

Is it possible to change sex?



[Posted to Medium 14th February 2019. Edited 15th of February 2019, to correct a mistake in the discussion of the property cluster views].

In 2018, radical and gender critical feminists in the UK began wearing t-shirts, distributing stickers, and sponsoring billboards, all bearing the message ‘woman: noun: adult human female’. This insistence upon the dictionary definition of the word ‘woman’ was a reaction to a proposal to reform the UK’s Gender Recognition Act and make legal sex a matter of statutory declaration. ‘Woman’, these campaigners asserted, is just not something that a male person can be, and certainly not on the basis of his mere say-so. In response to this campaign, transwomen began [posting](#)[1] images of themselves on Twitter using the hashtag #adulthumanfemale, insisting that their status as transwomen made them not only women – as the popular slogan (‘trans women are women!’) has it – but also made them female. Things have not gotten better since then, with [some transwomen](#)[2] claiming not only to be female, [but to be lesbians](#)[3], too. One may be reminded, at this point, of the well-known exchange between Humpty Dumpty and Alice in *Through the Looking Glass*:

“When I use a word,” Humpty Dumpty said, in rather a scornful tone, “it means just what I choose it to mean – neither more nor less.” “The question is,” said Alice, “whether you can make words mean so many different things.” “The question is,” said Humpty Dumpty, “which is to be master – that’s all.” – Lewis Carroll ([1872] 1934), p. 205.

The Humpties in the ongoing gender wars are trans rights activists. The Alices are radical and gender critical feminists, and many other people besides. The Humpties don’t seem too bothered by the fact that they’re using terms like ‘sex’, ‘gender’, ‘man’, ‘woman’, ‘male’, ‘female’, ‘gay’, ‘lesbian’, ‘bisexual’, and ‘straight’ in completely different, and sometimes contradictory, ways to the rest of the language community. It may cause confusion, sure; but like Humpty Dumpty in the the original dialogue, they hope to become master over meaning.

Is there anything that trans rights activists could be getting right when they insist that transwomen are female, or more generally, assert that it is possible for a person to change sex? Or is this all just so much nonsense?

When philosophers give definitions for things, there are two ways they usually try to do it. One is to propose a necessary condition, for example ‘a feminist is someone who works for female liberation’. On this definition, someone only counts as a feminist if they work for female liberation, and all feminists have that in common. Another way to give a definition, though, to propose a ‘property cluster’, which is a set of non-necessary conditions some number of which are taken to be sufficient. For example, someone is a feminist if they satisfy at least one of the following: work for female liberation, work for female equality with males, believe that all human people are equal, or work against intersectional injustice ([where at least one of the intersections is sex](#))[4]. On such a view, four women could all count as feminists and yet have no property in common.

In what follows I'll consider two 'necessary condition' views and two 'property cluster' views, which understand sex on the basis of a necessary condition, and two views which understand sex on the basis of having a sufficient set of non-necessary properties. I'll argue that not all of these theories are satisfactory, and that those that are do not support transgender rights activists' claims that it is possible for a person to change sex.

If it's not true that a person can change sex, might there still be good reason to assert the untruth? Perhaps; if asserting it would bring about some great good. In the final section of this piece, I weigh up the long-standing shared understanding of sex (presented in section I) against the newer meaning that trans activists propose (presented in section II).

A note before we get into it: because there's so much variation within the group of trans people, for each candidate definition of sex I'll talk about three distinct sub-groups. These are i) trans people who have had sex reassignment surgery, ii) trans people who have not had sex reassignment surgery but who are engaged in cross-sex hormone therapy, and iii) trans people who have not had sex reassignment surgery and are not engaged in cross-sex hormone therapy. It might seem obvious that the latter can't have changed sex, but because there are a good number of people out there who maintain that they have, it's worth including them in the discussion as we go through.

I. Necessary condition: large and small gametes

Whenever you chat to a biologist about what they understand 'sex' to be – and I have chatted to a few – they tend to talk about [large and small gametes](#)[5]. Human sexual reproduction proceeds through the combination of sex cells of two different sizes (this is known as anisogamy): small gametes (sperm) and large gametes (ova). Males produce sperm, and females produce eggs. Almost no definitions that we give in philosophy have a single necessary condition, but sex is one of the few instances where such a definition works well. If a human individual produces sperm then he's male, and if a human individual produces ova then she's female. This is a definition that researchers in many different academic disciplines take as foundational to their work. Of course the definition doesn't tell us anything about the individual's gender identity, but we're not talking about gender identity, we're talking about sex.

