Received: 29 September 2022 | Revised: 17 February 2023 | Accepted: 18 May 2023

DOI: 10.1111/bioe.13187

ORIGINAL ARTICLE

bioethics WILEY

Equality-enhancing potential of novel forms of assisted gestation: Perspectives of reproductive rights advocates

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Funding information
British Academy, Grant/Award Number: SRG21\210640

Abstract

Novel forms of assisted gestation—uterus transplantation and artificial placentas—are highly anticipated in the ethico-legal literature for their capacity to enhance reproductive autonomy. There are also, however, significant challenges anticipated in the development of novel forms of assisted gestation. While there is a normative exploration of these challenges in the literature, there has not yet, to my knowledge, been empirical research undertaken to explore what reproductive rights organisations and advocates identify as potential benefits and challenges. This perspective is invaluable. These organisations/individuals have an awareness not only of the needs of individuals but also of the political landscape in which regulatory decisions are made and which individuals navigate when seeking reproductive assistance. In this study, data was generated from two semi-structured focus groups ($n = 11$). Reflective thematic analysis was used to examine the views raised by study participants in these focus groups. This paper explores two of the themes constructed in the data. First, the equality-enhancing potential of assisted gestation exploring the multifaceted ways in which assisted gestation has structural benefits for marginalised groups. Second, realising the equality-enhancing potential of assisted gestation explores the intersecting barriers to access to reproductive technologies and how they may impede the benefits of these technologies in practice. These results can enhance conceptual understanding of the importance of novel forms of assisted gestation and ensure that attention is paid to practical barriers in further normative research.

KEYWORDS

artificial placentas, assisted gestation, assisted repoduction, focus groups, uterus transplantation

1 | INTRODUCTION

For people unable to gestate, whether for biological, social or psychosocial reasons, assisted gestation affords them the opportunity to become biological parents. Assisted gestation has long existed in surrogacy. However, novel reproductive technologies that make possible different forms of assisted gestation are on the horizon and are highly anticipated for the specific experiences they could afford people who cannot gestate.[1] This article reports results from an empirical research project seeking the views of reproductive rights advocates in Great Britain about the benefits and limitations of novel forms of assisted gestation.

Uterus transplantation (UTx) presents the possibility of enabling those without a uterus of their own (whether they were born without it or have had a hysterectomy) to gestate—experiencing pregnancy and birth.[2] Since the first report of a live birth from a successful UTx in Sweden in 2014,[3] approximately one hundred transplants have been successfully performed worldwide.[4] While the procedure is not yet widely available and is yet to be performed in the United Kingdom (at the time of writing), it is described as an 'emerging therapy that is transitioning from an experimental phase to an established clinical practice'.[5] To date, the transplant has only been performed on people with physiology assigned female at birth (AFAB). However, one team of research surgeons have concluded that despite being challenging 'there is no overwhelming clinical argument against performing UTx' on a person with physiology assigned male at birth.[6]

A more futuristic endeavour is the artificial placenta, capable of facilitating gestation outside of the body[7] ('ectogestation').[8] Speculation about the possibility of gestation outside the body has increased since the publication of successful animal studies demonstrating proof of concept in 2017.[9] There are now more teams working on the prospect, and promising results of animal testing continue to be published worldwide.[10] These devices all have a similar design—a sealed system of warm amniotic fluid (in which the subject is located), with a cannula acting as an umbilical cord to deliver oxygen and nutrients and remove waste, and a pumpless oxygenator circuit.[11] Researchers have indicated that they hope to begin testing on human subjects in the immediate future. Equity financing for clinical translation was secured in 2022 by the team working in Philadelphia.[12] These devices are being designed specifically as a means of improving outcomes from extremely premature birth.[13] Artificial placentas have the potential means of enhancing reproductive decision-making by 'taking over' gestation for people undertaking dangerous pregnancies.[14] The technology, in its current iteration, can facilitate only *partial* ectogestation (since the technology is reliant on the subject having foetal physiology). In the future, artificial placentas might have further choice-enhancing potential by offering the ability to make decisions about what degree of bodily gestational labour individuals are willing to undergo in becoming a parent in a broader range of circumstances, for example, by enabling people to opt out of performing a complete gestation,[15] or, even of undertaking gestation at all.[16]

There is a growing body of normative ethical literature that explores the benefits and potential limitations of both UTx and artificial placentas; however, this literature can be considered somewhat disjointed. These technologies are most often explored in isolation and while it is important that we consider what is different about each technology, considering forms of assisted gestation collectively can help us see the implications of arguments made about novel technologies in their broader context. Moreover, considering the genus of assisted gestation (and thus several technologies encompassed within it) can improve our conceptual understanding of the technologies.[17] While these technologies work

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[1] Romanis, E. C. (2022). Assisted gestative technologies. *Journal of Medical Ethics*, *48*, 439–446.

[2] O'Donovan, L. (2018). Pushing the boundaries: Uterine transplantation and the limits of reproductive autonomy. *Bioethics*, *32*(8), 489–498.

[3] Brännström, M., Johannesson, L., Bokström, H., Kvarnström, N., Mölne, J., Dahm-Kähler, P., Enskog, A., Milenkovic, M., Ekberg, J., Diaz-Garcia, C., Gäbel, M., Hanafy, A., Hagberg, H., Olausson, M., & Nilsson, L. (2015). Livebirth after uterus transplantation. *The Lancet*, *385*, 607–616.

[4] Mann, D. (2022). *Good outcomes from first 5 years of uterus transplants, but concerns remain.* https://www.usnews.com/news/health-news/articles/2022-07-07/good-outcomes-from-first-5-years-of-uterus-transplants-but-concerns-remain

[5] Richards, E. G., Farrell, R. M., Ricci, S., Perni, U., Quintini, C., & Falcone, T. (2021). Uterus transplantation: state of the art in 2021. *Journal of Assisted Reproduction and Genetics*, *38*, 2251–2259, p. 2251.

