

## ***Valuable and Valueless Diversity***

In “Imposing Diversity” Robert Sparrow illustrates that objections to genetic selection based on diversity can have counterintuitive implications. Through a series of thought experiments designed to overcome any status quo bias that may be affecting our assessment of the value of diversity, Sparrow argues that valuing genetic diversity is more problematic than is generally recognized.

In this commentary I argue a well-developed account of the value of genetic diversity can lead to less problematic implications, and remain an important consideration when considering the ethics of genetic selection. For reasons of space I will only discuss two of Sparrow’s thought experiments “Imposing Disability” and “Genetic Scapegoat”.

Before I discuss the specifics of the case studies, I want to note that it should be fairly clear that very broad accounts of the value of genetic diversity are likely to be false. A simple claim that ‘all’ genetic diversity is valuable seems clearly in tension with findings in human genetics that many types of genetic diversity are functionless. There can be differences between two genomes that make absolutely no differences to phenotype in any conceivable environment. It would be very odd to think that variations in DNA strands that have no observable effects could be a source of moral value.

Equally it seems clear that not all types of functional genetic diversity are valuable. Suppose that genetic variants are found which explain why some people have much shorter lives than others. Many would believe that nothing of value would be lost from the world if this diversity was removed from the human gene pool. A world where everyone had the genetic potential to live as long as the current longest lived individuals seems preferable to world where some draw the genetic short straw.

However this does not mean that there are no valuable forms of genetic diversity. From studies in population genetics we know that populations which have diversity in the genes affecting immunity are more robust and resilient than more homogeneous populations. This “immunodiversity” is valuable both to individuals and populations as a whole as it reduces the frequency and severity of disease epidemics (Frankham 2005). For similar reasons, I have argued that cognitive diversity is valuable for human populations (Gyngell and Douglas 2014; Gyngell and Eastal 2015). Work in social science has demonstrated that cognitive diversity is vital for the ability of human groups to solve complex problems (Page 2007). Reducing cognitive diversity could potentially have very significant adverse effects on individuals and human populations, as it could diminish society’s ability to deal with complex global problems like climate change and energy security. Hence variation in genes that contribute to cognitive diversity could also be a valuable type of genetic diversity.

When looking over Sparrow’s thought experiments it may be helpful to have in mind a possible distinction between *valuable* types of genetic diversity, and *valueless* types of genetic diversity.

### ***Imposing Disability***

Sparrow gets us to imagine a “seismic upheaval” which reduces the frequency of “a wide range of congenital impairments due to genetic factors”. The specific examples Sparrow lists are “Down syndrome, cystic fibrosis, congenital adrenal hyperplasia, many forms of cleft palate, et cetera”. He then asks us imagine that a group of public spirited

bioethicists want to introduce “a mutagen into the water supply, with the intention of restoring the rate of genetic variation — and congenital impairment — to what it was before the recent precipitous decline and thus ensuring a more diverse world”.

I believe our attitudes toward the bioethicist’s plans should be influenced by whether it will restore valuable or valueless forms of genetic variation. The specific types of lost variants that Sparrow lists could well be examples of valueless diversity, and this may effect out attitudes toward the case as a whole. I think it is plausible that nothing of value would be lost if Down syndrome, cystic fibrosis, congenital adrenal hyperplasia, many forms of cleft palate were slowly and harmlessly lost from our population. If this is the case, there would be no *pro tanto* reason to reintroduce these specific genetic variants back into our populations.

However if we reimagine the example so that other forms of genetic diversity are lost, we may get different intuitions. Before we discuss the specific case of disability, suppose that the “mysterious seismic upheaval” causes all genetic diversity related to immune responses to be wiped from the population. The resulting homogeneous population would be at increased risk of epidemics, which would likely result in much suffering for individuals and compromise the long term future the population as a whole. Introducing the mutagen would harm no one, and benefit many by providing protection against future disease outbreaks. In this case I believe there would be a *pro tanto* reason to reintroduce the variants associated with immunodiversity in a bid to prevent any potentially devastating disease outbreaks.