This definition is not hospitable to the claims made by trans rights activists that transwomen are female. Transwomen who have had sex reassignment surgery will have lost the ability to produce small gametes, because the surgical procedure removes their penis and testicles and replaces them with a 'neo-vagina'. But they will not gain the ability to produce large gametes, because sex reassignment surgery cannot give them ovaries. Only fallacious reasoning from 'not male' to 'therefore female' would end at the conclusion that sex reassignment surgery makes a male person female. Even if we wanted to accept the 'not male' part of this reasoning, that provides much more justification for establishing a third sex category – 'produces neither sperm nor ova' – than it does for saying that such people are female, given the definition of female as producers of large gametes.

But it's far from clear that we should accept the 'not male' part of the reasoning. It's not as though every male person is such that he actually produces sperm. The best way to understand the 'sperm or ova' binary is that it's true all going well. Of course an individual man could end up with testicular cancer and have to have his testicles removed. Does that mean he's no longer male? Of course not. He's the kind of individual who, all going well, produces sperm. He's not the kind of individual who, all going well, produces ova. There's no reason why we should treat the person who loses the capacity to produce sperm involuntarily any differently from the person who loses the capacity to produce sperm voluntarily.

If transwomen who've had sex reassignment surgery aren't female on this definition, then a fortiori ('from the stronger argument') trans women without sex reassignment surgery aren't female on this definition. Hormone therapy [has been claimed to](#)[6] change the phenomenal quality of male sexual function, but it doesn't change the fact that the male person produces sperm, not ova. And gender identity alone hasn't a hope in hell of changing anything about gamete production.

In summary, on the *necessary condition: large and small gametes* definition of sex, it is false that transwomen are female.

II. Necessary condition: gender identity

Advocates of the claim that ‘transwomen are female’ may respond to the above indignantly: ‘we don’t think the right view of sex is gamete production!’ Fine, okay, all the biologists are wrong, and you, entirely motivated by political gain, are right. Give me your best definition, then.

From what I’ve read, it’s clear that the best – and indeed, the only not entirely ridiculous (e.g. claims about ladybrains) – definition of sex trans rights activists have to offer is one based on gender identity. Now it might seem obvious that gender identity can’t change sex, but if that’s your objection, you’re not playing the game, because we’re not saying that sex is one thing and gender identity is another, we’re proposing gender identity as the definition of sex. How is this supposed to work, you ask? Well, there are differences between people, yes, like that some people have penises and some people have vulvas, and that some people are on average taller and stronger and hairier than others, but these differences are no more significant than other things like attractiveness, or eye colour, or body weight, or skin colour, or hair texture. No such differences are the basis of meaningful categorization of people.

The only difference which is a basis of meaningful categorization of people is gender identity. This is the strongly-held conviction that a person has about what her gender is. Transwomen have the strong conviction that they are women, and transmen have the strong conviction that they are men. But that alone doesn’t get us to a definition of sex, because a proponent of the necessary condition: large and small gametes view could simply assert the sex/gender distinction and say that theirs is a definition of sex while this is a definition of gender. So we need also to deny the sex/gender distinction. One way to do that is to note that woman/female or man/male are used synonymously in everyday life, and to conclude that what we thought was sex just is gender (an alternative conclusion is that [what we thought was gender just is sex](#))[7].

Again we have a very simple definition of sex with a single necessary condition, but instead of the condition being the one most hospitable to radical and gender critical feminists’ thinking in the gender wars, this is the condition most hospitable to trans rights activists’ thinking in the gender wars. On this view, transwomen are female, because what it is to be female just is to be someone with the gender identity ‘woman’, regardless of one’s physical features.

One thing that’s good about this condition is that it unifies the group of trans women – all will have a ‘woman’ gender identity, whether or not they also take hormones, or have had sex reassignment surgery.

One problem with this definition is that it acts like we’re in a utopia long before we actually are. Perhaps one day, whether you’re a person who produces sperm or a person who produces ova will be just another difference between people that doesn’t make much of a difference, like eye colour. But at this time, being a person who produces ova is a major determinant in how people’s lives go, all around the world. Ova-producing people* (females/women) are the majority of human trafficking victims. Female people are sexually assaulted at much higher rates than male people. Female people do the bulk of domestic labour all around the world. Female people are underrepresented in highly-paid jobs, and in politics. (And so on, and so on). Replacing ‘ova-producer’ with ‘has the gender identity ‘woman’’ in our understanding of sex does nothing but displace this important difference. This is at best inconvenient, because we’d need to rapidly come up with a new term for referring to that difference (and change the wording of all the law that was designed to protect it), and at worst unjust, because it erases a significant political difference that affects literally half the population of the whole world.