[6] Jones, B., Williams, N. J., Saso, S., Thum, M. Y., Quiroga, I., Yazbek, J., Wilkinson, S., Ghaem-Maghami, S., Thomas, P., & Smith, J. R. (2019). Uterine transplantation in transgender women. *BJOG: An International Journal of Obstetrics & Gynaecology*, *126*(2), 152–156.

[7] Romanis, E. C. (2018). Artificial womb technology and the frontiers of human reproduction: conceptual differences and potential implications. *Journal of Medical Ethics*, *44*, 751–755.

[8] Kingma, E., & Finn, S. (2020). Neonatal incubator or artificial womb? Distinguishing ectogestation and ectogenesis using the metaphysics of pregnancy. *Bioethics*, *34*(4), 354–363.

[9] Partridge, E. A., Davey, M. G., Hornick, M. A., McGovern, P., Mejaddam, A. Y., Vrecenak, J. D., Mesas-Burgos, C., Olive, A., Caskey, R. C., Weiland, T. R., Han, J., Schupper, A. J., Connelly, J. T., Dysart, K. C., Rychik, J., Hedrick, H. L., Peranteau, W. H., & Flake, A. W. (2017). An extra-uterine system to physiologically support the extreme premature lamb. *Nature Communications*, 8, 15112; Usuda, H., Watanabe, S., Miura, Y., Saito, M., Musk, G. C., Rittenschober-Böhm, J., Ikeda, H., Sato, S., Hanita, T., Matsuda, T., Jobe, A. H., Newnham, J. P., Stock, S. J., & Kemp, M. (2017). Successful maintenance of key physiological parameters in preterm lambs treated with ex vivo uterine environment therapy for a period of 1 week. *American Journal of Obstetrics and Gynecology*, *217*, e1–457.

[10] Coughlin, M. A., Werner, N. L., Church, J. T., Perkins, E. M., Bryner, B. S., Barks, J. D., Bentley, J. K., Hershenson, M. B., Rabah, R., Bartlett, R. H., & Mychaliska, G. B. (2019). An artificial placenta protects against lung injury and promotes continued lung development in extremely premature lambs. *ASAIO Journal*, *65*(7), 690–697; Charest-Pekeski, A. J., Sheta, A., Taniguchi, L., McVey, M. J., Floh, A., Sun, L., Floh, A. A., McVey, M. J., Sheta, A., Estrada, M., Crawford-Lean, L., Foreman, C., Mroczek, D., Belik, J., Saini, B. S., Lim, J. M., Moir, O. J., Lee, F. T., Quinn, M., … Haller, C. (2021). Achieving sustained extrauterine life: Challenges of an artificial placenta in fetal pigs as a model of the preterm human fetus. *Physiological Reports*, *9*(5), e14742.

[11] Partridge, E. A., & Flake, A. (2020). The artificial womb. In M. Kilby, A. Johnson, & D. Oepkes (Eds.), *Fetal therapy: Scientific basis and critical appraisal of clinical benefits* (pp. 83–98). Cambridge University Press.

[12] George, J. (2022). *Vitara biomedical raises $25 M to advance its artificial womb technology for premature babies*. https://www.bizjournals.com/philadelphia/news/2022/08/09/vitara-biomedical-philadelphia-artificial-womb.html

[13] Partridge, E. A., et al., op. cit. note 9; Usuda, H., et al., op. cit. note 9; Romanis, op. cit. note 7.

[14] Romanis, op. cit. note 7; Romanis, E. C. (2020). Artificial womb technology and the choice to gestate ex utero: Is partial ectogenesis the business of the criminal law? *Medical Law Review*, *28*(2), 342–374; Hammond-Browning, N. (2018). A new dawn: Ectogenesis, future children and reproductive choice. *Contemporary Issues in Law*, *14*(4), 349–373.

[15] Romanis, op. cit. note 14; Nelson, A. (2022). Should delivery by partial ectogenesis be available on request of the pregnant person? *International Journal of Feminist Approaches to Bioethics*, *15*(1), 1–26.

[16] Kendal, E. (2015). *Equal opportunity and the case for state-sponsored ectogenesis*. Palgrave Macmillan.

[17] Romanis, op. cit. note 1, p. 439.

in different ways, there are some obvious synergies in their potential uses to aid people who cannot gestate, and they might be thought of as alternative options to address an inability to gestate by potential service-users. Thus, in this study, multiple forms of assisted gestation were considered. The study sought to ascertain the views of reproductive rights advocates about novel forms of assisted gestation—UTx and artificial placentas—drawing together experiences and reflections connected to each.

To my knowledge, before this study, there had been no empirical research conducted exploring reproductive rights advocates' perspectives on novel forms of assisted gestation. Empirical research with individuals working with or for reproductive rights organisations is key because they have an awareness of the experiences of different people who cannot gestate or who have experienced difficulties during gestation and birth and of the political landscape. Their insights are consequently invaluable in highlighting how individuals may want to access and use novel technologies, as well as some of the challenges they may face. This article reports results from a focus group study exploring these perspectives that was analysed using a reflexive thematic analysis approach.[18] These results have utility in helping enhance the understanding of why assisted gestation is important, and what the potential access barriers are for individuals, in further normative research.

2 | METHODS

2.1 | Study design

A qualitative approach can best identify, explore and generate understanding about novel and complex issues (compared to quantitative methods that are more about ascertaining the prevalence of issues/views). These methods both generate 'detailed, valid data',[19] and 'permit formulation and inform further study,'[20]—which is necessary here because of the novelty of the context and the nature of the enquiry. The ethical issues arising from novel forms of assisted gestation are multifaceted and therefore focus groups were chosen to allow for the generation of data through the interaction of research participants.[21] Open discussion in focus groups better enables unanticipated insights, the emergence of different perspectives and for these to be incorporated into the results.

