

ANNIVERSARY COLLECTION - POSITION PIECE

Ectogenesis: Capsula Mundi, Flower Baby, and Sacrificial Lamb

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In this short article, I consider the mythologies of ectogenesis that have arisen in response to breakthroughs in scientific research on incubators from the 1880s to the present day. In particular, I interrogate contemporary claims that artificial womb technologies could one day replace abortion. I argue that these claims demonstrate a significant lack of attention to care and relationality during pregnancy. Finally, I propose that we can use the fantasy of ectogenesis in a different way, to imagine a new kind of future rather than replicating the narratives of the past.

In the late 1800s, obstetricians and paediatricians exhibited their innovative incubation designs using the new platform of the World's Fairs. At the Berlin Exposition in 1896, Alexandre Lion and Martin Couney were the proud founders of the *Kinderbrutenstalt*, or 'child hatchery'. At Earl's Court in London, the promise of an incubator baby show generated a keen crowd and prompted a popular song (rich with undertones of population-related anxiety) about 'breeding a nation by means of incubation' (Durbach 2009). After his tour with Lion, Martin Couney returned to his home nation of the United States and opened a permanent incubator baby display at Coney Island's Luna Park. There, offspring born too early were cared for among ice cream counters, Ferris Wheels, and sword-swallowers until just before the Second World War.

A full-term pregnancy is forty weeks, and the infants housed in these glass cases were no more than a week premature. But for Victorian crowds, the novelty of babies in boxes interspersed between palm trees that flourished in the humidity prompted rumours in the print press that the incubator was indeed an 'Artificial Foster-Mother': a glass rendition of the human uterus (*ibid*).

Flashing forward to 2017, this idea begins to take on a life beyond fantasy. At the Center for Fetal Research at the Children's Hospital in Philadelphia, a team led by Emily Partridge and Alan Flake announced the successful animal trials of a highly advanced incubator called the biobag, in which they supported lamb fetuses at the equivalent of approximately twenty-three weeks human gestation. A short time later, Haruo Usuda and his team, a collaboration between the Women and Infants Fetal Research Foundation at the University of Western Australia and Tohoku University in Japan, declared the success of their iteration of the new technology dubbed (with no small amount of cheek) 'ex vivo uterine environment therapy', or EVE (Usuda et al 2017). The incubators of the late 1880s were capable only of sustaining babies born quite close to their due dates by our standards. The biobag, by contrast, is intended for use on fetuses at around 23–24 weeks of gestation, the current cusp of 'viability', when a fetus has a chance of survival outside the womb.

Any number of anecdotes from the peculiar era of incubator-baby sideshows might tell us something about how to process the themes now emerging in

present-day debates over artificial womb technology. But there is one particular thread that I want to pull. Alongside the many stories that circulated about new incubation technologies was the claim that it had become possible to grow babies like orchids in hothouses. Babies, among rare flowers, cultivated under the watchful eye of gardeners who may or may not be related to them. Babies, among rare flowers, carefully managed to demonstrate particular qualities, excised if they failed to flourish.

While the imagery surrounding the incubators of the 1880s is rife with lush petals and floating glass, speculation on the contemporary artificial womb can be characterized by the eerie image of a lamb fetus in a plastic bag, surrounded by simulated artificial amniotic fluid. The imaginary of the future of ectogenesis (the growth of a baby from conception to term in an artificial womb) that has emerged in the wake of this development has had a jarring ring to it. Most notably, coverage in the popular press and academic literature alike has focused on the possibility that by reducing the point at which a fetus can survive outside the womb, ectogenesis will eventually render abortion both unnecessary and illegal. According to the authors of such claims, once a fetus can be extracted to continue to grow elsewhere instead of being terminated, abortion can no longer be defended (see Kaczor 2018; Mathison and Davis 2017; Blackshaw and Rodger 2018; Colgrove 2019; Istvan 2019). I won't take up the counterarguments to this claim here (my dissertation discusses these in detail). But suffice to say, fetal viability is not a magical quality that renders a fetus a person: in law, it is a fictive construct that in some jurisdictions produces a line that keeps abortion firmly (and unnecessarily) in the hands of the state. Bioethicists in particular seem hopelessly devoted to making the claim that ectogenesis will pose an inevitable, universal challenge to abortion rights (*ibid.*). In so doing, they neglect the fact that the technology will only challenge these rights where they have been constructed as contingent, where the law has weighed reproductive freedom against interest in fetal life. It is certainly true that for this reason, the technology may pose a danger to reproductive rights in some jurisdictions. But we need look no further than nations such as Canada, in which abortion is decriminalized and viability is not used as a legally enforced limit to see that this is not universally so. And, as I argue

in my dissertation, rather than accepting that abortion must inevitably be banned or attempting to make small changes to an unsustainable status quo, the best way to protect abortion rights against a challenge posed by ectogenesis is to decriminalize abortion and improve access to reproductive care for pregnant people.