*[Just to be clear, I’m not calling women ‘ova-producers’ in the same spirit as terms like ‘menstruators’ or ‘cervix-havers’, I’m simply trying to avoid ambiguity as I move between different candidate

definitions of sex. It would be begging the question to keep using ‘sex’ to refer to the large and small gametes definition while attempting to consider whether it could instead mean gender identity).

A further problem is that ‘sex’ is a concept that should neatly categorise people, and it’s not clear that gender identity does this. Many ova-producing people do not conform to gender expectations, such as the expectation of heterosexuality, or the expectation of feminine behaviour or presentation. At least some, if not all, of these ova-producing people may deny that they have any gender identity at all, or deny that if they do it’s ‘woman’. Many of these people use the term ‘woman’ synonymously with the term ‘female’, and by that mean something like the physical definitions in I or III (below). If it turns out that [not everyone has a gender identity](#)[8], then it will turn out that not everyone has a sex, on this definition. And that would be an odd result.

In summary, on the necessary condition: gender identity definition of sex, it’s true that transwomen are female, but it’s not necessarily true that women are female. Because it fails to classify everyone, and because it’s not clear *why* we should reject the sex/gender distinction and be forced to go one way or the other on their collapse, this is an unsatisfactory theory of sex.

III. Property cluster: primary sex characteristics

Okay, let’s move onto a different kind of definition. Instead of trying to pin down a necessary condition, perhaps we can find a definition more hospitable to the trans rights activists’ claim by thinking in terms of a property cluster instead. One way to give a property cluster view of sex is by focusing on primary sex characteristics. There are four primary sex characteristics, and these are: external genitalia; internal genitalia; gonads; and chromosomes. A typical male person will have a penis and scrotum (external genitalia), urethra, prostate, and seminal vesicles (internal genitalia), testes (gonads), and XY chromosomes. A typical female person will have a clitoris and vulva (external genitalia), vagina, uterus and fallopian tubes (internal genitalia), ovaries (gonads), and XX chromosomes. Most people will have all four female-typical or all four male-typical properties.

One way to be generous about a definition of sex is to weight all the properties equally, and say that what it takes to be male or female is simply to have a majority of the properties from one set. So someone who has, say, two properties from the female-typical set and three properties from the male-typical set will count as male. (A more detailed defence of how to weight the properties and how many properties are sufficient would be needed before accepting this view; running it with different weightings and different thresholds is likely to change the results).

This is where the distinctions I made earlier between different transwomen become relevant. A person born male who is trans, but who hasn’t had sex reassignment surgery (whether or not she also doesn’t take female hormones, like [Alex Drummond](#)[9] or [Lily Madigan](#)[10]) has all four male primary sex characteristics. There is just no way to count them as anything other than male on the property cluster view.

How about sex reassignment surgery? A transwoman who transitions ‘surgically’ – by having sex reassignment surgery – has her external genitalia and gonads removed and replaced with a constructed vulva and vagina. So she’ll have two male-typical properties (internal genitalia and XY chromosomes) out of four, and two female-typical properties (external genitalia and internal genitalia) out of four. (You’ll note that there’s an overlap in the properties; that’s because male-to-female sex reassignment doesn’t tend to remove male internal genitalia, even while it adds female internal genitalia). The transwoman does not count as female on this majority property cluster view; the result is indeterminate.

The upshot of this view seems to be that transwomen who don’t transition either medically or surgically are male; transwomen who transition medically but not surgically are male; and transwomen who transition both medically and surgically are neither male nor female.

There's something appealing about the way this definition draws the line, because only people who are very serious about transition – serious enough to have major surgery – will count as having changed sex, at least in the sense of becoming 'not male' (even though, as mentioned above, this doesn't entail that they've become female). And one thing we should definitely want in giving recognition to a change of sex either in law or socially is a signal of very serious commitment. (Of course, this won't avoid all the problems that radical and gender critical feminists have raised with accepting the claim that transwomen really are women, or really are female, such as the effects of male socialization on attitudes and behaviour towards women and girls. It looks like a better argument for a third sex category and third gender spaces than an argument for transwomen's inclusion *as women*).

