

Ethics of artificial wombs: missing angles and special concerns

Sophya Yumakulov, BHSc, Gregor Wolbring, PhD

Faculty of Medicine, University of Calgary, Calgary, AB, CANADA

syumakul@ucalgary.ca, gwolbrin@ucalgary.ca



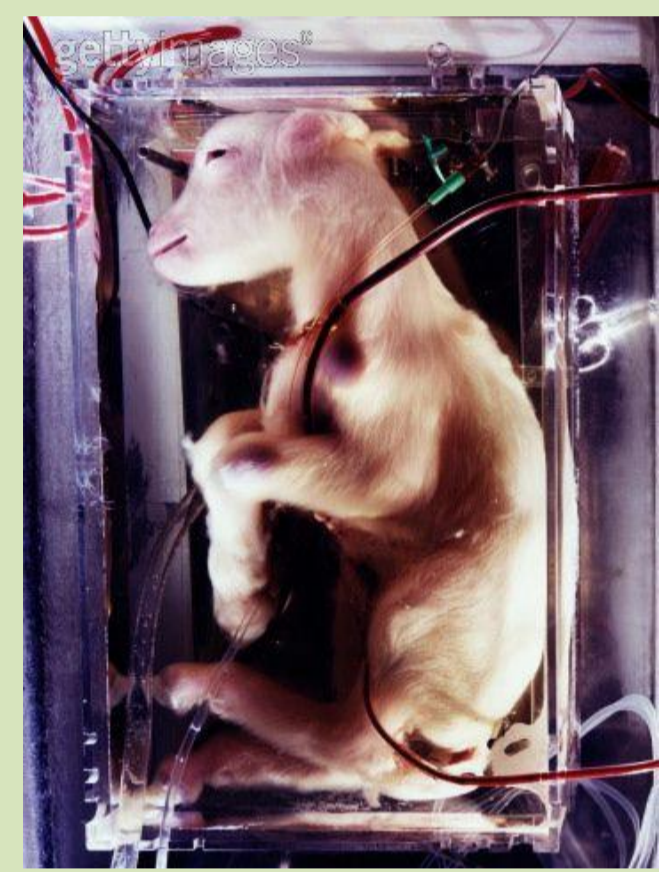
We acknowledge the support of the Wolb-Pack

Artificial womb technology

➤ **Artificial womb technology (AWT):** man-made technology that can gestate a fetus.

➤ **Progress to date:**

- 1986-1997 – artificial perfusion of uteri in Italy[1]
- 1996 – Kubawara et al gestate goat fetus in artificial placenta for 3 weeks[2]
- 2002 – Hung Ching Liu et al design human uterus and grow embryos for 6 days[2]



<http://img315.blogspot.ca/2004/12/japanese-pioneers-raise-1d-in-rubber.html>

➤ Can be developed indirectly by the eventual meeting of **IVF technology** (allowing embryos to survive in vitro longer and longer) and **neonatal technology** (allowing premature fetuses to survive at younger and younger stages)[1]



http://farm3.static.flickr.com/2545/3441035507_223910662_0.jpg

Study Purpose:

To understand the scope of research, discussion, and discourse around artificial womb technology, including special challenges for bioethics, women's issues, and global health.

Methods

Review of literature related to AWT

Databases

ScienceDirect, Compendex, IEEE, Communication Abstracts, Scopus, OVID(All), EBSCO(All), Academic One File, Web of Science, and JSTOR

Search Term

"artificial womb"

Inclusion/Exclusion Criteria

➤ Include: English-language, primary research, conceptual pieces, reviews, academic newsletters, book chapters, book reviews

Exclude: Non-English, pure technical, no PDF-link

➤ 194 articles found, **133 included**.

Analysis

Use Atlas.ti ver. 7 to perform **content analysis**, find themes, and organize data.

