals polygyny is not an independent variable here (Hicks, 1993). What's more, it has recently been found that there is no evidence that polygyny itself is to female disadvantage, but the opposite; supporting models of polygyny based on female choice (Lawson et al, 2015). As for social stratification: FGMo many times has arisen in cultures without any, and the pattern of occurrence of FGMo is mainly caused by factors orthogonal (with no relation at all) to stratification, leaving stratification itself a very weak part of FGMo aetiology (Ross et al, 2016). This anyway is unsurprising, in that ascribing significance to social stratification of indicating hierarchy where otherwise it would be absent, is false. Hierarchy, in being a universal male social structure, does not require any formal social structure to be manifest. That it may be thought not to be evident in non-complex human society goes against what would be expected: that a stable hierarchy in a small group usually would not and does not need to be to the fore. There is little if any evidence, then, to support any assumption that FGMo arose in complex societies built on agricultural surplus and conquest, featuring all-powerful rulers with huge harems (so-called 'imperial polygyny').

What looks like the most salient factor common to all occurrence of FGMo is arranged marriage; this being all but ubiquitous across the world prior to industrialisation (Apostolou, 2010), and it remains the dominant form of match-making across Africa, the Middle East and Asia (Hamon & Ingoldsby, 2003). There is no requirement for complex social structure, and socio-environmental variables generally have no impact: 85% of hunter-gather societies have arranged marriage (Apostolou 2007), and the few that don't are strongly suspected to have lost it only recently, though disruptive pressure from agricultural neighbours, and assimilation and acculturation into state-level societies (Walker et al, 2011).

With arranged marriage much the more widespread phenomenon, then it appears to be the more ancient; and, therefore, likely the background from which FGMo sprang. If this is so, then the issue of whether men or women are the more operative in arranged marriage becomes material to the question of FGMo origin; of its character at its inception. To ascertain antiquity, mitochondrial DNA phylogenetic reconstruction of human marriage practices using Bayesian, maximum likelihood, and parsimony methods, reveals, regardless of method, that arranged marriage goes back at least to the initial modern human expansion, 50,000+ years ago (Walker et all, 2011), if not to 'mitochondrial Eve'; an order of magnitude older than FGMo is assumed to be.

The reviewers state that it is conceivable that arranged marriage has no less antiquity than the cultural encoding of pair-bonding – marriage – itself. It may, then, be a necessary albeit not sufficient condition for the emergence of FGMo. Either way, it is the principal background to and sets the scene for FGMo.

On the question of whether arranged marriage is controlled by men or women, there is no dispute. All evidence points to activity very much within a female domain: all is orchestrated by women family members (aunt, elder sister, sister-in-law), possibly an older 'matriarch', and/or an outsider female 'matchmaker'. Throughout history this was the cross-cultural norm, whether, for example, anciently in China (Benn, 2001) and Greece (Noy, 2012), or just as today with the famous 'rishta auntie' remaining a fixture in this regard across India and Pakistan (Krishnan, 2010); likewise the 'khatba' in Egypt (El Feki, 2013), and even in polygynous highly traditional African tribal societies, such as the Igbo of Nigeria and the Betsilio of Madagascar (Kottak, 2003) or the Vhavenda of South Africa (Raphalalani & Musehane 2013).

With FGMo likely being an extension of the female intra-sexual practising of arranged marriage / matchmaking, then in turn it is likely itself to be a female within-sex phenomenon, as would be indicated if those who actually *perform* the procedures are all or mostly female. This is just what is found. Only women are practitioners (except where, in attempting to minimise harm, contemporarily it has become medicalised, or, in a few places, sometimes the village barber is employed). Usually it's the mother, grandmother or local specialist 'cutter'; generally an elderly woman of the community (Lindner, 2008). Sæverås (2002) found that *"a grandmother may set up the circumcision of her granddaughter even if the child's mother is against it. Friends may do the 'operation' on the daughter while the mother is away".* The mother-in-law is also regularly cited, though it seems that rather than relatives the bulk of operations are done by the older female 'specialist' (Worku Zerai / Norwegian Church Aid, 2003). Sæverås points to the power of the 'exciser': in being often also the community birth attender and/or healer, she's held in great respect.