There is one major problem with this definition, however, and that is that it treats transwomen and transmen asymmetrically. While transwomen who have surgery tend to have 'bottom' surgery (removing male external genitalia and gonads), transmen who have surgery tend to have 'top' surgery, removing only their breasts. But breasts are a secondary, not a primary, sex characteristic. An court in Western Australia – a state that requires sex reassignment surgery for a legal change of sex – [granted a transman a change of sex](#)[11] on the basis of him having undergone a double mastectomy, despite having intact female internal and external genitalia, and gonads. (This is why I also consider a property cluster view that includes secondary sex characteristics in section IV). A transman who undergoes the most common type of surgery for transmen will have four out of four female-typical properties (external and internal genitalia, gonads, and chromosomes). That means the transman will be female, not male or indeterminate.

Some transmen do have 'bottom' surgery, but even those few who do tend only to have penises added. So they'll have one out of four male-typical properties (external genitalia), and four out of four female-typical properties (internal genitalia, external genitalia, gonads, and chromosomes). (There's another overlap in properties due to the location of male-typical external genitalia relative to female-typical external genitalia which makes it possible to have both).

Another type of 'bottom' surgery, *metoidioplasty*, takes a clitoris enlarged by testosterone and alters it to function as a micro-penis. We can argue about whether a modified clitoris should be classified as male external genitalia or female external genitalia, but even if we grant for the sake of argument that it's male, this keeps the male-typical properties at one out of four (external genitalia), and brings the female-typical properties down to three out of four (internal genitalia, gonads, and chromosomes). Only the most extreme series of surgeries (hysterectomy to remove the uterus, oophorectomy to remove the ovaries, vaginectomy to remove the vagina) – which virtually no transmen undergo – will get a transman below the level of having a majority of female-typical properties, such that their sex will also be indeterminate. In almost all cases, transmen remain female on the property cluster view.

Although some transwomen would probably be fine with accepting a definition that worked out well for them even though it worked out badly for transmen, I think it's clear that this asymmetry in the way the theory treats transmen in contrast to transwomen gives us a good reason to reject this version of the property cluster view. A theory of change of sex should surely treat trans people equally.

A further reason to reject it, for those transwomen and trans rights activists who are unmoved by the asymmetry, is that it's not clear whether we should be granting primary sex characteristics on the basis of form rather than function. A neo-vagina may look a lot like a vagina, but it doesn't function as a vagina does: for one, it's not self-cleaning; for another, it will 'heal' if certain measures – like keeping the vagina dilated – are not taken over a sustained post-surgery period. If all that matters is having physical features that look like external and internal genitalia, then transwomen who have had sex reassignment surgery will have those features. (In favour of this, consider that if someone becomes beautiful as a result of plastic surgery we don't go around insisting that really she's ugly). But if we also think that function matters, so that it's not just having physical features that look the part but also having physical features that function in the way those parts are meant to function, then perhaps we won't want to say that transwomen who have had sex reassignment surgery have those features after all. In favour

of this, consider that no amount of clever painting and radical mane-chopping can make a horse a zebra.) I don't claim to have resolved the 'form or function?' question here, only to have raised it as a potentially serious problem for the application of the property cluster view.

If we take the function consideration seriously and ignore the 'all going well' caveat, we'll end up back at the 'third category' possibility, because transwomen who've had sex reassignment surgery won't have sufficiently many male-typical properties to count as male, but they also won't have sufficiently many female-typical properties to count as female. If we had a third category, then sex reassignment surgery could be considered a way to move out of the female/male binary and into the third sex category.

(Some might be tempted to try to draw a parallel to intersex cases here. I don't have time to get into this, because that would involve trying to run the property cluster view for each of the different intersex variations. There's no straightforward answer, and as many people have pointed out, there's no general conclusion that can be drawn from intersex cases to support trans people's claim to change of sex. If you're interested in reading more about this, check out, Alex Byrne's excellent discussion [here](#)[12], [this recent piece](#)[13] by David Griffiths, and [this earlier reply](#)[14] to Anne Fausto-Sterling by Leonard Sax.)

In summary, on the *property cluster: primary sex characteristics* definition of sex (weighting the properties equally and taking the threshold to be a majority of properties), the sex of transwomen who've had sex reassignment surgery is indeterminate, and the sex of transwomen who haven't had sex reassignment surgery is male. The sex of almost all transmen is female (and for very few who have had the most radical surgeries, it's indeterminate). (All supposing for the sake of argument that function is not necessary/form is sufficient, and that there's no 'all going well' clause on function).