Two focus groups (each with five to six participants—total $n = 11$) were hosted in June and July 2022. These groups were each two hours. Some of the individuals/organisations that were recruited had a specific focus on an aspect of reproduction—for example, fertility, abortion, or birthing—whereas others had a more general approach across different aspects of reproducing, for example, equality for marginalised people during reproduction or promoting public understanding about assisted reproduction. Thus, the interaction between these individuals bringing different expertise, as well as their specific individual contributions, made for fruitful discussion. Recruitment took place through my personal network; I contacted potential participants directly by email. Participants were selected by purposive sampling to ensure a wide range of appropriate expertise. All organisations/individuals were based in Great Britain.

The study has a small sample size and thus has limited statistical-probabilistic generalisability; however, it has some analytical generalisability.[22] The concepts developed within the results are useful in making sense of what is important in assisted gestation. Even if the number of groups means that the study was unlikely to have reached saturation,[23] I recruited from a variety of organisations—including most of the most active in terms of campaigning for reproductive rights in Great Britain. The results, therefore, have utility in examining the views of reproductive rights organisations in Great Britain.

Before the study began, ethical approval was granted by Durham Law School Ethics Committee in April 2022. Written consent from participants was obtained before their participation. Participants were given an information sheet containing information about the purpose of the study and ample opportunity to ask questions. Participants were told that they could end their participation at any time during the focus group and/or withdraw their permission for the data to be used up to 1 week after the focus group.

The first focus group took place in-person. However, there were several potential participants who had been interested in participating but were not able to attend in-person for a variety of reasons (primarily scheduling and location). Online focus groups are recognised as a good option where researchers are working with a busy and geographically disparate population.[24] Consequently, the second focus group was hosted online via Zoom. There were some unique challenges of the remote format—specifically, it was harder as the facilitator to not be more involved in organising the flow of the conversation, and at times, there were issues with some participants' internet. Using both online and in-person formats in one study is known to incorporate the benefits of both[25] and here it enabled the generation of a richer data set by enabling the inclusion of a broader range of perspectives.

The focus groups had a semi-structured format. At the beginning, I provided a very basic background and introduction to UTx and artificial placentas. This was to provide some context for participants who were less familiar with UTx and/or artificial placentas. There were some participants who had much more familiarity with these technologies than others because of their background/interest, but

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[18] Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, *11*(4), 589–597.

[19] Powell, R., & Single, H. (1996). Focus groups. *International Journal for Quality in Health Care*, *8*(5), 499–504, p. 409.

[20] Ibid: 409.

[21] Wilkinson, S. (1998). Focus group methodology: A review. *International Journal of Social Research Methodology*, *1*(3), 181–203.

[22] Smith, B. (2018). Generalizability in qualitative research: Misunderstandings, opportunities and recommendations for the sport and exercise sciences. *Qualitative Research in Sport, Exercise and Health*, *10*(1), 137–149.

[23] Hennink, M., & Kaiser, B. (2022). Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Social Science & Medicine*, *292*, 114523.

[24] Barbour, R. (2018). *Doing focus groups*. SAGE Publications.

[25] Ibid.

most participants indicated having heard of UTx/artificial placentas before the focus group. Open-ended discussion points, based on my prior normative reflections,[26] were used to prompt conversation. Some examples of question prompts include:

- Do you think that new technologies (UTx/artificial placenta technologies) will have some unique benefits? In what way?
- What do you think are the biggest problems with the law surrounding reproduction at the moment?

2.2 | Data analysis

Both focus groups were digitally voice recorded using a Dictaphone. A clean verbatim transcript was produced by a transcription service within two weeks. There were no edits made for grammatical correction, but linguistic fillers (um and ah) were removed. After each transcript was received, I listened to each recording twice against the transcript to check the authenticity of the written record and to familiarise myself with the data.[27] Analysis was based on reflexive thematic analysis.[28]

After familiarisation, I undertook inductive line-by-line coding of each transcript using NVivo: a computer software package designed to assist with the organisation and analysis of qualitative data. Consistent with the ethos of reflexive thematic analysis, it is important to acknowledge that my identification and labelling of codes was influenced by embodied aspects of myself as a researcher. Specifically, codes were concepts more readily recognisable to me because of my disciplinary background and subject-specific knowledge.

Once codes were labelled, they were organised into a code tree. The organisation of the data was the result of an organic reflexive process. I did not use software tools to build a tree, and the organisation of the codes, as a reiterative process, changed over time.[29] The organic approach here afforded space and potential for the codes themselves, and how they were organised, to change to reflect my 'deepening understanding of the data' over time.[30] Developing a code tree to map out how different ideas were related/inter-related in the data set helped me construct an initial set of themes. These are, of course, subjective and affected by my positionality to and within the data. The themes I constructed I see 'as stories about particular patterns of shared meaning across the dataset'.[31] These themes were named based on the big picture story that they told me, highlighting their central organising concept. During writing up, participants were contacted to provide a pseudonym and their preferred pronouns. One participant did not respond and a name was assigned.

In what follows, I report two of the major themes constructed within the data set. First, reflections about how novel forms of assisted gestation have equality-enhancing potential. Second, the challenges in realising the equality-enhancing benefits of novel assisted gestation centred around limitations on access.

3 | RESULTS

3.1 | Assisted gestation as equality-enhancing

In both focus groups, there was consensus that assisted gestation is important. Assisted gestation has the potential to address reproductive health inequalities by enabling people to reproduce in different ways that were attentive to their individual needs and preferences. This discussion was focused primarily on how assisted gestation has equality-enhancing potential for communities and individuals within its capacity to enhance their privacy and dignity in reproducing. There was focus in the conversations on how technologies provide opportunities to facilitate feelings of inclusion amongst communities and individuals who are unable, physically, socially, or psychosocially, to gestate. Different forms of assisted gestation could better facilitate equality in supporting diverse family formation—so helping individuals to create families that they thought might not be possible because of, among many reasons, their sexuality or their biology. However, the importance of the technology was recognised as much broader and more impactful than individual use. In the following exchange, participants in the second focus group reflect on the benefits assisted gestation (and specifically increasing options) afford whole groups of people with marginalised identities, even if they never decide to make use of it:

> Richard: I think we're seeing technology as facilitating a very specific thing, as facilitating gestation. But I think that there is actually the variety and increasing the variety of routes to parenthood does something much more powerful and fundamental, which is it potentially makes people, at the point at which they realise that they can't carry—whether that's because they've got MRKH or whether it's because they're gay or whether it's because they're trans, that there are barriers to carrying—it allows them to recognise that family life is still an option for them in the future. So I think that we just risk missing that out. This is not just a means to an end, it is actually potentially going to allow people, earlier and more comfortably, to be themselves…
>
> [He then discusses the individual difficulties persons can experience in coming out]

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[26] Romanis, op. cit. note 1.

