



Ectogenesis

ethics, rights, regulation

4 May 2022, 2-4pm
Online

ectogenesis *noun* /,ɛktə(ʊ)'dʒnəsis/ development of the embryo/fetus outside the human body

PROGRAMME

Introduction

Jolie Zhou (University of Cambridge)

What is the latest news from the biobag?

Alan Flake (Children's Hospital of Philadelphia)

What are the implications of ectogenesis for the abortion laws and the rights of the fetus?

Amel Alghrani (University of Liverpool)

Who has rights with regards to the treatment of the fetus in a biobag?

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What are the implications of complete ectogenesis for women's rights?

Anna Smajdor (University of Oslo)

Register: <https://bit.ly/ectogenesis-2022>

ABSTRACTS

The programme for this meeting has been organised by Professor Martin Johnson and Ms Jolie Zhou.

Introduction

Jolie Zhou (University of Cambridge)

Abstract

Ectogenesis often refers to the entire process of human gestation taking place in an artificial environment. So far, the closest breakthrough to the prototype of Ectogenesis is the Biobag in 2017, which mimicked the uterine environment and sustained some lambs equivalent to the human fetus at 22-23 weeks gestation to full term successfully – partial ectogenesis. There are also some impressive advances on the other end of human gestation. For example, in 2016, a team at Cambridge university grew human embryos for up to 13 days after fertilization. Some scholars have predicted that full Ectogenesis may happen by accident as these efforts progress to the extent they meet in the middle of gestation.

Full or partial Ectogenesis is bound to raise many ethical issues directly related to women as a group. Thus, partial Ectogenesis would probably challenge the existing abortion policies based on viability when new technologies can save extremely premature babies. Also, when unwanted fetuses can be safely transferred to an artificial womb, the dominant abortion defence based on bodily autonomy may become less valid. Also, there will be a new question: is it ethical to switch off the artificial womb to end the development of the gestating, the being in the artificial womb, and who has the right to do this? The ethical implications of Ectogenesis for gender equality are even more far-reaching. Professor Anna Smajdor has defended the moral necessity of full Ectogenesis from the perspective of improving women's health. There is still a myriad of general or specific concerns around this topic, linked to women's future reproductive and social roles, social justice and social values, etc. Altogether a meaty set of issues to be discussed!

Biography

Jolie Zhou is a PhD student in the Department of History and Philosophy of Science at the University of Cambridge in her second year. Before her PhD study, she finished her master's dissertation at King's College London, which attempted to address a question: Is It Moral to Compel a Woman to Transfer an Unwanted Fetus into an Artificial Uterus as an Alternative to Abortion? In her PhD dissertation, she is exploring the ethical implications of ectogenesis for women's rights from a broader perspective.

What is the latest news from the biobag?

Alan Flake (Children's Hospital of Philadelphia)

Abstract

I plan to give an update on the EXTEND system (our Artificial Womb technology) and provide insight into our plans for clinical implementation.

Biography

Alan Flake is an attending surgeon in the Division of General Thoracic & Fetal Surgery at the Children's Hospital of Philadelphia where he holds the Ruth and Tristram C. Colket, Jr. Endowed Chair in Pediatric Surgery, is Vice Chair of Surgical Research, and acts as Director of the Center for Fetal Research. He is also Professor of Surgery tenured track at the University of Pennsylvania School of Medicine.

Dr Flake has led a National Institutes of Health (NIH) funded research laboratory directed toward surgical correction of fetal anomalies and fetal stem cell and gene therapy for over 20 years. Under Dr. Flake's leadership, the Center for Fetal Research is exploring

innovations in prenatal treatment, particularly in the areas of gene and stem cell therapy, and for life-threatening anatomic malformations and diseases. Recently, the Center has developed new technology for physiologic support of the extreme premature infant, a development that could have major implications for the treatment of prematurity.