IV. Property cluster: primary and secondary sex characteristics

We can run the same argument we've just been over, but adding in secondary sex characteristics to see whether that changes anything for the property cluster view. Secondary sex characteristics are features of individuals that develop during puberty. Things already become complicated at this point because there's a question of which features to count and whether to count a different number between males and females. I'll consider the most prominent, and an equal number for each cluster.

In females, I'll include breasts; body hair (underarm and pubic); widening of hips; a change in the distribution of fat around hips, thighs, and butt; and rounder, softer facial features. In males, I'll include enlargement of the Adam's apple; broadening of shoulders and chest; growth of facial hair; growth of body hair; and increased muscle mass and strength. These do indeed seem to track the most significant features that trans people tend to try to acquire in transition, e.g. transmen tend to take testosterone and work out, which gives them facial hair and body hair, and broader chests and shoulders, and transwomen tend to take estrogen and antiandrogens (and sometimes progesterone), which reduces body hair, changes fat distribution, and encourages the growth of breasts. Some trans people have facial surgeries to make their features more like those of the other group.

Now we've increased the number of properties in the cluster from four to nine, so a majority will be five. Again, most people will have all nine male-typical or female-typical primary and secondary sex characteristics. Does this understanding of the property cluster view do a better job of vindicating the claim that trans people change sex?

Let's start with the transwoman who does not take hormones and has not had sex reassignment surgery. Nothing changes about her male physiology, so nothing changes about her status as male. So there's obviously no change of sex here.

The remaining two types of transwoman are those who have had sex reassignment surgery and take hormones, and those who have not had sex reassignment surgery but take hormones. In considering primary sex characteristics alone, transwomen who have had sex reassignment surgery were at two out

of four female-typical properties. So if they also take female hormones, which change breasts, body hair, and fat distribution, then they'll have a further three out of the further five properties, giving them a total of five out of nine female-typical properties. (Hormones don't change facial features enough, post-puberty, to make them female-typical, and hormones don't change the size of hips). So transwomen of this type count as female on this view.

What about transwomen who only take hormones? In considering primary sex characteristics alone, they were at zero out of four female-typical properties. Then in adding secondary sex characteristics, it becomes three out of five, for a total of three out of nine. So transwomen who only take hormones do not have a majority of female-typical properties, and therefore do not count as female on this view.

What about the asymmetry between transwomen and transmen that came up in discussing primary sex characteristics alone? Testosterone can't produce an Adam's apple, and it can't produce the broadening of chest and shoulders. But it will change facial hair and body hair and lead to increased muscle mass and strength. So transmen who take hormones also get three out of five for secondary sex characteristics. But this 'equality' in result for secondary sex characteristics still combines with the problem of inequality in result for primary sex characteristics. Most transmen (those who undergo top surgery and take male sex hormones) will have zero out of four male-typical primary sex characteristics and three out of five male-typical secondary sex characteristics for a total of three out of nine male-typical properties. Transmen of this type don't count as male on this definition of sex.

Those who have the most common type of 'bottom' surgery still only get to four out of nine, which is insufficient. Those who have the most radical surgeries get to five, and so will count as male. Again, the asymmetry in the way the theories treat transwomen and (most) transmen make it an unacceptable theory of sex.

In summary, on the property cluster: primary and secondary sex characteristics definition of sex, it's true that transwomen who've had sex reassignment surgery and who take female sex hormones are female, and it's false that transwomen who haven't had sex reassignment are female (whether they take female sex hormones or not). It's false that (most) transmen are male. (Again, supposing for the sake of argument that function is not necessary/form is sufficient and that there's no 'all going well' clause on function).

V. Benevolent falsehoods

The property cluster theories of sex are unsatisfactory, because they treat transwomen and transmen so differently. The gender identity version of the necessary condition theory is unsatisfactory, because it doesn't give everyone a sex, and it doesn't explain why we should reject the sex/gender distinction (or collapse sex into gender rather than *vice versa* if we do). The gamete production version of the necessary condition theory is satisfactory, but it doesn't count transwomen as female (or vindicate change of sex more generally). Overall, there is no good case to be made that transwomen are female or that change of sex is possible.