What is most notable about the blithe claims that ectogenesis will 'solve' the 'problem' of abortion is the assumption that care will be straightforwardly provided to the fetus plucked from a person's body and placed in an artificial womb. Sophie Lewis's beautifully argued *Full Surrogacy Now* (2019a), in which she traces the work of gestation, is a useful touchpoint here. Lewis takes the very real labour that is demanded throughout pregnancy seriously, a testimony to the intricate apparatus that would need to be created before an alternative could be realized. More recently writing explicitly of biobag technology, Lewis argues that "in our species at least, pregnancy is a multifaceted and part-consciously creative undertaking" (2019b). The recurring proposal that an unwanted fetus could simply be extracted and grown in an artificial womb reflects little regard for the physical, emotional, relational labour of pregnancy. Who will be responsible for these fetuses during and after gestation? Some scholars suggest, cheerfully, that a prospective father could take responsibility where a pregnant woman rejected it. But they neglect to acknowledge the potentially unwanted relationships produced between the fetus and its caretakers, and between and amongst these caretakers as ectogenetic gestation occurs. The question of who is to care for the fetus in instances in which both progenitors ultimately reject responsibility is frequently left dangling. We are meant to simply accept that the goal of fetal rescue is enough in itself.

In the absence of a single human who, by virtue of the fetus's location, provides the sustenance it needs to survive, ectogenetic gestation draws attention to the way that external relationships shape, harm, limit, protect, or allow gestation to occur. Creating an alternative to the care the pregnant person gives to the fetus requires a medical device that mimics the delivery of nutrients and extraction of toxins performed by the placenta, and that expands and contracts with the fetus's growth. As Aristarkhova (2012) emphasizes, it means engaging the (paid) work of numerous

medical experts who can monitor the minutiae of the fetus's movements, and it means finding caretakers before it emerges who will treat it as a loved baby when it arrives. When you spell out the accoutrements required to allow a baby to be grown in this way, it is striking that ordinarily we assume one person should do it all alone. It makes explicit that pregnant people are expected to provide these resources without any certainty of outside support. And it becomes particularly painful to think that we would fail to provide a person with the means to refuse to continue a pregnancy.

To counter the frequent absence of discussions of care and nursing in scholarship on the history of incubators, Aristarkhova offers the rich image of the '(hungry) nurse': invisible support staff, mostly women, whose lunch hours are negated in the interests of monitoring the progress of the incubated fetus (2012, p. 126). With this image, she intends to emphasize that visions of a fully automated artificial womb frequently erase the fact that the fetus within will remain dependent on human care in some form. Without consideration of 'hungry nurses', Aristarkhova suggests, treatises on ectogenesis and its potential impact will do little in the way of preparing us for the realities of this technology. Aristarkhova focuses on the hospitality of nurses, on whom she argues the success of the artificial womb as a medical innovation depends. I find this image of 'hungry nurses' particularly generative, in considering as well 'hungry gestators', 'hungry parents', and 'hungry doctors'. Who makes the machine run? Who anticipates the fetus that grows inside it? Whose work is required to allow a baby to be born?

The association that is perhaps most provocatively triggered by the before-and-after images of the biobag is that of the sacrificial lamb. In fact, while one of the creatures from the original study was kept alive for a year after its gestation to ensure that it fared well, the rest of the group was euthanized. These creatures, extracted from their familial wombs long before their naked bodies were ready for exposure to air, have the distinction of being the first animals to survive growing to term from such a fragile state in an artificial womb. But they are not the first casualties of such experiments, and they will not be the last. The creators of the biobag, ever-aware of the dystopian lineage of ectogenesis, acknowledged when they announced the

success of their study that its key limitation was parental perception of their baby in a plastic bag (Partridge et al 2017). The image of a lamb pressed against the polyurethane surface of the technology, its eyes looking ready to open, is undeniably disconcerting. The instinct that a newborn of any species should be held is one many of us might be said to share.

By contrast to the image of a lamb fetus entangled in a plastic organ and synthetic veins, I want to return to the more whimsical vision that accompanied Victorian speculation on ectogenesis following the introduction of the first functional incubators. This fantasy of ectogenesis evokes a different kind of cultivation: watered, fed, and whispered to by interrelated gardeners and perhaps the automatic features of the greenhouse itself, a baby grows amidst petals and leaves. A modern image is that of the organic burial pod, a *Capsula Mundi*.¹ The *Capsula Mundi* marks the end of life, the encapsulation of a body in a seed to grow into a tree. I want to link these two images, *Capsula Mundi* and greenhouse flower. Holding on, for a moment, to the baby emerging from a bud, I want to speculate on the way that the stories we tell about ectogenesis (realised through the materials used to produce it, the regulatory frameworks built to govern it, and the social steps taken toward enabling it) – produce meanings for the technology that are worlds apart.

