Sex and the Social Epistemologist.

By Nathan Emmerich

This paper is essentially a discussion of an issue raised by this quote:

> "If the immutable character of sex is contested, perhaps this construct called sex is as culturally constructed as gender; indeed, perhaps it was always already gender, with the consequence that the distinction between sex and gender turned out to be no distinction at all."[1]

There are many things one could take this quote to mean and consequentially say about this quote, as well as the rest of Butlers work. This paper does not purport to engage with the substantive work of Butler and nor does presuppose any familiarity with it. Rather, this paper is about whether or not it is the case that 'immutable' is a property of the biological concept of sex. If this is not the case as I argue then one can raise the issue of whether this is to do with gender and I contend that it does not. Rather, I would have thought that the conception of biological sex as immutable has more to do with historical conceptions of gender within biological science. As such then I take the above quote to be saying the following:

1. The biological concept of sex is thought to be 'immutable'. According to this definition each organism is assigned – or thought to be - either male or female.
2. This concept can be attacked and what is more destroyed or discarded when we correctly understand gender, sex and biological science.

Thus the argument follows that sex does not really exist and is found in bodies due to a gendered investigation and construction of those bodies. An immediate problem occurs which is that Butler is not talking about the concept of sex at all. Rather she is discussing the specific sex of specific bodies and the ways in which sex is assigned to bodies by the self and by others. There will be some agreement with this position in what I have to say especially insofar as social epistemology. A second thing that could be meant is the various ways which modern medical science can interfere with the sex of particular bodies. That this is possible is a subtext of what I have to offer and something I hope that this exploration of the biological nature of sex can accommodate. Whether or not I am correctly interpreting Butler and the conclusions that could be drawn from any differing interpretations of this quote and her substantive work shall have to put to one side in favour of my discussion on the possibility and nature of sex as a biological category.

Butlers claim – that gender can enter the body and generate sex – can be hard to understand. Is she actually claiming that the social – gender – literally enters the body – the biological – and in doing so produces sex? This sounds rather implausible but it is not without precedent. Consider the characteristic 'race'. I think the majority currently agree, correctly so, that race has no biological foundation. Indeed this is the predominant opinion amongst biologist – although other scientists, such as social/ cultural anthropologists exhibit greater levels of disagreement.[2] However, in the past,

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[1] Butler, J. Gender Trouble. Routledge. 1990. pp10-11

[2] Leiberman, L. Kirk, R. Littlefield, A. 'Perishing Paradigm: Race – 1931-99' American Anthropologist. Vol. 105 No. 1, March 2003. pp110-113.

that race is a biological category has been a widely accepted truth inside and outside the biological sciences. I don't intend to argue for this any further as I suspect we are all in agreement. Suffice to say that it is an example of how the cultural perception can invade the biological description.

The analogy is then that our discovery of sex in the body – as a biological property – is prompted by our social understanding of gender. Biological science is mediated by our social assumptions; our investigations and perceptions mediated by our social understandings. This is no great assumption and such thoughts form the basis for many philosophical and sociological critiques of the sciences.[3] Our ordinary assignment of sex to others is predicated on our perception of their gender. We assume an individuals sex on the basis of our understanding of their gender. Could it be the case that we have assumed sex on the basis of gender. In order to assess this question we must consider what it is that biology means when it talks about sex and the sex of an organism.

A preliminary investigation of biological sex reveals certain indeterminacies. There are many levels at which we can define the sex of bodies. The genitals are usually used to define the sex of new born individuals. And we are all aware of the chromosomes XX and XY which are supposed to correlate or even cause organisms to be female or male. The other levels on which sex can be decided – and so what the concept of sex needs to include – are the gonads, the gametes, the hormones, the phallus (understood as the clitoris as well as the penis), the particularities of urination, the ability to menstruate, ones psychological sex and fertility. Of all these it is not clear to me that fertility has any real bearing on the sex of a body – surely fertility is a function of sex rather than its definition.[4] Infertility after all does not affect whether or not one is male or female in terms of biology and nor of gender. In addition, psychological sex is obviously problematic for a strictly biological account.

It could be thought that there is a strict causal hierarchy - from genes via hormones to genitals - that is generative of sex. Unfortunately there are various things that can go awry. Perhaps then we should simply choose one criterion. A hormonal definition could be rejected on the basis of the potential for differing levels of androgens found in bodies assigned the same sex. A genetic definition could be preferable – appearing at least to be binary. Unfortunately XX and XY are not the only potential combinations. XXX or XXY have occurred. More confusingly the sex determining region found on the Y chromosome has been known to jump onto an X chromosome causing an XX individual to develop as a male for all other intents and purposes.[5] Fausto-Sterling has gone so far as to suggest – jokingly – that five sexes ought to be considered to encompass the genetic spectrum of human sex.[6] Defining sex on the

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[3] For a comprehensive discussion of the historical and social factors affecting the development of biology see: Mayr, E. The Growth of Biological Thought. Harvard University Press. 1982.