Something's being true, or there being good evidence that it's true, is the only real reason we have for *believing it*. But this may not be true of *asserting it*. Perhaps there are some cases where asserting an untruth, despite not believing it, will have very good consequences, and these are enough to outweigh the reasons not to assert it that come from its being false. Trans rights activists might agree with everything I've said here about theories of sex, and concede that in fact, there's no theory of sex that vindicates transwomen's claims to be female. Nonetheless, they might say, we should assert that transwomen are female, because this brings about important goods.

What are the goods? Well, at least in the case of transwomen who suffer from severe sex dysphoria, for whom being reminded they are male is extremely psychologically painful, asserting the untruth that transwomen are female avoids that pain. All else being equal, we have reasons to avoid pain. So if there

was nothing else to consider, this would be a good reason to assert that transwomen are female even though they're not. The question, of course, is whether there is anything else to consider.

I mentioned already that whole areas of research depend on the shared understanding of sex advanced in section I. The costs for research of overturning this shared understanding are likely to be very serious.

I also mentioned already that the sex-based oppression of women is erased by a rewriting of 'sex' to refer to something other than whether an individual is ova- or sperm-producing (at least until some other term is developed to replace it – although there's no guarantee that trans rights activists wouldn't just try to rewrite that term in turn). Women and trans people are both marginalized groups, but women are a lot larger of a group. So even if trans people are worse off than women (which there's reason to doubt), it's still unlikely that the psychological pain felt by dysphoric transwomen would be sufficient to outweigh all the sex-based harms against women that would then go unmitigated. It should hardly be controversial to state that the psychological pain of dysphoric transwomen does not trump sex-based harms to women.

So, all things considered, there is no good reason to assert that trans women are female. Trans women are not female, because no satisfactory theory of sex vindicates this claim, and there is not sufficient moral reason to assert the claim despite its untruth.

VI. Conclusion: upholding a sex/'gender identity' distinction

I have considered four candidate theories of sex, two based on a necessary condition (small and large gametes, and gender identity), and two based on having a majority of properties in a cluster (primary sex characteristics, primary and secondary sex characteristics). The gametes theory does not vindicate the claim that transwomen are female. The gender identity theory does, but it faces the problem that it does not sort all individuals into sex categories, and that it collapses the sex/gender distinction without sufficient argument. The primary sex characteristics property cluster theory supports indeterminacy, which is a change of a sort, but it is compromised by giving asymmetric verdicts about transwomen and transmen. The primary and secondary sex characteristics property cluster view does support change of sex in some cases, but it is also compromised by asymmetry.

The latter argument is not definitive, because there's room for argument over exactly which traits to include as secondary sex characteristics, and which are included and whether they must be the same in number for each sex cluster will make a difference to the final result. I also haven't considered homeostatic property cluster views, which might possibly give a different result. I finished by asking whether, despite the fact that candidate theories of sex do not vindicate the claim that people can change sex, we might nonetheless have reason to assert that trans women are female (trans men are male). And I argued that we do not have sufficient reason to assert this.

So the conclusion is that it is not possible to change sex, and it is not desirable to pretend that it is possible.

Notes:

[1] <https://twitter.com/nightsprite/status/1093801092180254720?s=21>

[2] (Lily Madigan's account now unavailable). Old link:

<https://twitter.com/lesbianleftie/status/1080894248063586304?s=19>

[3] <https://www.youtube.com/watch?v=H34a-ElzSIs&feature=youtu.be>

[4] What intersectionality isn't – archived at hollylawford-smith.org

[5] <https://theconversation.com/male-female-ah-whats-the-difference-12786>

[6] <https://www.youtube.com/watch?v=PbBzhqJK3bg&feature=youtu.be>

[7] <https://arcdigital.media/is-sex-socially-constructed-81cf3ef79f07>

[8] <https://arcdigital.media/what-is-gender-identity-10ce0da71999>

- [9] <https://www.buzzfeed.com/patrickstrudwick/this-transgender-woman-has-a-full-beard-and-she-couldnt-be-h>
- [10] (Lily Madigan's account now unavailable). Old link:
<https://twitter.com/lesbianleftie/status/1080894929889607681?s=19>
- [11] <https://www.perthnow.com.au/news/wa/court-rules-transsexuals-do-not-require-gender-reassignment-to-become-men-ng-02008d274352250244f4f774e3761fa6>
- [12] <https://arcdigital.media/is-sex-binary-16bec97d161e>
- [13] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5808814/>
- [14] https://www.jstor.org/stable/3813612?seq=1#page_scan_tab_contents