In spite of the numerous possible stories we could tell about ectogenesis, legal and bioethical scholarship, new and old, has clung to and replicated what we might call the path of least imagination. Though often packaged with the claim that ectogenesis will change everything we take for granted about human reproduction, much of this literature simply reproduces the status quo at best, and at worst, reaches into the past to find a template for a narrative about the future. I am not suggesting here that we need to disregard history to allow a feminist future for ectogenesis to unfurl. On the contrary, liberal claims that ectogenesis will produce ‘true equality’² that fail to address the multiple ways that reproductive technologies

¹ Noémie Merleau-Ponty is responsible for giving me the idea of the *Capsula Mundi* as a way of imagining a less sterile, more generative artificial womb.

² See for instance, Kendal 2015.

have been used to enact violence³ can only continue to replicate existing inequities in access to reproductive freedom.

But like the different stories we can find in the image of the lamb and that of the orchid baby, there are multiple ways we can read ectogenesis. One of these ways of reading is to use the fantasy offered by the technology to imagine not a future that replicates the lack of relational attention to care that constitutes a limitation to present-day reproductive freedoms in some nations, but as a way of imagining ourselves away from such limitations. If we are looking to a future that has yet to arrive, we must begin by rejecting the untenable status quo, by rejecting the idea that things as they are as they should be.

Competing Interests

The author has no competing interests to declare.

References

- Aristarkhova, I.** 2012. *Hospitality of the Matrix: Philosophy, Biomedicine, and Culture*. New York: Columbia University Press. DOI: <https://doi.org/10.7312/columbia/9780231159296.001.0001>
- Blackshaw, B** and **Rodger, D.** 2018. Ectogenesis and the Case Against the Right to the Death of the Foetus. *Bioethics*, 33(1). DOI: <https://doi.org/10.1111/bioe.12529>
- Colgrove, N.** 2019. Subjects of Ectogenesis: Are ‘Gestatelings’ Foetuses, Newborns, or Neither? *Journal of Medical Ethics*, 48. DOI: <https://doi.org/10.1136/medethics-2019-105495>
- Durbach, N.** 2009. Baby Incubators and the Prosthetic Womb. *Victorian Review*, 35(2): 23–27. DOI: <https://doi.org/10.1353/vcr.2009.0016>
- Istvan, Z.** 2019. The Abortion Debate is Stuck. Are Artificial Wombs the Answer? *The New York Times*.

³ Many books have been written on the subject of how sterilization abuse and reproductive violence have been exercised (both historically and presently) against black and Indigenous women, trans and queer people, and people with disabilities in particular. See Ross and Solinger 2017 and Ross et al 2017.

- Kaczor, C.** 2018. Ectogenesis and a Right to the Death of the Prenatal Human Being. *Bioethics*, 32(9): 634–638. DOI: <https://doi.org/10.1111/bioe.12512>
- Kendal, E.** 2015. *Equal Opportunity and the Case for State-Sponsored Ectogenesis*. UK: Palgrave MacMillan.
- Lewis, S.** 2019a. *Full Surrogacy Now*. London: Verso.
- Lewis, S.** 2019b. Do Electric Sheep Dream of Water Babies. *Logic*, 8. <https://logic-mag.io/bodies/do-electric-sheep-dream-of-water-babies/>.
- Mathison, E** and **Davis, J.** 2017. Is There a Right to the Death of the Foetus? *Bioethics*, 31(4). DOI: <https://doi.org/10.1111/bioe.12331>
- Partridge, EA, Davey, MG, Hornick, MA, McGovern, PE, Mejaddam, AY, Vrecenak, JD, Mesas-Burgos, C, Olive, A, Caskey, RC, Weiland, TR, Han, J, Schupper, AJ, Connelly, JT, Dysart, KC, Rychick, J, Hedrick, HL, Peranteau, WH and Flake, AW.** 2017. An Extrauterine System to Physiologically Support the Extreme Premature Lamb. *Nature Communications*, 8: 1–16. DOI: <https://doi.org/10.1038/ncomms15794>
- Ross, L, Roberts, L, Derklas, E, Peoples, W and Bridgewater Toure, P.** (eds.) 2017. *Radical Reproductive Justice: Foundation, Theory, Practice, Critique*. New York: the Feminist Press at CUNY.
- Ross, L** and **Solinger, R.** 2017. *Reproductive Justice: An Introduction*. Oakland: University of California Press.
- Usuda, HM, Watanabe, S, Miura, Y, Saito, M, Musk, GC, Rittenschober-Bohm, J, Ikeda, H, Sato, S, Hanita, T, Matsuda, T, Jobe, AH, Newnham, JP, Stock, SJ and Kemp, MW.** 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*. DOI: <https://doi.org/10.1016/j.ajog.2017.05.046>

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