While we do not know of any disabilities which are correlated with valuable types of immuno-diversity, some may be correlated with valuable types of cognitive diversity. Disabilities such as Aspergers syndrome, and dyslexia cause people to develop unique cognitive abilities (Everatt et al 1999; von Károlyi et al 2003; Armstrong 2013) and may contribute to valuable forms of cognitive diversity. If these conditions were harmlessly removed from our populations, it may well make the world worse in an impartial sense because of the cognitive resources that would be lost. Having some people with these conditions may improve society’s collective ability to solve complex problems, and thus its resilience in the face of external and internal threats. This suggests that if the seismic upheaval leads to the loss of these specific disabilities, something of value would have been lost and there would be moral reasons to reinstate the genetic variants related to these conditions.

However, even if we limit our thinking about Sparrows “Imposing Disability” case to scenarios in which there is a *pro tanto* reason to in favour of reintroducing the variants, this does not mean that the actions of the public-spirited bioethicists will be permissible. The problem is with their method. Presumably people would not consent to consuming a mutagen which would increase their chances of having a disabled child. Hence adding mutagens to the water will violate the liberty of individuals in the post-upheaval population. This would constitute a reason against reintroducing the variants in this manner –and this reason that may well outweigh the *pro tanto* reasons relating to increased diversity.

This brings us to an important point. If the Imposing Disability case does not show that genetic diversity is valueless, but only that its value is not always strong enough to override liberty, then this may point to another way to distinguish the *conservation* of

genetic diversity from the *imposition* of genetic diversity. If methods used to impose diversity constitute greater violations of individual liberty than methods used to conserve it, then it's possible that value of genetic diversity will provide decisive reasons in relation to conservation but not in relation to imposition. That is, if we think that putting mutagens in the water is a greater violation of individual liberty than limiting access to certain reproductive technologies, it is possible that the value of genetic diversity will provide strong enough reasons to justify restricting access to PGD to avoid certain disabilities, but not strong enough reasons to justify the actions of the bioethicists in the case study.

### **Genetic scapegoat**

The above discussion points to the possibility that one can maintain genetic diversity is sometimes an important value, and point to other considerations to explain what is troubling about Sparrow's thought experiments. I think this is the case in *Genetic Scapegoat*. While I fully share Sparrows intuition that it would be repugnant to "deliberately create persons with very severe disabilities to increase aggregate and average social welfare", this seems to me because of the exploitation and inequality in the world. We have two classes of people who are radically unequal in their enjoyment of life. It seems completely consistent, however, to value diversity for intrinsic or instrumental reasons (such as contributing to population persistence and flourishing) and disvalue inequality and exploitation. When assessing the desirability of a state of affairs we would need to weigh these values against each other. Perhaps the value associated with diversity is large enough to outweigh the disvalue associated with slight inequalities, but not large enough to justify moderate or strong inequalities.

### **Conclusion**

Professor Sparrow does an excellent job in illustrating some of the difficulties facing broad accounts of the value of genetic diversity. The challenge for defenders of the view that genetic diversity is valuable, such as myself, is to develop a more robust account of this value that provides satisfactory responses in cases such as those that Sparrow presents. In this commentary I hope to have taken some steps to show how such an account may be developed and defended against these challenges.

## References:

Armstrong, T. 2013. *Neurodiversity: Discovering the Extraordinary Gifts of Autism, Adhd, Dyslexia, and Other Brain Differences*. Da Capo Press: 61-62.

Everatt, J. Steffart, B. and Symthe, I. 1999. An Eye for the Unusual: Creative Thinking in Dyslexics'. *Dyslexia* 5: 28-46.

Frankham, R. 2005. Genetics and extinction. *Biological Conservation* 126: 131-140.

Gyngell, C. and Douglas, T. 2014. Stocking the Genetic Supermarket: Reproductive Genetic Technologies and Collective Action Problems. *Bioethics*. doi: 10.1111/bioe.12098.

Gyngell, C. and Easteal, S. 2015. Cognitive diversity and moral enhancement. *Cambridge Quarterly of Healthcare Ethics* 24: 66-74.

Page, S. 2007. *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies*. Princeton: Princeton University Press.

von Károlyi, C. Winner, E. Gray, W. and Sherman, G.F. 2003. Dyslexia Linked to Talent: Global Visual-Spatial Ability. *Brain and Language* 85: 427-431.