[27] Barbour, R., & Kitzinger, J. (1999). *Developing focus group research: Politics, theory and practice*. SAGE Publications; Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. SAGE Publications.

[28] Braun & Clarke, op. cit. note 18; Braun & Clarke, op. cit. note 27.

[29] Braun & Clarke, op. cit. note 18.

[30] Braun, V., & Clarke, V. (2021). Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. *Counselling and Psychotherapy Research*, *21*(1), 37–47, p. 39.

[31] Braun & Clarke, op. cit. note 18, p. 592.

> So it wasn't in my case, but if the necessity and the fundamentality of wanting to be a parent was the reason for my trauma, then having been more aware of the process for surrogacy or, in the future technology that can support that, it would have made my life, a big chunk of my life, a lot happier. And I just wanted to say that.
>
> Ali: To add to that, you reminded me of something where there might be a parallel. I think when gay marriage was introduced in Massachusetts, it lifted not just the kinds of outcomes for the people that got married, but it lifted the outcomes for the gay community as a whole. When you're looking at benefits, there's just a broader benefit to all the groups in society that might be able to benefit from assisted reproductive technologies, of knowing they are there, and it is levelling their place in society. I think they're hard to quantify, but I think there's a statement in that.

In this exchange, participants are discussing the utility of the technology in facilitating equality in a structural sense. The observations here add a more nuanced and enriching dimension to the existing literature, which tends to focus on the benefits to individuals in the use of specific technologies for their own personal reproductive projects, for example, to enable people to have a biologically related child when they might otherwise be unable. Taking into account people who do not consider themselves to have an immediate use for the technology, as well as those who would use it if it were available right now, illuminates pertinent issues of social justice and the intersection between individual reproduction and the inclusion of marginalised groups in society. Where a person feels excluded from experiences deemed personally valuable—such as parenthood, or gestation itself—because of personal attributes, this can affect not only the way that they feel about themselves when trying to reproduce but much earlier in their lives in ways that impact on their identity. It can also affect how they feel in relation to others. Technologies and practices that enable these individuals to attain the ability, if they so wish, to access (forms of) these experiences are invaluable for their identities and sense of self-worth but also their (perception of) social standing. Most importantly, it will affect the extent to which individuals feel that they have options affording the same opportunities to experience meaningful experiences that other people who can gestate have.

In the ethics literature, there has been some reflection on the equalising potential of artificial placentas for women/people AFAB[32] because these technologies mean that these individuals can become parents without being expected to undertake the gestational labour. There has also been critique of the presumptions underlying such claims—specifically, in that they locate inequality in the physiology to become pregnant rather than in the social response to these bodies.[33] There has not, however, been exploration of the equality—enhancing potential in the benefits of 'knowing options are there' for marginalised communities. Where the benefits for LGBTQ+ people have been alluded to, they are often asserted and the mechanisms of benefit not explained. For example, Lee and others stipulate that 'ectogestation might benefit transgender individuals by detaching gestation from the concepts of womanhood and womanhood'.[34] The observations of the participants in this study fully elucidate possible substantive mechanisms of equality-enhancement—it is not simply a matter of helping people build families in different ways, but it is enabling people to plan their lives and their identities (including being their true selves) around those future potential possibilities. While the focus here is on assisted gestation, these reflections might also be useful in thinking about the benefits of future technologies that assist with conception that may have similar benefits to those outlined here, for example, in vitro gametogenesis.

In the ethico-legal literature, there is little reflection on the benefits of novel forms of assisted gestation for LGBTQ+ communities. Male same-sex couples and trans persons are considered a secondary population that might benefit from artificial placentas—evidenced by how they are often referenced in a list of who stands to benefit only briefly alongside in-depth analysis about the benefits (or disadvantages) for ciswomen.[35] Kimberly and others published a paper that stands out in exploring some of the potential benefits for LGBTQ+ people.[36] There has been some—though maybe not as much as might be expected—discussion about the benefits of UTx for trans individuals or couples in male same-sex relationships.[37] In these focus groups, however, LGBTQ+ populations were understood and discussed as primary users of assisted gestation, which reflects the fact that this group is more likely to need to rely on technological assistance to reproduce.[38] Bobby emphasised we must consider "*at the get-go that it might not just be folks assigned female at birth that will benefit and will want or need to have access to these services*". That LGBTQ+ populations were seen as key beneficiaries of the

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[32] Smajdor, A. (2007). The moral imperative for ectogenesis. *Cambridge Quarterly of Healthcare Ethics*, *16*(3), 336–345; Smajdor, A. (2012). In defense of ectogenesis. *Cambridge Quarterly of Healthcare Ethics*, *21*(1), 90–103; MacKay, K. (2020). The 'tyranny of reproduction': Could ectogenesis further women's liberation? *Bioethics*, *34*(4), 346–353.

[33] Romanis, E. C., & Horn, C. (2020). Artificial wombs and the ectogenesis conversation: A misplaced focus? Technology, abortion, and reproductive freedom. *International Journal of Feminist Approaches to Bioethics*, *13*(2), 174–194; Horn, C., & Romanis, E. C. (2020). Establishing boundaries for speculation about artificial wombs, ectogenesis, gender, and the gestating body. In C. Dietz, M. Travis, & M. Thomson (Eds.), *A jurisprudence of the body* (pp. 227–254). Palgrave Macmillan; Cavaliere, G. (2020). Ectogenesis and gender-based oppression: Resisting the ideal of assimilation. *Bioethics*, *34*(7), 727–734.

