Egg Donation for Research is a Double Whammy
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What was science fiction yesteryear is science today. But what is happening in the field of reproductive technology today has long been foreseen. An imaginary tale of a civilisation undertaking dissections, surgical operations, experiments with ‘poisons and medicines’, the making of ‘commixtures’ and ‘new kinds’, Francis Bacon’s utopia or arguably dystopia, New Atlantis, published already in 1627 was prophetic. Mitochondrial replacement involves precisely what you could call commixtures.

Proving just how fast the science of reproductive technology has developed since 1978 when Louise Brown, the world’s first IVF baby, was born, two different mitochondrial replacement techniques have been proposed. Both involve cloning-like procedures and germ-line gene therapy, that is, genetic modification of human gametes or embryos, the effects of which are hereditary. Developed at Newcastle University, the techniques replace the mitochondria in the egg or the IVF embryo of a woman who has a mitochondrial disease with mitochondria from a healthy egg donor. Mitochondria, tiny organelles within our cells that generate energy, carry a small number of genes, some of which are linked to serious diseases. One technique, called pronuclear transfer, involves destruction of two embryos in order to construct a ‘combination embryo’. Two IVF embryos are created, one with an egg from the woman with mitochondrial disease, the other with an egg from a healthy donor. The donor’s embryo is enucleated (its chromosomomal DNA is removed) and replaced with the pronuclei (nuclear DNA) of the intending mother’s IVF embryo. The result is a reconstructed embryo with healthy mitochondrial genes from the donor and nuclear DNA from the intending mother. The alternative technique is called maternal spindle transfer. This technique involves no destruction of human embryos. Instead the spindle of chromosomes (nuclear DNA) of an unfertilised (healthy) donor egg is removed and replaced by the spindle of chromosomes (nuclear DNA) of the woman who is suffering from mitochondrial disease. The result is a reconstructed egg with healthy mitochondrial genes from the donor and nuclear DNA from the intending mother. The healthy egg can then be fertilised in vitro with sperm from the partner of the woman with mitochondrial disease.

Yes, egg donation is now used not only to help other women having babies but also to allow researchers to create embryos for research, and soon so it is hoped, also as a means of avoiding mother-to-child transmission of mitochondrial disease. The Human Fertilisation and Embryology (Mitochondrial Donation) Regulations 2015 came into force in the UK on 29 October. Since the UK is the first country in the world to issue such regulations, it would not be surprising if the first mitochondrial-replacement-conceived baby will be born in the UK, just as like the world’s first IVF baby.

But egg donation for the sake of embryo research is a double whammy. And there are two reasons for saying this. For one, it involves the deliberate creation and destruction of human embryos, as if they were nothing but disposable commodities. Not only does the Catholic Church insist that: ‘The human being is to be respected and treated as a person from the moment of conception’,¹ but conservative Protestant Churches do so too. The Southern Baptist Convention, the largest Protestant domination in the United States, states that : ‘we the messengers to the Southern Baptist Convention, meeting in Atlanta, Georgia, June 15-16, 1999, reaffirm our vigorous opposition to the destruction of innocent human life, including destruction of human embryos...’. The Orthodox Churches take the same view. Nor is this view only held by Christians or by religious people, for there

¹ CCDF, Donum Viate, 1987, I, 1.
are very good grounds for holding this view. Each one of us started life as an embryo. Of course, things could go wrong for the embryo so that it fails to develop into a baby. But this does not alter the status of the human embryo or foetus. So this is a poor objection to the view that the human embryo deserves respect and protection. Things could go wrong at any stage in life.

Secondly, egg donation means taking risks with women’s health. In addition it commodifies women by treating them as sources of raw material for the use of research. Egg donation is contrary to the Hippocratic code of old. It means that women are undergoing time-consuming, burdensome and far from risk-free procedure that are of no clinical benefits to them. This is bad medicine. And if the woman is paid for her trouble, her service and her products are given a market value, a pecuniary value. But money is not the scale on which her fertility or her eggs are to be valued.

Newcastle University might argue that giving £500 for egg donation for mitochondrial research is not to pay but to compensate for time and effort. They might say that offering such a small sum is to recruit women on an altruistic basis and that it avoids exploitation of the poor. There is, however, an alternative offer. The University’s Fertility Centre is offering woman cheaper IVF in exchange for egg sharing. This, so they are told, could save them some £1.500. Very possibly it could save them much more. This then means offering a financial incentive. It is a form of bribery and payment. And given what many women have to pay for IVF treatment, it could be seen as exploitation.

UK scientists have taken pride in being in the forefront in embryo research. But not everyone thinks this is something to be proud of. Creation of embryos for research is widely seen as controversial, as witness that it is actually forbidden in some European countries, among them Austria, Germany and Italy, though research using imported embryonic stem cells is allowed in all three countries. Lithuania’s laws are even stricter. Neither embryo research nor the use of imported embryonic stem-cell lines is allowed. And many other European countries forbid the creation of embryos specifically for research, even if they allow embryo research using embryos left over after fertility treatment. Among them are Bulgaria, Finland, France, Greece, Norway, Portugal, Spain and Switzerland. Germany bans embryo research both for the sake of protecting the human embryo and for the sake of protecting women.

American federal law only allows funding of research using embryos left of after fertility treatment, and then only with the egg donor’s explicit and informed consent. And in 2009 President Obama issued new guidelines for National Institutes of Health (NIH) for the funding of research. These guidelines allowed federal funding of research involving induced pluripotent stem cells (IPSCs), that is, reprogramming of adult cells and turning them into stem cells resembling embryonic stem cells. But somatic cell nuclear transfer (SCNT), that is, cloning of embryos, in order to create embryos specifically for the sake of embryonic stem cell research was not to be federally funded. This was on the ground that such research “require women to donate oocytes, a procedure that has health and ethical implications, including the health risk to the donor from the course of hormonal treatments needed to induce oocyte production.” Could there be a more explicit recognition that exposing women to the risks of egg donation solely for the sake of research is unethical.