Dr Flake has published extensively with authorship of over 400 peer-reviewed publications and over 150 review articles and book chapters. He is on the editorial board or has served on the board of many hematology, stem cell, and fetal therapy related journals and has participated on numerous NIH study sections. Among other awards, he is the recipient of the 2021 March of Dimes Richard B. Johnson, Jr., MD Prize in Developmental Biology. Clinically, Dr. Flake actively participates as a Fetal Surgeon in the Fetal Diagnosis and Treatment Program at the Children's Hospital of Philadelphia with interests in fetal diagnosis and therapy, in utero stem cell and gene therapy, extracorporeal support of the extreme premature infant (the artificial placenta/uterus), and minimally invasive neonatal and pediatric surgery.

What are the implications of ectogenesis for the abortion laws and the rights of the fetus?

Amel Alghrani (University of Liverpool)

Abstract

Ectogenesis will undoubtedly impact on the laws pertaining to abortion, since it is clear the embryo / fetus is offered (limited) protection by the state and that concept of 'viability' has influenced the legislation governing abortion.

Judge Baker's (in)famous quote in *Paton v BPAS* [1979] QB 276 'the fetus cannot, in English law, in my view, have a right of its own at least until it is born and has a separate existence from its mother' does not mean the fetus is a 'nothing' in the eyes of the law. We know from HFE Acts 1990 and 2008, that an embryo has a 'special status' which is why the 14 day limit was chosen as a cut off point for research, at which point the embryo must be implanted or discarded. In terms of civil liability; a fetus which is harmed in utero by the negligence of third parties and later born alive can sue for that harm The Congenital Disabilities (Civil Liability) Act 1976. Lastly, destruction of fetal life remains a criminal offence in England and Wales, courtesy of the Victorian enacted OAPA 1861, sections 58 and s59 of which render procurement of a miscarriage a criminal offence subject to life punishment. The Infant Life Preservation Act 1929 creates the offence of 'child destruction' committed when any person, with the intention of destroying the life of a 'child capable of being born alive', by willful act causes a 'child capable of being born alive' to die before it has been born. However, there are defences/ exceptions as to when a termination is permissible, outlined in Abortion Act 1967 (as amended by Human Fertilisation and Embryology Act 1990). Importantly, there remains 'no right' to an abortion and instead a woman has to convince two doctors in good faith that she come within the exceptions in this statute. Thus, the law is clear, at least in theory, the fetus is protected.

So, what happens when the fetus is capable of growing in vitro, externally to the mother and has this separate existence Judge Baker spoke of (such as via complete ectogenesis)? What is the status to be ascribed to the 'gestatling' and when, if ever, can the gamete progenitors end the life on the In Vitro Fetus? It is clear current abortion laws which govern abortion, do not extend to this scenario and the statutes were clearly drafted with pregnancy in a woman's body in mind. Parliament will need to enact new legislation to govern this scenario.

For fetal life gestating in a human body, can ectogenesis signal a 'green light' for fetal rescue under current abortion laws? Section 1(1)(a) of the Abortion Act 1967 (as

amended) permits abortion if continuation of the pregnancy would could risk to life, or the physical or mental health of the pregnant woman, or that of existing children of their family than if the pregnancy were terminated (often referred to as the 'social ground' for the frequency it is invoked). It is the only ground which imposes a twenty-four week time limit. After 24 weeks, abortion is only legally permissible in a much narrower set of circumstances.

This twenty four week time limit was imposed as it was thought that this represented viability, the point at which a fetus was 'capable of being born alive'. In *Rance v Mid-Downs Health Authority* Brooke J. regarded this phrase as being interchangeable with viability and stated: 'The primary dictionary meaning of the word 'viable', which is derived from the French word 'vie' is 'capable of living'.

Using viability as a point from which to extend protection to the foetus is problematic as viability is an ever-changing concept, often dependent on both the technology available and where in the world one lives. As Herring notes, a twenty-six-week-old fetus may be viable in some parts of Britain, but would not be viable in a developing country with limited medical facilities. Thus, claims that legal protection and moral status can be grounded in viability are problematic - as medical science becomes better able to provide for the separate existence of the fetus, the point of viability could be moved further back.