Regarding specifically who makes the decision that a female should undergo FGMo, Koroma (2002) summarises:

> "FGM is women's business and they more actively perpetuate FGM than do men. … decision-making for undergoing the operation is in large part made by mothers, although

> there are instances where it is a joint decision by both mother and father with the latter 'only informed to obtain his blessings'. Other decision-makers are wider female family members, particularly grandparents".

Earlier investigators concur that it's the grandmother who decides if it's not the mother (Hicks, 1996; Lightfoot-Klein, 1989). Shweder (2000) reveals that: "the practice is almost always controlled, performed, and most strongly upheld by women (p222).

Where men fit in, or rather don't, Shweder continues*:*

> "... men have rather little to do with these female operations, may not know very much about them, and may feel it is not really their business to interfere or to try to tell their wives, mothers, aunts, and grandmothers what to do. It is the women of the society who are the cultural experts in this intimate feminine domain, and they are not particularly inclined to give up their powers or share their secrets".

Rye (2002) finds that "many many men find it a problematic part of their culture". Hejll (2001) observes that "all too often men see FGM as 'women's business'. This is understandable in societies that segregate the sexes and where men and women seldom discuss sexuality. Women also keep men out of the matter" (p. 11). In noting that a midwife figure usually carries out the operation, Boddy (1989) notes that "men are completely excluded" (p. 84). So completely excluded are men that Greer (1999) concludes from her own non-formal fieldwork in Africa that most men don't even know whether or not the women within their own families have undergone any FGMo procedure. If this is as much indifference as exclusion, it's but another measure of the complete absence of any 'male control'.

It is not merely that women perform FGMo, then, but that they make the *decision* that FGMo should be carried out, and they also *exclude men*. Tellingly, it is not the men but the women themselves who *support* FGMo ; and zealously so (e.g., Boddy, 1989, 1998). There is virtually no fieldworker who doesn't at least acknowledge this. The female peer group regards the operation as a mark of positive status, and girls who have not yet had it are sometimes mocked, teased, and derogated by their female peers (Lightfoot-Klein, 1989). Priya (2007) concludes "it is much more difficult to convince the women to give it up, than to convince the men" (p189). Ali (2012) complains of "the cultural resistance of women, more than men" to rejecting FGMo. In a 2007 UNFPA report, it's stated that "paradoxically it is Maasai women, more than men, who have insisted on keeping the tradition of FGM/C alive ... most men, once they

understand what the practice entails, are horrified by it and oppose it … in their extra-marital relations they prefer uncircumcised women from other communities". Formal surveys have been conducted across several countries, confirming that smaller proportions of men than women support FGMo (Population Council, 1999; Population Reference Bureau, 2001). Even in countries where concerted campaigning to dissuade women has already led to a major shift away from supporting FGMo by women, it's still not amongst women that opposition is strongest. Women lag behind men in this regard. Lindner, in her own survey, finds 79% of all male participants do not support FGMo, which is significantly more than the 67% of women, despite male attitudes not being targetted in campaigns. Men also actively object. Several papers reviewed by Hicks (1996) detailed men's attempts to persuade women to substitute less radical forms of FGMo, but this is always thwarted by women; and even fathers objecting to their daughters being subjected to procedures are overruled (Lightfoot-Klein, 1989).