[34] Lee, J. Y., Bidoli, A., & Di Nucci, E. (2023). Does ectogestation have oppressive potential? *Journal of Social Philosophy*. p.3. https://doi.org/10.1111/josp.12512

[35] As an example of see Cavaliere, op. cit. note 33; Lee, J. Y., et al., op. cit. note 34; And to see an exception (a chapter that focuses on how discusses about equality and the artificial placenta are often very heteronormative): Horn & Romanis, op. cit. note 33.

[36] Kimberly, L., Sutter, M. E., & Quinn, G. (2020). Equitable access to ectogenesis for sexual and gender minorities. *Bioethics*, *34*(4), 338–345.

[37] Alghrani, A. (2018). Uterus transplantation in and beyond cisgender women: Revisiting procreative liberty in light of emerging reproductive technologies. *Journal of Law and the Biosciences*, *5*(2), 301–328; Jones, B., Rajamanoharan, A., Vali, S. Williams, N. J., Saso, S., Thum, M. Y., Ghaem-Maghami, S., Quiroga, I., Diaz-Garcia, C., Thomas, P., Wilkinson, S., Yazbek, J., & Smith, J.R. (2020). *Uterine transplantation in male to female transgender women; A cross-sectional survey assessing perceptions, acceptability and demand.* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3526304

[38] See Kimberly, L., et al., op. cit. note 36.

technology is reflected in the examples participants gave in the conversations about the benefits of assisted gestation for individuals.

The benefits for potential users of technology that were described by participants were multifaceted. There was a discussion of greater privacy and greater dignity in the process of reproduction. At their root, these benefits are all linked to the equality-enhancing capacity of assisted gestation. Participants often described privacy and dignity in *decisions* about reproduction as something that fertile heterosexual couples, and people who can become pregnant, can often have as a matter of course (assuming, of course, that they do not need assistance). For individuals who cannot gestate, however, the journey to parenthood can feel marked by powerlessness, invasiveness, and can feel dehumanising. Participants described how artificial placentas and UTx might address some of the negative emotional aspects of assisted reproduction for individuals.

In explaining how artificial placentas and UTx could afford individuals privacy, participants reflected on how—for individuals who do not have the capacity to become pregnant and gestate without assistance—becoming a parent is a much more public decision. In contrast, people who can gestate and decide to become parents can conceive without others (including their social circle and other important people in their life like their employer, as well as the healthcare professionals) knowing that they are trying. Furthermore, the process itself is more public. It involves other individuals or instances of feeling hyper-aware of social circumstances since people may ask more questions about their journey to parenthood where they have seen that the parent (and/or their partner) have never been visibly pregnant.

> Richard: there is something about privacy here as well, because if you want to go through surrogacy in the UK in an altruistic way through an organisation like ours, it's not a private affair, you know? You have to be pretty public about that, whereas if you're in a cis-hetero relationship, then conception, pregnancy and childbirth can be an entirely private thing if you wish it to be. So, there's an inequality there, which I'm fine with because I don't really have much social anxiety and things, but there are people for whom that must be absolutely horrible…

Artificial placentas and UTx involve some degree less of this because they do not involve another person carrying the pregnancy for the intended parent(s):

> Ali: you know, surrogacy is amazing, but… The idea that you could be more in control of that process without needing to involve somebody else to me seems like that would be a tremendous benefit and appeals to this point of dignity. Now, I'll come back to dignity later, but the quiet dignity of being able to just lead a life like anyone else leads, without the noise or the hoo-ha, I mean it has such a value.

Richard later made a further observation about privacy:

> Richard: There is something there about how 'mine' is this baby, and is it more 'mine' if it's growing in a pod than if it's growing in my friend's womb? I guess there are some people who would be more comfortable with the arm's length or the technological thing of the pod rather than the person.

It is interesting that participants saw the physical involvement of a surrogate as potentially more distressing for individuals than the medical professionals that might necessarily be involved in the use of an artificial placenta. Potentially, this is because there is an expectation of medical involvement in the use of reproductive technologies,[39] and this does not necessarily lead to an intended parent feeling that they are displaced. However, another person physically undertaking gestational work may feel like a physical manifestation of a lack of privacy. For individuals who seek the privacy a surrogacy arrangement cannot afford, UTx was also considered an important option.

Finally, participants described how novel forms of assisted gestation facilitate dignity by meeting individuals' social and emotional needs. For people without the capacity to gestate, UTx can meet their strong desire to gestate. Artificial placentas were discussed as having the capacity to preserve the dignity of people who fear institutional violence and/or specific traumas in the carrying of a pregnancy. For example, people who have experienced previous trauma in giving birth, or trans, intersex, or asexual people who may find the experience of pregnancy dysphoric. Bobby explained:

> [A]re we going into the spaces of the dysphoria that that could trigger, being a gestational parent, trans or an intersex person or an asexual person as well? We can't forget that the ace [asexual] people exist either. But would that [use of an artificial placenta] actually be preferable because of the discrimination and the violence that trans people can experience when they're moving outside of what is deemed as 'trans enough' behaviour. It would be a shame if that was the only route and the only reason for that. Ideally, it's purely wanted because of the other benefits of that system or that option. But I wonder if there would possibly be another group of people that would find that more appealing to avoid the societal expectation or the emotional or up to and including physical violence that they may experience because they are a pregnant man or a pregnant non-binary person as well.

If technology were able to assist individuals with these feelings to become biological parents without performing gestational work, it could better respect their identities and

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[39] I am grateful to Victoria Adkins for discussions on this point.

protect their mental and physical health in a way that affords dignity. This is equality-enhancing because it enables these individuals to feel less dehumanised—and othered—in the process of reproducing.