Discourses Around Artificial Wombs

The Abortion Debate

- ❖ AWT can end the abortion debate – allowing women to terminate pregnancy without needing to kill the fetus[3]
- ❖ AWT will NOT end the abortion debate, because women who seek abortion are trying to end not only pregnancy but *motherhood* [3]

Advantages

- ❖ Keeping preterm babies alive[99]
- ❖ Safer environment for the fetus[100]
- ❖ Potential for fetal surgery in utero[100]
- ❖ Saving IVF embryos[4]
- ❖ Replace surrogacy, for women unable to have offspring[5]
- ❖ Liberate women from negative effects of pregnancy and birth = gender equality[6-8]

Disadvantages

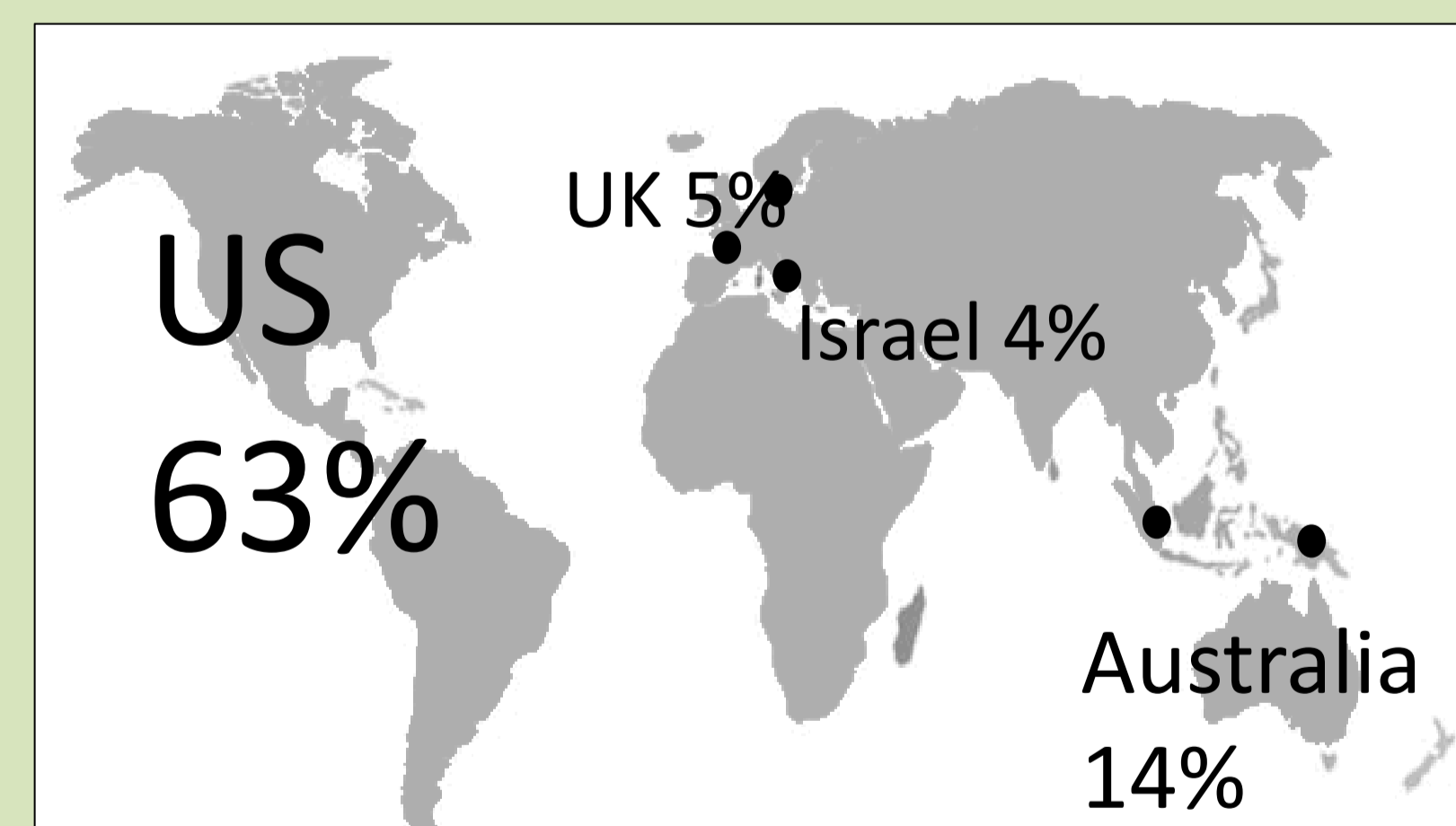
- ❖ AWT would undermine women's right to decide when/how to become mothers[3]
- ❖ Risks of removing a fetus from womb[3]
- ❖ Men taking over uniquely female function/experience[3]
- ❖ Men gaining complete control over reproduction and women's bodies[9]
- ❖ Reduced women's status to laborers, sex providers and breeders[10]