A case study providing an in-the-round illuminating picture has been made by Dellenborg (2004), of an in-depth project among the Jola in Senegal. To briefly summarise: here, FGMo was only recently introduced (fifty years ago), mainly by young women, who, as do young women today, viewed excision as crucial to a female collective identity: a female secret society in which unmarried young women and childless married women live most of their social lives, and they feel empowers them to fully become female adults. The very few young women / teenage girls who had doubts rarely expressed them even to the investigator, an outsider; and never to the older women in their families. Some young and middle-aged men have joined together against what they see as an imported tradition ruining women's health, fecundity, and, in particular, sexual desire – men preferring to marry uncircumcised women, whom they assume will take fuller pleasure in sex, and they describe as more 'tasty'. But the mens' opposition has met fierce resistance from their married daughters, sisters and wives, as well as from now older women earlier adopters of FGMo, who are its chief defenders. Most men, though, would not express their critique in public; its being considered indiscreet and shameful for a man to talk of 'women's matters'. Older women ridicule the male detractors as childish, irresponsible, and only thinking of sex. The very few women who did have doubts could not say why; just that it was 'not good'. Sexual control is not mentioned either as a reason for women to be excised or a result of it. People were not concerned with women's chastity or virginity-- traditionally, the only taboo was reproduction out of wedlock (such babies usually were killed at birth). Female sexuality was

not seen as a problem.

From this account it is even clearer that a 'male control' understanding of FGMo cannot be sustained, and that the phenomenon is profoundly female intra-sexual. The odd aspect is the apparent loss of any understanding of the function of the procedure just as it has come to occupy such a central place in local female sociality: that the women don't register – or pointedly decline to register – the reduced sexual sensitivity caused by FGMo. Rather, though, this may be more of a key than a mystery. Dellenborg supplies a pointed anecdote: about the reaction of some Somalian women on a trip to Europe to a mistaken title of 'mutilated femininity' instead of 'female genital mutilation'.[2] They angrily protested that merely their genitals had been 'mutilated', not their femininity. This indicates a starkly different cultural perspective on sexuality that may be widely shared by women across African traditional or non-developed societies. It might be thought that perhaps it can be understood in part in the light of the notion that female orgasm is more a brain than a genital mechanism, but so is all orgasm, both male and female; and the contrast with males seems to be in the different nature of the tactile sexual stimulation than in brain mechanisms (Georgiadis et al, 2009). That the Senegalese Jola women here appear to view sex-organ mechanics as subsumed within a much wider, deeper sensibility of womanhood that is not only whole-body/mind but profoundly collective, seemingly with a spiritual dimension, would be consonant with religion hypothesised as being based in helping to ensure 'paternity certainty' (Strassmann et al, 2012). Alternatively, it may be more the case that these MGMo women are rendering more psychologically salient the human female reality of being highly co-operative, if not to the extent of humans being a 'cooperative breeding' species, then in women's profound, protracted mutual child-caring evident in all traditional cultures. To a traditional African mindset, a European feminist focus on expressing one's own sexual being as in essence mere clitoral stimulation, appears to be viewed as silly, vulgar, aberrant extreme individuality.

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[2] The expression *genital modification* is here used in preference to the pejorative *mutilation* or still slightly loaded *cutting*, in accord with an emerging scientific convention to resist what had become usual inappropriate moral / ideological imposition into what should be objective study.

The most striking aspect of FGMo in its variable traditional manifestation is the absence of recorded evidence from interviewees in surveys within societies where FGMo occurs, that the procedure is in any way male imposition rather than female initiative. What makes this particularly remarkable is that it's notwithstanding the feminist-inspired interventions to try to eradicate FGMo. Many investigators are part of these political initiatives, and, having the required feminist or extreme-feminist mindsets, many would arrive in Africa with the expectation that they would be obtaining data revealing male imposition of FGMo. Such data would be expected to be contaminated with the researchers' own confirmation bias to record victimisation at the hands of males. Yet survey data re FGMo indicating any sort of male coercion appears to be non-existent. It is only from outside these communities – outside the under-developed world – that it is taken to be axiomatic that apex males must be the dominant or controlling party in all matters male-female. Men are assumed to be behind FGMo by extension from them being considered to be generally 'in charge' of society as a whole; but this itself is an ideological construct not congruent with human sociality, consisting as it does of essentially sex-separate sociality evident even from toddler age (Fabes, Martin & Hanish, 2004), with the male sociality of dominance / prestige hierarchy not impinging on females given that dominance hierarchy is an intra- and not *inter*-sexual phenomenon (Moxon, 2016) – indeed, dominance hierarchy is found to be male-specific (Van den Berg, Lamballais & Kushner, 2015). Males are not 'in charge' even within their own pair bonds (Vogel, 2007; Coleman & Straus, 1986; Bates, Graham-Kevan & Archer, 2014).