The present law on abortion remains clearly influenced by viability. After viability, an abortion is possible only under the extreme circumstances that the life of the pregnant woman is at risk or the pregnancy may cause grave permanent injury to her physical or mental health, or if there is a substantial risk that if the child will be seriously handicapped.

If complete ectogenesis is one day possible, and 'viability' is from fertilisation, it has been asserted that under current abortion laws this might mean ectogenesis could be used to extend legal protection to the fetus and mandate that women seeking to end their pregnancies under s1(1)(a) of the Abortion Act (to prevent risk to the health of the pregnant women or her children) can only opt for fetal extraction/ transfer into an ectogenic incubator, which will end the pregnancy, but not fetal life, causing all to embrace in happy harmony.

However, the advent of complete ectogenesis, under current legislation does not mandate, nor obligate a woman to only end her pregnancy and not fetal life under section 1(1)(a) of the AA 1967 as it is currently drafted, since the AA 1967 does not require that a pregnant person should consider, or choose, any form of abortion in particular- especially any form of termination that might secure freedom from pregnancy without compromising fetal development/life. A strict reading / interpretation of the ILPA 1929 to mean that a fetus is 'capable of being born alive' at the point that it is capable of being transferred, could mean women could only consent to extraction, but as Romanis highlights s1(1)(a) AA 1967 still provides a defence: 'unless Parliament were to repeal or amend the OAPA 1861, ILPA 1929 and AA 1967 in future, pregnant people would retain the ability (with their doctor's permission) to seek abortion under current provisions.'

The form that abortion takes depends on the gestational stage of the pregnancy and the pregnant person's preferences (whether medical (often pre 12 weeks)) or surgical termination). Butler Sloss was clear in *Re MB*, a competent pregnant person is entitled to accept or refuse any medical procedure, 'or to choose one rather than another of the treatments being offered'. Thus, under current legislation, a pregnant person could refuse consent to the more invasive 'fetal extraction' which would be needed to preserve fetal life and end pregnancy. Even if partial ectogestation is possible, she has the legal right to opt instead for early medical abortion (before 12 weeks gestation) or surgical abortion which will both end the pregnancy and fetal life.

Caution must be advocated when discussing the implications of ectogenic technology on abortion rights and endeavours to utilise such technological breakthroughs to promote fetal rights and thereby curtail the procreative rights of the pregnant women. In *R v. Scrimaglia*, in which a backstreet abortion took place after enactment of the Abortion Act 1967, the then Lord Chief Justice commented that ‘one of the objects, as everyone knows, of the new Act was to try to get rid of back-street unsanitary operations’. Any attempts to curtail the procreative autonomy of women in light of ectogenesis, may create more harm than good. This is supported by evidence that indicates maternal mortality owing to unsafe abortion is generally higher in countries with major restrictions and lower in countries where abortion is available without restrictions as to reason or under broad condition.

Biography

Amel Alghrani is a Professor of Law at the University of Liverpool. A major strand of her work focuses on regulation of families and alternate family formation through the use of both current and emerging assisted reproductive technologies (such as uterus transplantation and ectogenesis) and the impact these will have on reproductive rights of individuals and the welfare of children born through the use of such technologies. She has published extensively in this field and has a monograph on this topic titled ‘Assisted Reproductive Technologies: New Horizons: Regulating the Future of Human Reproduction - Cambridge University Press, 2018).

Who has rights with regards to the treatment of the fetus in a biobag?