[4] This comment needs greater consideration and refinement. It may be that the concept of 'sex' is inseparable from the concept of 'sexual reproduction' and in which case fertility would seem to be important to the conceptual underpinnings of biological sex if not necessarily part of the definition.

[5] For a 'popular science' discussion of the diversity in the development of 'sex' in humans see Ch 7 of: Leroi, A. Mutants. Harper Perrenial. 2005. esp. pp 232.

[6] Fausto-Sterling, A. The 5 Sexes: Why Male and Female are not enough. The Sciences. March/ April 1993. pp 20-24 http://www.nyas.org/publications/sciences/TOC_1993Mar.asp See also: Fausto-Sterling, A. The Five Sexes Revisited. The Sciences. July/ Aug. 2000. http://www.nyas.org/publications/sciences/TOC_2000Jul.asp

basis of the external appearance of the genitals is also problematic when one considers the possibility of castration and the abilities of modern plastic surgery.

Other – usually medicalised – conditions such as Androgyny Insensitivity Syndrome (AIS) also generate problems in the search for a conceptual definition. AIS is a condition where by an XY individual is insensitive to the presence of testosterone and so develops into an infertile female. Certain other conditions cause the sex of individuals to become troublesome at the later stage of adolescence.[7]

A brief consideration of biology provides a sufficient *prima facia* challenge to think that an organism's sex is a mutable characteristic and as such sex is an indeterminate concept. If we look beyond humans we see examples of frogs changing sex when in a population dominated by one particular sex.[8] We also see functional 'hermadaphritism' in plants – organisms which function as both 'male' and 'female'. Perhaps then, like race, it should be discarded and returned to the level of a social characteristic. I do not think that this is an option. Put simply sex is needed in biology to explain sexual reproduction and if biology cannot explain reproduction then it is legitimate to wonder what it can do. Instead I intend to take the view that biological sex is an indeterminate concept and that this is not necessarily a flaw in biological concepts. To this end I offer a further analogy with the concept of 'species'. This will show that indeterminate concepts are not unusual in biology and that perhaps it is the historical characteristic of gender as being dichotomous is the source of our expectation of determinacy for biological sex. If we accept the former and discard the latter then perhaps we can start to search for an appropriate definition of biological sex.

The concept of the species is central to biology and particularly evolutionary biology. Again, the majority presume there is some well founded definition that allows us to examine the natural world and divide it into species with validity. I contend that there is not and that the definition currently at work and any definition we could hope to give in future cannot be completely determinate. This is rather an ambitious argument to present here and so what I have to say amounts to a sketch towards this conclusion.

The first level of species definition we can consider is a phenetic description. As the name suggests this is a definition of species according to their form – their phenotype. To be brief this definition cannot be sustained without circularity. The similarity of phenotype is what we seek to explain by use of the concept of species. Similarly the concept of a species ought to explain the commonalities of the genotype rather than rely on those commonalties as part of its definition. Thus a definition of species given in either phenotypic of genotypic terms is specious.

A second definition is known as the biological definition. Here a species is defined in terms of reproductive isolation. A species is all those organisms that can reproduce together. Interestingly this has been supplemented by mate recognition – a species is all those organisms that (correctly) recognise each other as potential mates. This last criterion goes some way to accounting for geographic separate populations of the

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[7] CF. Fausto-Sterling, A. Sexing the Body. Basic Books. 2000.
[8] T. U. Grafe, T. Linsenmair, K. 'Protogynous Sex Change in the Reed Frog Hyperolius viridiflavus' *Copeia*, 1989, No. 4. pp. 1024-1029

same species. A greater challenge can be raised by consideration of what are known as 'ring' species. A paradigmatic example of this is the black backed gull – populations which encircle the arctic.[9] Individual colonies recognise their neighbours as potential mates and can successfully mate with them. The problem comes in when non adjacent populations are introduced. They cannot successfully mate and neither do they recognise each other as potential mates.