With the examination above of FGMo in all its facets revealing it to be comprehensively a female intra-sexual phenomenon, it still may be thought that it is merely its second-order frequency-dependent manifestation; in other words, that it's the *maintenance* of the phenomenon which is intra-sexual, with the origin after all being in 'male control'. This would appear to be suggested if FGMo, as in the case of the two other 'female cloistering' phenomena of face/body veiling and Chinese foot-binding, had disseminated down through the rest of society from a beginning in nobility. This is taken to be as reasonable an hypothesis as any other (Mackie & LeJeune, 2009), but that's as weak a position as could be posited. It remains non-evidenced conjecture, as Mackie & LeJeune concede. By contrast, foot-binding is well-evidenced to have "spread from the Imperial palace, to court circles, to the larger upper classes, and then to the middle and lower classes" (p1001) (Mackie, 1996). Similarly, veiling in Middle-Eastern ancient

empires is documented to have been restricted to elite, married, 'free' (not slave) women (Khairunessa, 2013). It is not unreasonable, therefore, to assume FGMo developed according to a not dissimilar pattern, but this does not help a 'male control' model.

The parallel with foot-binding and face/body veiling is apposite, but for the very reason that all indications are of these phenomena being even more clearly female intra-sexual and not male-imposed. Veiling in Mesopotamia and Persia was so popular among women that it had to be forbidden by law to poor and single women, prostitutes and slaves (Khairunessa, 2013), with the laws backed up by punishments. In Assyria, veiled servants and prostitutes could have their garments confiscated, be given fifty blows and tar poured over them (Kinias, 2010). Laws required the reporting of women who should not be veiling, and that serious punishments (imprisonment, mutilation or public flogging) were introduced even for this (Nemet-Nejat, 1998), is good indication of men feeling decidedly non-involved and unconcerned with the practise. For such extreme measures to be warranted strongly suggests that men persistently failed to report women for these breaches.

Foot-binding in China is the more recent of the three 'cloistering' modes, and emerging within the bureaucratic ancient Chinese state is well-documented, so is the least opaque. Women bound their own and their daughters' feet (Ko, 2008). The 'matriarchy' from both families of a couple were behind it, but specifically the prospective mother-in-law was responsible for marriage selection requiring foot-bound discipline (Blake, 1994). The practice "produced permanent bonding with (their) mother(s) and female ancestors" (Ping, 2000). So taken with it were women that through the ages repeated attempts at banning by emperors failed and were reversed (Levy, 1992). From the many accounts of foot-binding (including all of the above-cited), it's clear that acquiring a pair-bond partner – necessarily competing with other women in this regard – was the root of the custom. Mothers, family 'matriarchs', female village elders and 'professional' specialist practitioners were behind and to the fore regarding all aspects of the custom: introducing girls to it, carrying out the procedures and monitoring that it's adhered to. There was the fear of not being able to find a husband and outcasting as lewd anyone who did not undergo the practice: give-aways as to the basis of the practise, as with FGMo and veiling.