Chloe Romanis (Durham University)

Abstract

Who is responsible for the entity in the artificial placenta such that they can make decisions about its treatment? Some academics claim that a gestateling (the subject of the artificial placenta) is born because, in still undergoing gestation, it has fetal physiology and physicality, even if no longer in utero (Romanis 2018; 2019; 2020; Kingma and Finn 2020; Kingma 2021). The law arguably only recognises a person as a parent after birth, and if a gestateling in the artificial placenta is not ‘born alive’ - and there are good reasons to suppose that it would not be considered so in English law (Romanis 2020) - this raises interesting questions. Since it is neither being gestated by a person, nor is it a born child, does it have a legal parent? If not, how do we ground rights to make decisions surrounding it? For example, whose consent is necessary in order to place an entity in an artificial placenta? And whose consent would be necessary to ‘switch it off?’

Biography

Elizabeth Chloe Romanis is an Assistant Professor in Biolaw and Co-Director of Gender and Law at Durham at Durham University. She does research in healthlaw and bioethics with a particular interest in reproduction and the body (abortion, gestation, pregnancy and birth). Chloe’s PhD thesis, funded by the Wellcome Trust, explored the ethico-legal implications of artificial womb technology with a focus on ethical and legal status of gestating entities (both in and ex utero), the development of experimental treatments and abortion. Chloe was awarded a University of Manchester Distinguished Achievement Award as 2020 Humanities Student of the Year for this thesis. The work is published in leading journals including the *Medical Law Review*, *Journal of Law and the Biosciences* and the *Journal of Medical Ethics*.

In September 2022, Chloe will take up a fellowship-in-residence at Harvard University’s Edmond J. Safra Center for Ethics and Petrie-Flom Center for Bioethics working on her project entitled ‘Biotechnology, Gestation, and Legal and Social Infrastructure’.

What are the implications of complete ectogenesis for women's rights?

Anna Smajdor (University of Oslo)

Abstract

Shulamith Firestone famously claimed that women could not be fully liberated until they were freed from the burdens of gestation and childbirth. Yet many feminists regard the prospect of ectogenesis with scepticism. Some view the specific reproductive functions of women as a source of power; others fear that in the attempt to throw off these specifically female functions, women are selling out in some respects – attempting to remake themselves in the model of men. Others may view ectogenesis as a dangerous tool in the context of societies that already seek to contain and control women's reproductive choices. I acknowledge these concerns, and share some of them myself. Nevertheless, I suggest that ectogenesis can and should be harnessed as a means of freeing women from the burdens of gestation and childbirth, insofar as this does in fact further their interests as human beings. In order to ensure that ectogenesis yields the benefits that Firestone hoped for, I argue that we need a new approach to the understanding of gestation and childbirth: a conception of gestational justice. I will show how, on the basis of this concept, societies can make progress in ensuring that the interests of women are furthered, rather than hindered, by the development of ectogenesis.

Biography

*Anna Smajdor is professor of practical philosophy at the University of Oslo. She has written extensively on questions relating to reproductive ethics, and also has research interests in the interface between society, biomedical science and philosophy. She is co-author (with Ruth Deech) of *From IVF to Immortality*, and (with Jon Herring and Robert Wheeler) *The Oxford Handbook of Medical Ethics and Law*.*

Chair

*Tim Lewens is a Professor of Philosophy of Science in the Department of History and Philosophy of Science, University of Cambridge, and a Fellow of Clare College. His primary research interests include the philosophy of biology, biomedical ethics, and general philosophy of science. He is an investigator on a large, multi-institution project 'Putting the Extended Evolutionary Synthesis to the Test', funded by the John Templeton Foundation. He was the Principal Investigator for the ERC-funded project *A Science of Human Nature?* (2011–2016). From 2009 to 2015 he was a Council Member of the Nuffield Council on Bioethics, and served on the working parties for two Nuffield Council reports: *Novel Techniques for the Prevention of Mitochondrial DNA Disorders: An Ethical Review* (June 2012), and *Human Bodies: Donation for Medicine and Research* (October 2011). From 2014 to 2017 he was the Deputy Director of CRASSH, the Centre for Research in Arts, Social Sciences and Humanities.*

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