Indeed, if anything the egg donor is even more commodified and depersonalised in the case of egg donation for the sake of research, than she is if she donates her eggs for another woman’s fertility treatment. As a source of useful material for research she cannot even identify herself as a fairy godmother helping another woman fulfil her dream of motherhood. And can she really tell herself that she is an altruistic donor? Is she really as enthusiastic about science as that? And, if she is, does she realise that any embryo created with her eggs will be killed? If she does, has she taken in that those embryos of hers might have become children of hers? One wonders. That said, in the case of egg donation for research it is surely realistic to believe that in many or most cases the woman’s primary motive is financial rather than altruistic, even though advertisements for egg donors for the
sake of research might seek to appeal to altruism by pointing to the good ends of their research, such as new wonder-cures for hitherto untreatable diseases.

Embryo research can only be justified if you put blinkers before your eyes in an effort to hide that destruction of an embryo amounts to cutting short a human life. Science for the sake of science is callous. As history has shown, it can lead to all kinds of exploitation. A decade ago Dr Woo Suk Hwang’s heartless exploitation of egg donors for the sake of embryonic stem-cell research brought to the fore the danger of prioritising science over respect for the human person. In January 2005, Woo Suk Hwang, the leader of the South Korean team conducting embryonic stem-cell research, caused an international stir when the team’s 2004 and 2005 reports in the highly esteemed journal *Science* had to be withdrawn. The scientific world was shocked and scandalised when Hwang had to admit that he had cheated and falsely claimed that he had produced embryonic stem-cell lines from embryos (blastocysts) created by cloning (somatic cell nuclear transfer or for short, SCNT) was false. Worse was to come. In November 2005 the world learned that Hwang had also lied about the provenance of the egg he had used for his stem-cell research. What he had failed to reveal was that he had used eggs from junior scientists in his laboratory as well as from paid egg donors. Furthermore, he apparently had wasted over 2000 human eggs. Not only did he prioritise science over the welfare of the egg donors, but the embryos created and the eggs he used were treated as a cheap disposable material for the research.

This story of fraud and corruption and abuse of female laboratory assistants brought the whole world’s attention to egg donation for stem-cell research involving the creation and destruction of the human embryo. Not surprisingly it cast a shadow over this kind of research, even though shady dealings such as those reported in Seoul are exceptional. That said, the events in Seoul brought to the fore not only that science for the sake of science, or for fame and glory is as dangerous, it also showed just how hard it can be for scientists to make women volunteer as egg donors for embryonic stem-cell research or any other kind of research involving the creation of embryos destined to be destroyed. Otherwise, why would Hwang have resorted to his female assistants in order to obtain egg for his work? Surely he knew that so doing was highly unprofessional. Surely he realised that his female assistants felt pressurised and obliged to help him. He was their superior. That placed them in a vulnerable position. Their employment and their careers would have depended on helping Whang.

Yes, scientists who avail of egg donors for the sake of creating embryos for research are acing with blinkers before their eyes. They do not seem to see the woman. What they see is source of highly desirable products, eggs. But this is a strange blindness. It averts the gaze from the woman. And even if the scientist is blind to the fact that the human embryo is a human being, he obviously recognizes that it is human and alive. If he didn’t the human embryo would be of no scientific interest to him. The gaze of science is materialistic and reductionist. The woman is reduced to flesh and the embryo to a bit if tissue. But then so much hope has been placed on embryonic stem-cell research. It has been seen as a panache for many hitherto incurable ills. Hence, researchers have been eager to obtain human eggs or embryos for their research, even though research with adult stem cells (obtained from adults, children or umbilical cord blood) has yielded more clinical results to date, and even though it is now possible to reprogramme adult cells to a near embryonic stage and use them for research instead of embryos. For the stem-cell researcher the human embryo is counted as nothing other than a cell or cells that have a purely utilitarian research value. So if they can be obtained, why not use them.

Yet scientists can change their minds. And some have, as witness Sinya Yamanaka. In 2006 Shinya Yamanaka, Kyoto University in Japan, discovered that skin cells from mature mice could be reprogrammed to an embryonic-like pluripotent stage, that is, to induced pluripotent stem cells. By
introducing a few genes, the biological clock of skin cells could be rewound and the skin cells reprogrammed to become immature stem cells. Subsequently, in 2007, both Shinya Yamanaka’s and James Thomson’s team at the University of Wisconsin, separately published papers showing that the technique could be used with human cells as well. \(^{iii}\) But you may wonder why they started their projects. As for Yamanaka, he has explained why in an interviewed with the New York Times, published on 11 December 2007. Here he tells you that what had made him undertake research into alternatives to embryonic stem-cell research was a visit to the IVF clinic of a friend many years earlier. Looking down a microscope seeing a human embryo what he saw was not just a cell or a bunch of cells. ‘When I saw the embryo, I suddenly realized that there was such a small difference between it and my daughter’s,’ said Yamanaka. ‘I thought we cannot keep destroying embryos for our research. There must be another way’. After years of searching he found an alternative.

Indeed, Yamanaka right. It is absurd to entice women to undergo burdensome, unpleasant and risky procedures in order to create and destroy nascent human life. Whatever wonder-cures are hoped for from eggs donated for embryo research, the end does not justify the means.