There is anyway little in FGMo serving the purposes of an alpha male – just as there isn't in

the case of foot-binding or face/body veiling. The alpha male is at little or no risk of being cuckolded, because his wife / wives can have no use as extra-pair sex partners for other locally available males, given that they would not be of still higher genetic quality than the male to which they're already permanently partnered. As cited above, in line with theory, the empirical evidence is that human females 'up' their criteria in choosing extra-pair over pair-bond partners. In any case (again, as mentioned above), engaging in extra-pair sex would not be worth the risk for a wife of being deserted by the highest mate-value male she already has as a pair-bond partner. What is more, the alpha male is of all males the one who would be able, potentially, to acquire any female as an extra-pair sex partner, and is likely to choose an unmarried younger (maximally fertile) female from a lower social stratum over the older, likely pregnant, same-stratum females to whom the males nearer to him in the hierarchy are pair-bonded. Not least are other considerations of avoiding destabilising the uppermost portion of the hierarchy that might lead to bids to oust him as leader. The alpha is on the lookout not only for extra-pair sex but also additional wives (in formally polygynous societies) or 'mistresses' plus serial wives (where polygyny is more clandestine); and again he would prefer young (maximally fertile) women – not that older still-attractive females anyway are available to pair-bond. Unlike females 'marrying up', males correspondingly tend to 'marry down'. [To clarify the meaning of 'marrying up': a highly physically attractive (high fertility, high mate-value) female within what in male terms is a lower social stratum (that is, the social stratum to which her father and male relatives belong, and in which she was raised) can realistically seek high-status males (males from a higher social stratum) as prospective pair-bond partners in assortative mating, given that all concerned share high mate values (the female fertility and male status measures are at similar levels, and, therefore, are equivalent).]

The availability to the alpha male of young females potentially for extra-pair sex is tempered by usual female reticence and procrastination in the face of considerable potential costs, and the generic reduction in female sexual receptivity that FGMo produces can only compound these obstacles. This can be anything but welcome to the alpha. Likewise the lessened sexual receptivity in his own wives. Still further, with females being unlike males in not functioning as a 'genetic filter', and with their mate value being in terms of the fairly narrow set of criteria that constitute fertility, then the differences in quality between females (in comparison to that between males) is not that great, rendering those above a reasonable

threshold of fertility to a considerable extent effectively inter-changeable. As an alpha male anyway will easily be able to obtain multiple pair-bond partners (in whatever form) from a considerable pool of females, then with the combination of near sure loss in competition to the alpha and the large supply of what is being competed for; there is little basis for intense male intra-sexual competition for wives at this level. It would be expected, therefore, that with the interests of the alpha male not being served, that neither he nor any of the males in the group, whom he out-ranks and controls, are involved in FGMo, just as evidence confirms.

FGMo presumably confers an advantage not to males, then, but to individual females. It might be imagined that high-fertility females who become the wives of apex males would require other women to undergo FGMo to render them less likely to lure away their husbands. Only weak motivation could pertain here, though, given that for wives any extra-pair sex by their husbands is not a major problem. There is no possibility of the pair-bond being vulnerable to the importation of genes from a third party to produce offspring. The husband cannot be impregnated by an extra-pair sex partner, then to be unavailable for reproduction for several years, as would be the distinct possibility should a wife engage in similar activity. This is a key reason why wives are minded and tend to stand by even serially unfaithful husbands, whereas husbands are minded and tend to desert wives at the first instance of unfaithfulness. [This appears to be a recently taboo area of research, rendering it difficult to find and cite any study of what is well attested anecdotally, but abundant research has unearthed an indirect measure: unlike men, women are less concerned with purely sexual than with emotional betrayal (eg, Sagarin et al, 2012), reflecting a relatively relaxed attitude to a partner's extra-pair sex; reserving concern for the likelihood of being abandoned. This is in complete contrast to men, who are anxious not to be cuckolded, and it would seem that as long as they feel assured that no sex is entailed, then husbands may not be worried about a wife's even profound platonic relationship with another male.]