The values infused within the way participants discussed assisted gestation and reproductive preferences reiterate the equality-enhancing potential of the technology for individuals and communities. In contrast, the literature focuses on these technologies, and the choices they give rise to, facilitating (reproductive) autonomy as the reasons for their importance.[40] This is a much more atomistic conception of the benefits that novel forms of assisted gestation could provide. While choice was presumed in the background of the conversations, participants in this study never used the language of 'choice' or 'autonomy' to articulate the value that novel forms of assisted gestation have. Instead, they reflected on how it can afford dignity and privacy. The language of 'choice-enhancing' or 'autonomy-enhancing' that is used in the literature potentially does not go far enough in capturing the nuances of the benefits persons stand to gain from this technology: that is the equality-enhancing potential both for people seeking to become parents and in a broader structural sense.

3.2 | Realising the equality benefits of assisted gestation

Concerns about access to technologies were a predominant feature of both focus groups. Participants stressed that it was important to consider *who* would likely have access to technologies to ensure that any equality-enhancing benefit can be realised for those individuals who stand to benefit the most. As Auden noted:

> the potential equality benefits are potentially offset by who actually has access to it and whether it's a technology that is actually available to anyone who might wish to make use of it.

This point reflects Robert's observation that novel reproductive 'technologies rarely achieve their subversive potential' because of a complex interplay of barriers and financial, cultural, and government manipulation.[41] The extent to which intersecting barriers to access may limit the equality-enhancing potential of assisted gestation (particularly artificial placentas) has been stressed in the more recent academic literature—with a focus on how these impact marginalised populations along the lines of class, race and socio-economic status.[42]

In both focus groups, there was a discussion about legal, social and economic barriers to access that might be faced by individuals. Participants all saw extra-legal obstructions to access as the more material: as those with the greatest impact on whether someone was able to access their chosen form of assisted gestation. This did not mean the law was irrelevant, just that it does not exist in a vacuum:

> Auden: The law doesn't sit just up at the top on its own level. There's a question about how it interacts with everything else that's underneath which makes a lot of difference to people's own ability to access and use reproductive healthcare

The 'welfare clause' in section 13(5) of the Human Fertilisation and Embryology Act 2008, which mandates that the welfare of future children (including their 'need for supportive parenting') is taken into consideration when fertility treatment is provided, was raised by the same participant as something to be considered. The legal commentary explains that this clause has been used historically—and could still be being used—to limit who can become a parent in Great Britain.[43] There are, therefore, concerns that such a clause will continue to discriminate in the context of assisted gestation (in addition to assisted conception). Academic critique of this provision has been substantial.[44] However, how this clause, and other provisions enabling indirect discrimination against individuals seeking fertility treatment, could prevent access to UTx[45] and ectogestation[46] needs further interrogation.

Even if there were limited legal restrictions on access to novel forms of assisted gestation, participants expressed concerns about medical gatekeeping and the medicalisation of access. In both focus groups, there was consensus that clinical need is something that must be interpreted broadly to ensure access to UTx and ectogestation. Some participants considered that these technologies have clinical benefits, but others questioned that this might not be so clear-cut in practice. Some also questioned the focus on 'clinical' benefits:

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[40] In the context of UTx see Horsburgh, C. (2017). A call for empirical research on uterine transplantation and reproductive autonomy. *Hastings Center Report*, *47*(S3), S46–S49; Alghrani, op. cit. note 37; O'Donovan, op. cit. note 2. In the context of artificial placentas see Smajdor, op. cit. note 32; Kendal, op. cit. note 16. In the context of both UTx and artificial placentas as options see Romanis, E. C., & Kendal, E. (Forthcoming). Subjective experience, gestational preferences and justice: Valuing both uterus transplantation and ectogestation. In N. Hammond-Browning, & N. J. Williams (Eds.), *International legal and ethical perspectives on uterine transplantation*. Edward Elgar Publishing.

[41] Roberts, D. (2017). *Killing the black body: Race, reproduction, and the meaning of liberty* (p. 248). Vintage Books.

[42] See Romanis & Horn, op. cit. note 33; Horn & Romanis, op. cit. note 33; Cavaliere, G. (2020). Gestation, equality and freedom: Ectogenesis as a political perspective. *Journal of Medical Ethics*, *46*, 76–82; Horn, C. (2022). Ectogenesis, inequality, and coercion: A reproductive justice-informed analysis of the impact of artificial wombs. *Biosocieties*, *2022*. https://doi.org/10.1057/s41292-022-00279-3; Romanis, op. cit. note 1.

[43] McGuiness, S., & Alghrani, A. (2008). Gender and parenthood: The case for realignment. *Medical Law Review*, *16*(2), 261–283; McCandless, J., & Sheldon, S. (2010). "No father required"? The welfare assessment in the Human Fertilisation and Embryology Act 2008. *Feminist Legal Studies*, *18*, 201–225.

[44] Fox, M. (2009). The Human Fertilisation and Embryology Act 2008: Tinkering at the margins. *Feminist Legal Studies*, *17*(3), 333–344; Sheldon, S., Lee, E., & Macvarish, J. (2015). 'Supportive parenting', Responsibility and regulation: The welfare assessment under the reformed Human Fertilisation and Embryology Act. (1990). *Modern Law Review*, *78*(3), 461–492; Lee, E., Macvarish, J., & Sheldon, S. (2014). Assessing child welfare under the Human Fertilisation and Embryology Act 2008: A case study in medicalisation? *Sociology of Health & Illness*, *36*(4), 500–515.

[45] O'Donovan, op. cit. note 2.

[46] Horn & Romanis, op. cit. note 33.