What is missing?

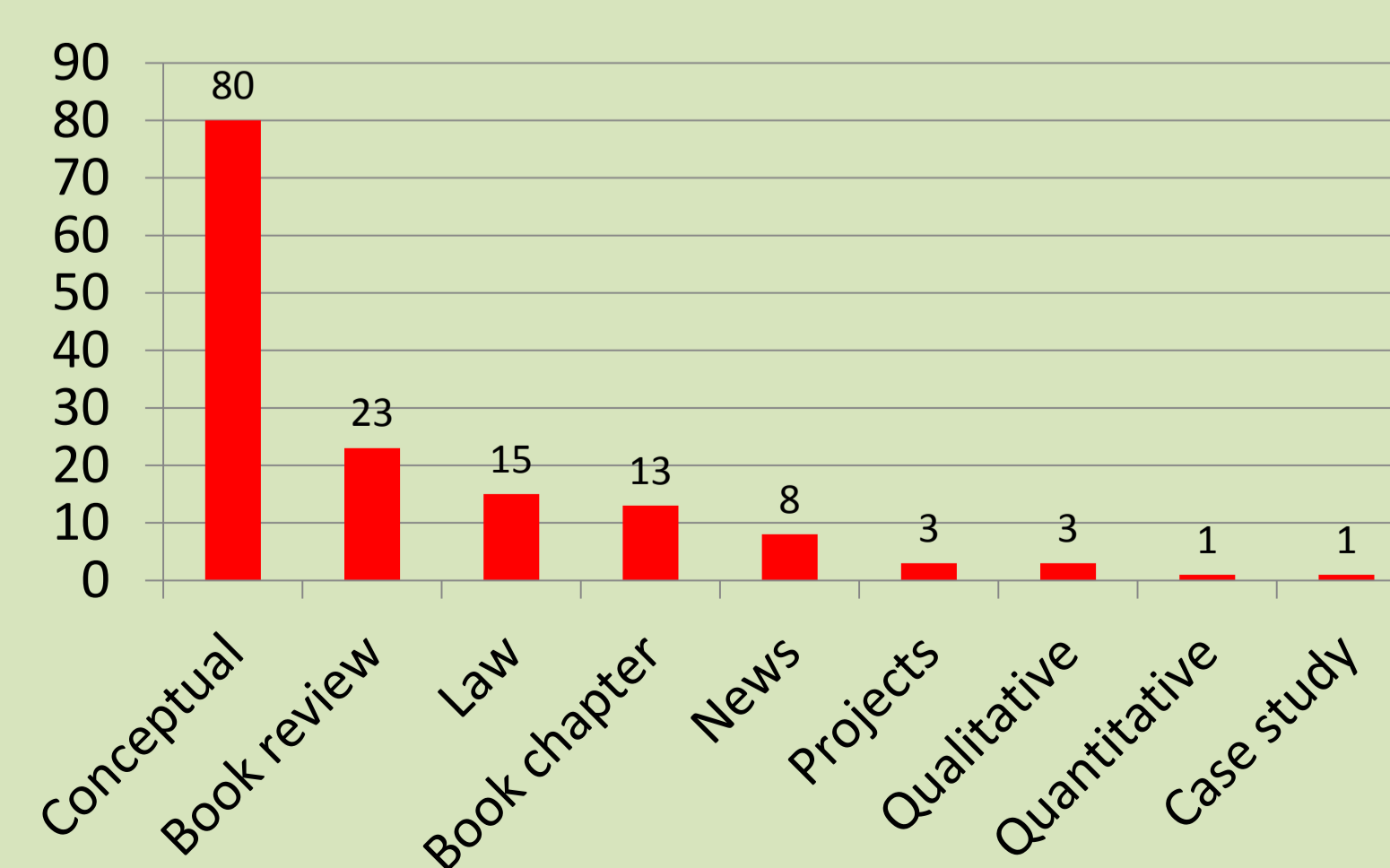
- Currently perspectives are mainly limited to *American feminism*
- Consideration of future possibilities
 - Further medicalization of reproduction
 - Reproductive technologies are seen as women's "rights" in industrialized countries, but this may not be true of other places (eg. used for genocide or infanticide)
 - Government-sponsored reproduction
 - Combined with **Synthetic Biology** = custom humans
 - In places where reproduction is controlled by certain groups (ie. males), AWT would be accepted, threatening women's right.