Men rarely wish to convert an extra-pair sex partner into a wife, because, being already in possession of a wife or wives, extra-pair sex fulfils the extremely powerful male motivation for sex with partners in numbers; this being an obvious evolved predilection serving to profoundly increase potential fertility (overall reproductive outcome). For this reason too, male extra-pair sex typically is anyway merely fleeting and serial. Any residual threat to the integrity of the pair-

bond is minimised by the usually clandestine nature of assignations. All in all, far from leading to the male dissolving the pair-bond, extra-pair sex by the male partner is often considered to act as a safety valve, in providing an alternative and different form of sexual outlet, or partners younger and more sexually active than an ageing spouse, taking the pressure off the pair-bond, leaving the male less inclined to seek its replacement. Paradoxically, male extra-pair sex in effect can assist in maintaining the pair-bond it circumvents. All in all, then, a woman does not have much to fear from her partner's extra-pair sex, and, consequently, doesn't have much to fear either from rival females poaching her man.

In the absence of an apparent individual benefit to women of their reducing their propensity to engage in extra-pair sex, it might be imagined that there is a collective benefit if all or at least a large proportion of females undergo FGMo, in that an overall restriction in the availability of extra-pair sex might serve to increase generically the value to males of pair-bonding. Considering, however, that with the raised criteria females require, then extra-pair sex effectively is unavailable to most males; still further restricting its availability would not seem to be an effective way to bolster the value of pair-bonding – particularly in the light of the 'safety valve' argument that extra-pair sex indirectly bolsters pair-bonding. A putative collective advantage also would have to outweigh the undermining of pair-bonding that FGMo produces through the general reduction in female sexual responsiveness being detrimental to sexual satisfaction of both wives and their husbands.

There is instead a benefit to females, individually, of FGMo, that would be obvious but for feminist or feminism-derived assumption of male imposition. This is in the use females have for FGMo not to try to maintain a pair-bond *but to obtain one*. Rather than intra-sexual competition between wives and women trying to lure away husbands with extra-pair sex, women here engage in another form of intra-sexual competition: to appeal to and hopefully secure as a pair-bond partner a high mate-value (high genetic quality) male in the first place. Even a relatively high mate-value male (albeit not the alpha male) faces the potential problem of his pair-bond partner being in effect protractedly off-line, as it were, with respect to reproduction *employing his own genes* (rather than those of a male interloper); if she were to be impregnated in extra-pair sex, to then gestate for nine months, before bearing a child and lactating – which, ancestrally, would have been for several years. The issue here is usually held to be 'paternity certainty', but this is

predicated on male investment, and human males did not evolve to significantly invest in offspring (Chapais, 2008, 2011; Geary & Bailey, 2011; Winking, 2006). The problem instead is the opportunity cost of being tied to a female whom (from a cuckolded husband's perspective) is non-reproducing for several years. This is not a great issue ahead of marriage, because the intensity of courtship displaces any interest the female otherwise might have in extra-pair sex (which anyway could not be clandestine with the male being so closely attentive and able to close-monitor), and any prior impregnation quickly would become apparent not long into the courtship period – even well before visible pregnancy, in that males implicitly assess female attractiveness in terms of a high waist depth to waist circumference ratio, which indicates non-pregnancy (Rilling et al, 2009).

The evolutionary logic, therefore, is not that a male seeks a virgin bride per se. Virginity is a poor proxy, at best highly indirect indicator of being unreceptive to and unlikely to initiate extra-pair sex; albeit it is the best concrete evidence, and it has clear, indeed powerful symbolic value. The problem for the male suitor is how to gauge the future likely behaviour of his prospective pair-bond partner after that bond has been cemented. Not only is non-pregnancy anyway assured by courtship ahead of an actual sexual relationship, but virginity is evidence only of never having had sex. It is not evidence of the likely sort of behaviour engaged in once regular sex commences – that is, whether or not there is any predilection for or resistance to having sex additional to that within a pair-bond. The male needs to look out for indications of this if he is to try to 'future proof' against the possibility of being cuckolded, but there is obvious difficulty in how a male may go about detecting not an observable sign of past behaviour or even behaviour as it is current, but a mere attitude, and how this might or might not change over a considerable period in the future, after a significant change (embarking on sexual activity) that itself may trigger other changes in turn. Females can key into and pre-empt this male concern by formalising an 'honest signal' in this regard. And they will be exceptionally keen to do so in the case of apex males, in trying to obtain such a male as a pair-bond partner (to reiterate: pair-bonding evolved in the female interest – in effect allowing a forward projection in time of peak fertility, as well as to keep away social and sexual attention of low mate-value males) (Moxon, 2013).