> Yan: like, whatever technology we're going to develop, we're going to research into, is it any medical benefit for the user or not? … Like, artificial uterus or womb, is it good or not? I will say it's good to help that woman if that woman getting pregnant and pregnancy can harm her health, then if I put the baby in the artificial womb, this woman's health is not at risk. That is a good thing to do, okay? Okay, so uterine transplant, if this lady or man really, really wants to be pregnant and give birth to her own child, if she cannot do it, then her whole life she feels like is not complete. Then doing that will help her, you know, psychologically. So, for me, it's just simple that whatever I do, am I helping that person or not? That's all.
>
> Auden: Yes, I mean I think [Yan] just spoke to it a bit towards the end, but the question that came to my mind when he was speaking was, like, who defines 'benefit', right, because there are benefits. So, the medical benefits, the clinical benefits, but there are benefits that we may or may not define as clinical and they still matter to the person.

There is the real possibility that novel technologies are limited to certain groups that have specific needs that *are* recognised, whereas other groups of people with other different needs may be excluded. As an example, Hammond-Browning advocates that the selection criteria for UTx candidates should specifically exclude 'women who are already mothers'.[47] This could encompass people who have already had children through biological means (being pregnant and giving birth), surrogacy, or adoption. The criterion therefore recognises the need a person may have to become a parent but not specifically to become a gestational parent. Moreover, it does not recognise a need some people may feel to expand/grow their families. In the first focus group, participants reflected on how who might be deemed "*deserving*" users (Hannah) of novel assistive gestation technologies and that these discourses would likely result in inequality of access to UTx or ectogestation for marginalised groups or individuals:

> Charlotte: I think people are more accepting if it is for medical reasons why I have got an artificial placenta. But if it is a choice, if you are choosing to do that rather than you need to do it to save a life. I think that is where people will have an issue with it. If you have to, you are choosing to do it, that way.
>
> Alex: Yes… the fact that people kind of, when they do something that is against health guidelines or against what is advisable. They either have to say that it was essential for them to do it or that they didn't have a choice in it…

This exchange speaks to the fact that often individuals must explain their reproductive choices (or choices around reproduction) in clinical terms to ascertain social acceptance. The concept of a 'deserving user' was discussed as something that might be made as a social judgement, as well as a medical one, that could come to feed into (or co-construct) medical perceptions of necessary use:

> Olivia: Yes, I have seen stuff on uterus transplantation and particularly the uterus transplantation into somebody without female physiology, that there is already stuff and comments being made about that and…
>
> Hannah: And how it should be used for those who did have it, have the like physiology but then it is always like, tragically lost it. And they should be the deserving recipients.
>
> Olivia: Yes, or were born without, yes.
>
> Hannah: Yes, like they are the deserving recipients like MRK or uterine cancer or whatever, as opposed to trans men or trans women, rather, receiving them. As that that would be [pause] yes, I think it starts to go down this really bizarre deserving/non-deserving, moral/immoral path.

Within this discussion, observations are made about how the reasons individuals may want to utilise a reproductive technology are classified as a 'need' or as a 'desire' and there is an understanding that these are treated differently. There was a considerable reflection about media villainization of, for example, LGBTQ+ populations—specifically trans people—wanting to access this technology and the potential for "*moral panic*" (Hannah; Faye):

> Faye: Would the new moral panic around something like womb transplants be wrapped-up in like transphobia and just this pushback against any sort of sexual progress, basically?

Narratives otherising these individuals could come to limit their access to assisted gestation by shaping ideas about who the technology is for and in what circumstances. How choices are categorised, both socially and medically, as meeting needs or preferences was perceived as likely to lead to the exclusion of some individuals—likely, the socially infertile. Surrogacy was used as an example of how this plays out in practice—for example, what kinds of reasons for surrogacy are seen as acceptable:

> Charlotte: I think there is a [pause] there is a definite split between those who need it and those who want it, especially in the UK, I think. Because it is not regularly used for people that just want, don't want their own pregnancy. It is more for people that need it.

In a similar vein:

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[47] Hammond-Browning, N. (2019). UK criteria for uterus transplantation: A review. *British Journal of Obstetrics and Gynaecology*, *126*(11), 1320–1226. p. 1323.

> Faye: … I think the arguments around surrogacy and those sort of debates about who is deserving and stuff would just be even more extreme with artificial wombs or womb transplants.

Even if novel forms of assisted gestation are safe and readily available—there will be social judgements about who the technology is for and medical professionals who do not support the use of these technologies to facilitate the needs of more marginalised people that may come to limit access. Concern about medical gatekeeping has been raised in the ethico-legal literature.[48] Interrogation of how medical professionals might respond to requests for the use of novel forms of assisted gestation in contexts beyond those imagined for developing technologies (e.g., beyond dangerous pregnancies in the case of artificial placentas and beyond cis women without a uterus in the case of UTx) is necessary. This interrogation must be attentive to social context because this also has a significant impact on the extent to which the equality-enhancing benefits of assisted gestation can be realised.

A further barrier to realising the equality-potential that participants raised in both focus groups was financial/resource allocation issues. There was a discussion about how the socio-clinical constructed barriers to access might come to place explicit limits on National Health Service (NHS) funding: so, funding being limited only to potential users with 'deserving' causes (with what is deserving being narrowly constructed by clinicians and influenced by broader social narratives). Issues of resource allocation were also raised—for example, would the use of assisted gestation be limited to people who were childless (and thus result in the exclusion of people who had reproduced but did not feel that they had completed their family), or to people who had not exhausted all existing options, for example, for people with a uterus they must have tried to conceive for a certain period? In the first focus group, there was a discussion about how, to access fertility treatment, people are expected to demonstrate that they are willing to "*sacrifice everything*" (Charlotte). There was an explicit acknowledgement that matters of resource allocation and the resulting financial pressures individuals face in accessing reproductive technologies is an extra-legal problem:

> Alex: Well changing the law wouldn't make
> Olivia: that any easier-
> Alex: -make NHS funding happen
> Hannah: No