Such "far-fetched" possibilities are not considered or discussed in current artificial womb literature, even though these visions of the future are not far-fetched at all; they have precedents in today's world, and they can be reached by simple logical steps from where we are today.

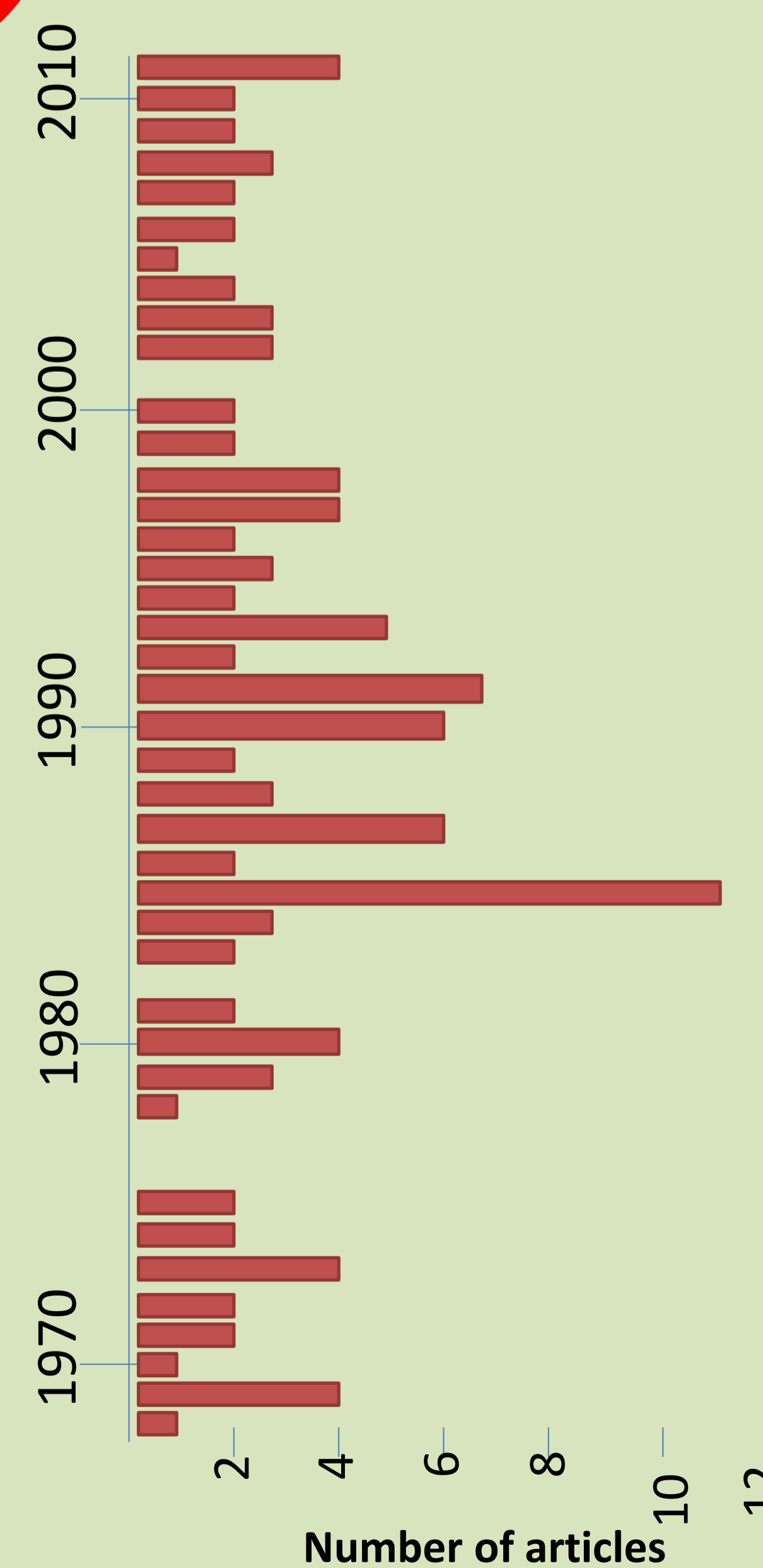
Geography of Research



Types of Articles



Research Timeline



The Global Perspective

The Global Perspective is lacking in this literature, even though artificial womb technology has implications on a global scale.

- **Global Health** – AWT has the potential to increase inequities between Southern and Northern countries, creating differences between countries that can afford it and countries that cannot, in terms of *maternal/child health* and *reproductive health*
- **Medical tourism and outsourcing** – controversial technologies such as IVF and stem cell research are taken up by countries that have more lenient regulations (eg. Lebanon, India) and use them as a national *source of income*. AWT can easily be included in this enterprise.
- **Regulating reproduction** – for highly populated countries where reproduction is already being controlled, and where women might be in short supply (eg. China). AWT also opens doors to genetic manipulations and "designer babies".
- **The Fate of Women** – exacerbating *women's rights* issues already present in many countries, AWT will shift the cultural perceptions of women and their roles in society, especially where a *woman's value* is measured by her ability reproduce, "bear sons", etc.