The males who have come first and nearly so – the beta and gamma (and delta, epsilon,

etc) as well as the alpha, as it were – in protracted competition to display genetic quality are indisputably the males with the very highest mate value, and will be the subject of determined efforts by females to secure them as pair-bond partners. With the entire basis of social system being to deal with the accumulation of gene replication error by a 'genetic filtration' / 'mutational cleansing' mechanism where males compete to be the formally appointed reservoir of the most uncontaminated genetic material; then a 'top dog' male or a small apex cohort of males would be the clear preference of all of the females within the local reproductive group. It would be possible and, indeed, in important respects desirable if all of the females could be impregnated (and repeatedly) by this / these few males. There are not really any corresponding females. Not only, in any case, can there be no female prodigious reproducer – all women are limited to a very slow rate of serial birth of offspring, ancestrally limited still more by several years of lactation – but the female mate-value criteria of fertility is a well-shared and fairly narrow measure, with not very many possible indicators – fairly obviously, youth (given that eggs are stored and decay), facial and bodily symmetry (revealing health and developmental stability) and a low waist-depth-to-waist-circumference ratio (indicating non-pregnancy) -- over which it is hard to contest in order to increase it. The upshot (as argued above) is that compared to males, females above a threshold that itself can be nothing like as discriminating as in the case of males, are rather interchangeable. The mating game at what in male terms is the very apex of society, is, then, an inversion of the usual scenario of males competing fiercely for females. Here, instead, many females are competing fiercely for a few particular males. At the level of nobility (in a stratified society; just the group leader(s) in a simple sub-tribal community), in important ways an individual female has far more use for a particular male than the other way round. In consequence, even a highly attractive female would have very good use for anything which could give her an edge over her rivals in finding an apex pair-bond partner.

The direct intervention in the form of FGMo to conspicuously advertise marked diminution in sexual sensitivity achieves this neatly. Within the context of female mediated arranged marriage, the 'cut' female can offer herself as such to a high-mate-value male, with the guarantee from the marriage arrangers that the procedure indeed has been performed (and which anyway is a simple physical check for the male to confirm). This initiative provides a highly significant competitive advantage to the female who has adopted the 'honest signal', obliging her rivals to follow suit. On a conceptualisation of societies as being 'stratified'

according to different levels of male hierarchy – as are all human societies, including supposedly egalitarian hunter-gatherer groups (hierarchy being indirectly present but not to the fore when it is stable) – then cohorts of females corresponding in mate value through their fertility to males of equivalent mate value in terms of genetic quality, would need to adopt FGMo in imitation of the cohort immediately 'above' them in order to be able to 'marry up' (see above), as women usually if not always try to do and often achieve. This is just what is thought to have happened historically with FGMo, though evidence is lacking. In some societies, where the practise does not become ubiquitous, or once was so but then slips back; an advantage of FGMo to individual females would remain. However, once the practise becomes a fixed universal one, then the advantage to individuals would disappear. Yet the procedure still would be maintained, because social sanction for non-compliance would be a self-reinforcing phenomenon. The serious costs to reproductive potential that would be incurred strongly militate against any individual female breaking ranks, no matter how flimsy are complementary or substitute justifications for FGMo that may emerge to try to salve 'cognitive dissonance' over the mismatch between the severity of the practise and the paucity of any apparent advantage bestowed. It is easy to see how the original function of FGMo is lost from collective memory. Only if, unusually, a significant minority of 'un-cut' women quickly emerge, for men to realise they could obtain more sexually receptive pair-bond partners if they learn to distinguish between non- FGMo and FGMo individuals, could the benefits of being non- FGMo then start to outweigh the costs of non-conformity. [However, recent research shows it's more complex than a battle between two norms of FGMo and non-FGMo. Attitudes towards FGMo evidently are heterogeneous, indicating that positive reasons for adherence to FGMo account for its persistence, and not just conformity to avoid sanction (Efferson et al, 2015). As a result, there is no coordination across communities whereby a non- FGMo norm can easily emerge, rendering interventions to try to eradicate FGMo still more difficult.]