A deeper problem occurs when we consider that this definition of species is predicated on sexual reproduction. Whilst sexual reproduction is the dominant mode of reproduction in the animal world it is not the only mode of reproduction even in this world. Asexually reproducing species would seem incomprehensible as species on this definition. At best, each asexually reproducing organism would seem to be its own species and those species which can reproduce via both asexual and sexual methods are extremely confusing. Simply put it seems incorrect to provide a definition of species on the basis of contingent reproductive behaviours.

Finally there is the Phylogenetic conception of species. 'Phylo' comes from the Greek for race[10] and 'genetic' – far from appealing to a genetic definition – represents the Greek for origin. The phylogenetic definition relies on a historical evolutionary perspective of species. A member of a species can be considered as such by virtue of a shared evolutionary history with other members. Thus the shared evolutionary history of a group of organisms constitutes that group as a species.

This raises the problem of speciation; how we distinguish between 'shared evolutionary histories'. According to evolutionary theory whatever we may consider to be two species today shared an ancestor sometime in the past. We need some way of telling when a new species is created – rather than when a simple descendant or intra species evolution of some species has occurred. The question is: what can be considered a speciation event? This usually sees the reintroduction of the biological species concept discussed above with some of its attendant problems. Specifically the problem of 'ring species' but this time temporally rather than spatially constituted.

For reasons of space I am going to have to cut short this discussion.[11] I hope that it goes some way to demonstrate that the concept of species is at best problematic if not necessarily indeterminate as I contend. Again we can ask why we cannot simply do away with the very concept. Are race, sex and species all just preconceptions from the cultural world projected into the biological?

Well, the first question one could ask is why we expect biological categories to be well founded properties of organisms? Reflection on evolutionary theory reveals its incremental, random and complex nature. Does this prevent our coming up with concepts and explanations for the natural world? It certainly makes them difficult and

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[9] See Mayr, E. Animal Species and Evolution. (1963) on the concept of ring species. I have simplified this example for the purposes of the paper.

[10] It is interesting to note the dual meaning of 'race': one being the 'race' mentioned above and the other being the type of race engaged in at the Olympics or between species and organisms: a survival of the fittest race.

[11] For an excellent discussion on the different definitions of species see: Sterelny, K. Griffiths, P. Sex and Death: An Introduction to the Philosophy of biology. Chicago University Press, 1999.

may present a challenge to absolute truth in our descriptions. That however is for another time. Can we at least differentiate between concepts thought to be well founded in biology and those that are not? Well of the three we have today- race, sex and species – race is being rejected whilst sex and species are being retained. This is on the basis of the work each of the concepts can do within biological theory. The concept of species and of sex allows us to explain various features of the natural world whereas the concept of race does not. Again this is a philosophy of biology that is open to certain critiques. But to return to our starting place with the Butler quote, it is not sufficient to show biological categories to be indeterminate or mutable in order to demonstrate that, say, sex is constructed by gender. It seems to me that biological categories are almost certainly indeterminate due to the nature of evolution. Whether the Butler project can be accomplished with this in mind is a matter for others to decide. But I do not think it necessary to reduce, equate, redefine or construct biological sex in terms of gender in order to suggest that it is not immutable.

Finally, I think it is worth returning to my title. I have barely mentioned the social epistemologist. As I suggested earlier I think that the act of concluding sex from the perceived of gender is an action to be understood in terms of social epistemology; it is what occurs in normal social interaction. Similarly I think that the history of biology reveals a certain penetration of this social epistemological approach. The assumption of the binary nature of sex is predicated on the no longer adhered to assumption of the dichotomous nature of gender. Thus if the social epistemologist in us all can be brought to understand the true nature of sex and of biological categories we can effectively decouple sex and gender in the way that seems to be desired by various feminist theoreticians whilst retaining a biological notion of sex that explains the natural world in a way consistent with our scientific observations.

Postscript:

Prior to delivering this talk and during the discussion that followed it occurs to me that the analogy with species can continue to be instructive. The phenetic description of species is rejected on the basis that individual species are defined by the properties they are supposed to explain. Similarly a definition of sex given in terms of male, female or any other phenotype(s) is subject to the same critique. The biological conception of sex ought to enable us to interrogate the natural world and determine the sex of individual organisms. Defining sex on the basis of those individual organisms – even on the basis of a cross species phenotypic description would be illegitimate. Similarly it is not necessary that sexual reproduction be limited to two sexes – although evolutionary theory contends it is highly likely to be a more successful strategy than any other form of sexual reproduction. If this is the case then the concept of sex ought to be able to accommodate a third functional sex.

These thoughts lead me to conclude that the best stratagem for defining the concept of sex is likely to be in terms of its function i.e. reproduction.