References

- Simonstein, F., Mashiacheizenberg, M. (2009). The artificial womb: A pilot study considering people's views on the artificial womb and ectogenesis in Israel. *Cambridge Quarterly of Healthcare Ethics*, 18, 87-94.
- Bulletti, C. Palagianio, A Pace, C Cerni, A Borini, A de Ziegler, D. (2011). The artificial womb. *REPRODUCTIVE SCIENCE*, 1221, 124-128.
- Langford, S. (2008). An end to abortion? A feminist critique of the 'ectogenetic solution' to abortion. *WOMENS STUDIES INTERNATIONAL FORUM*, 31, 263-269.
- Reiber, D. T. (2010). The morality of artificial womb technology. *National Catholic Bioethics Quarterly*, 10(3), 515-528.
- Shanley, M. L. (1993). Surrogate mothering and women's freedom: A critique of contracts for human reproduction. *Signs*, 18(3), 618-639.
- Sander-Staudt, M. (2006). Chapter eight: OF MACHINE BORN? A FEMINIST ASSESSMENT OF ECTOGENESIS AND ARTIFICIAL WOMB. *Ectogenesis*
- Woolfrey, J. (2006). Chapter nine: ECTOGENESIS: LIBERATION, TECHNOLOGICAL TYRANNY, OR JUST MORE OF THE SAME? *Ectogenesis*
- Weinberg, J. K. (1988). Abortion, technology and the law. *The Women's Review of Books*, 6(3), 9-10
- Cannold, L. (2006). Chapter four: WOMEN, ECTOGENESIS, AND ETHICAL THEORY. *Ectogenesis*
- Rowland, R. (1985). A child at any price?: an overview of issues in the use of the new reproductive technologies, and the threat to women. *Women's Studies Int. Forum*, 8(6), 539-546.