The upshot is that whereas sub-alpha apex males likely would not be in a position to impose FGMo, even if they had sufficient motivation and also could figure out what would work for them, to then devise FGMo as a practical measure; women *are* both motivated and able to do so. A 'male control' form of FGMo presumably would never arise given that the alpha male (or a cohort of male leaders) could stymie any such attempt by lowlier males, but women constitute a completely separate sociality over which the alpha male (or a cohort of male leaders) has no

jurisdiction. FGMo is a female ploy outside of and in effect circumventing the architecture of male sociality to provide a lure of something for which males hadn't realised they had a use and could devise; so as to obtain the much-prized service of pair-bonding by a high genetic-quality male.

The overall picture of genital modification, whether in men or (and especially) in women, is remarkably different from what commonly has been assumed – commonly but not universally, given some feminists (and not only Germaine Greer) have recognised that FGMo is a 'difficult' issue. Most aspects oFGMo, whether within- or between-sex, do not conform to standard expectations. Far from there being anything akin to 'oppression' by men, the only locus of what could be deemed 'male control' is *of* men; and in place of a feminist model there is a completely female same-sex self-grown phenomenon, that notwithstanding any self-inflicted harm entailed, arose and developed as a real asset to women in their narrow locus of mutual competition. This is far from the supposed internalised male 'oppression' supposed by feminist 'analysis', predicated on the assumption that pair-bonding is an imposition on women they agree to in exchange for resources, when actually human pair-bonding did not arise from a need for males to provision females, and far from itself being male imposition, evolved in female interest, as explained above. [Indeed, it is the ideological blindness to this – the assumption that pair-bonding is itself male imposition – that is a major root of the long-standing failure to comprehend FGMo.] The notion of who are 'victims' in GMo has inverted, and inasmuch, in light of this, there are those who wish genuinely to assist 'under-developed' societies in ridding them of FGMo (and MGMo) instead of intervention that is really a conduit to impose extreme ideology; then a proper understanding of the phenomenon is essential. Otherwise, as currently, a principal effect often will be a counter-productive refusal by women to abandon the practise, instead utilising it to maintain a sense of group identity, by expressing a renewed vigour in adhering to the custom (Esho, Van Wolputte & Enzlin, 2011) -- an effect so strong that concerted programmes to eradicate FGMo in some places has achieved the very opposite. A problem here is that feminist ideologues have a vested interest in FGMo persisting, because the ideology requires supposed female victimisation for its own validation and for it to continue and to attract funding.

The impact on MGMo of its proper understanding may be particularly profound. In place

of the continuing unjustified resistance to consider MGMo as being in any way parallel to FGMo, 'circumcision' may come to be seen as the more major issue, reflecting that it is this form oFGMo, and not FGMo, which at root is an imposition. Given the enormous disparity in the prevalence of the practices in developed societies (especially in the USA) – where FGMo may be present to a degree in some migrant enclaves but non-existent in host populations – then MGMo is set to rise up the agenda as concern with FGMo may fatigue. The already steep decline in neonatal 'circumcision' in the USA may accelerate with dissemination of the insights into its function, leaving MGMo (outside the Jewish sub-population) to become a purely elective adult practise with few adherents. In turn, an appreciation that GMo in both sexes actually is an *intra*-sexual phenomenon with no inter-sexual 'oppressive' dynamic, and that it's explicable in biological more than merely cultural terms; contributes to a gathering general radical 'bottom-up' reappraisal of human sociality and the sexes.

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