This conversation continued to explore why funding for novel forms of assisted gestation was unlikely. Limitations on IVF funding were used as an illustrative example: "*the reason it is not funded necessarily is because it is almost seen elective…*" (Hannah). Such limitations on access limit the equality-enhancing potential of assisted gestation described, because paying out-of-pocket for these services limits the benefits of knowing this is an option to only people who have significant disposable income. Limited public funding entrenches inequality along the strata of class and socio-economics. Further, Bobby noted, this was likely to particularly impact some groups; "*because LGBTQ+ people are likely to be in a lower socio-economic class than non-LGBTQ+ people*". Bobby continued on to raise that AFAB people within this group are more likely to feel coerced into oocyte donation to be able to afford fertility treatment. Scholars have pointed out the importance of public funding for novel reproductive technologies[49] to better ensure equal access. However, financial barriers persist regardless of whether the care itself is free:

> Auden: I think, in relation to the costs, there are direct costs and direct economic implications of how these sorts of technologies are accessed or not. But there are also the indirect costs. So, when I was at [redacted organisation], I did work talking to people who were facing really complicated circumstances in their lives, when they were pregnant and giving birth. And, you know, people talked to me about their struggles to access antenatal care, not because they didn't want to, but because they were on precarious zero-hours contracts, for example. And they just couldn't—either they couldn't get to the appointments at the sorts of times that appointments were available and had to basically choose between keeping their job—I certainly spoke to at least one person who lost their job because they couldn't get to both. So I think, there is the sort of, if you're looking at the economic barriers, there are the direct ones, but then I think there are the sort of broader—who is able to-? What does it mean, to participate, or to use, one of these technologies, in terms of the pressures that puts on your time and the flexibility that requires of your time?

This point about the indirect costs is a particularly salient one and has not been explored in either the UTx or ectogestation literature, despite the fact it would be a major barrier even if there were unlimited public funds supporting assisted gestation. Indirect costs have the potential to become an insurmountable barrier for people from lower socio-economic groups, again preventing the realisation of those equality-enhancing benefits. While participants did not reflect on the demographics of individuals impacted by indirect costs, the points made about sexual minorities in the context of the direct costs might also be

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[48] Romanis, op. cit. note 14; Adkins, V. (2021). Impact of ectogenesis on the medicalisation of pregnancy and childbirth. *Journal of Medical Ethics*, *47*, 239–243.

[49] On UTx see Wilkinson, S., & Williams, N. J. (2016). Should uterus transplants be publicly funded? *Journal of Medical Ethics*, *42*, 559–565; Alghrani, A. (2016). Yes, uterus transplants should be publicly funded!' *Journal of Medical Ethics*, *42*, 566-567. On artificial placentas, Kendal, op. cit. note 16.

raised here. It was notable that there was no conversation about race in these focus groups, but since there are notable socio-economic disparities in the United Kingdom experienced by people from marginalised racial groups,[50] financial barriers are likely to have a particular impact on people from racialised backgrounds, for example, Black people and Asian people. This raises another serious challenge to the equality-enhancing potential of this technology. Horn has advocated that we should move toward thinking about justice, rather than choice, in conversation about artificial placentas.[51] These results echo the necessity of this shift in the broader context of assisted gestation.

4 | CONCLUSION

Novel forms of assisted gestation are potentially equality-enhancing. There was consensus amongst the participants in this study that novel forms of assisted gestation are important for individuals and for groups of marginalised people more broadly; however, potential barriers to access are likely to be a challenge that will need addressing to ensure that these benefits can be realised. While the reflections of the participants in many ways reflect the discussions that are currently ongoing in the academic ethico-legal literature, there are some important ways in which their reflections differed and can thus enhance the nuance in how the importance of these technologies for different groups of people is understood and acknowledged, and what the access barriers they may face encompass.

The results have gone some way to considering some of the potential needs of groups that are not often considered in the literature on assisted gestation—particularly LGBTQ+ individuals. It is imperative that the needs of different groups of people are considered to avoid the possibility of such technologies failing to meet the needs of marginalised groups—whether because account is not taken of their needs as novel technologies and practices are developed and implemented or because legal and social regulation does not appreciate the needs of these individuals and groups. These results can assist normative ethico-legal reflections in considering the potential challenges ahead and thereby aiding in the provision of potential solutions that are attentive to concerns grounded in experience. Ultimately, the concerns of marginalised groups can be appropriately centred, and the political realities at hand accounted for.

ACKNOWLEDGMENTS

I am grateful to the following organisations (as well as some independent individuals) for participating in this research: Birthrights, British Pregnancy Advisory Service, Progress Educational Trust, SEED Trust, Surrogacy UK, and the Queer Birth Club. I am also thankful to all the attendees at a workshop I hosted to discuss early findings from this project at Durham University: Dr Dunja Begović, Dr Alan Brown, Professor Rita D'Alton Harrison, Dr Victoria Hooton, Dr Marianna Illanou, Zaina Mahmoud, Dr Alex Mullock, Dr Anna Nelson, Dr Laura O'Donovan, Professor Shaun Pattinson, Dr Zoe Tongue, and Dr Nicola Williams. I am also thankful to Dr Molly Johnson and the Reproductive Biomedicine and Technology Group at Monash University, Australia for inviting me to present this work within their seminar series in 2022 and for their interesting comments. I am grateful to Victoria Adkins and Dr Anna Lewis for their written comments on earlier versions of this paper. I am thankful to two anonymous reviewers and Professor Lucy Frith for their comments in peer review. All errors remain my own. Finally, I am thankful to the British Academy for funding this research.

CONFLICT OF INTEREST STATEMENT

The author declares no conflict of interest.

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How to cite this article: Romanis, E. C. (2023). Equality-enhancing potential of novel forms of assisted gestation: Perspectives of reproductive rights advocates. *Bioethics*, *37*, 637–646. https://doi.org/10.1111/bioe.13187

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[50] Office for National Statistics. (2020). *Household wealth by ethnicity, Great Britain: April 2016 to March 2018*. https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/articles/householdwealthbyethnicitygreatbritain/april2016tomarch2018

[51] Horn, op. cit. note 42.