

The Ethics of Biofabrication: The Case of New Hampshire's ARMI

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Background

- Biofabrication is the industrial production of living tissues and organs.
- ARMi, in Manchester, New Hampshire, is looking to do this at scale.
- Work examines three bioethical concerns in this field and how they compare to the traditional organ donation conversation in bioethics.
 - Commodification
 - Consent
 - Distribution of biomaterial
- Ongoing research will suggest future policy.



Introduction

- Biofabrication could save thousands of lives each year
- Biofabrication will change our medical capabilities drastically
- Ethical frameworks are underdeveloped in this area.
- Without proper ethical guidance, there is risk for public distrust, harm, and inequity.



Methodology

Informed Consent

- Determine ways consent must change in experimental fields using Quill Kukla.

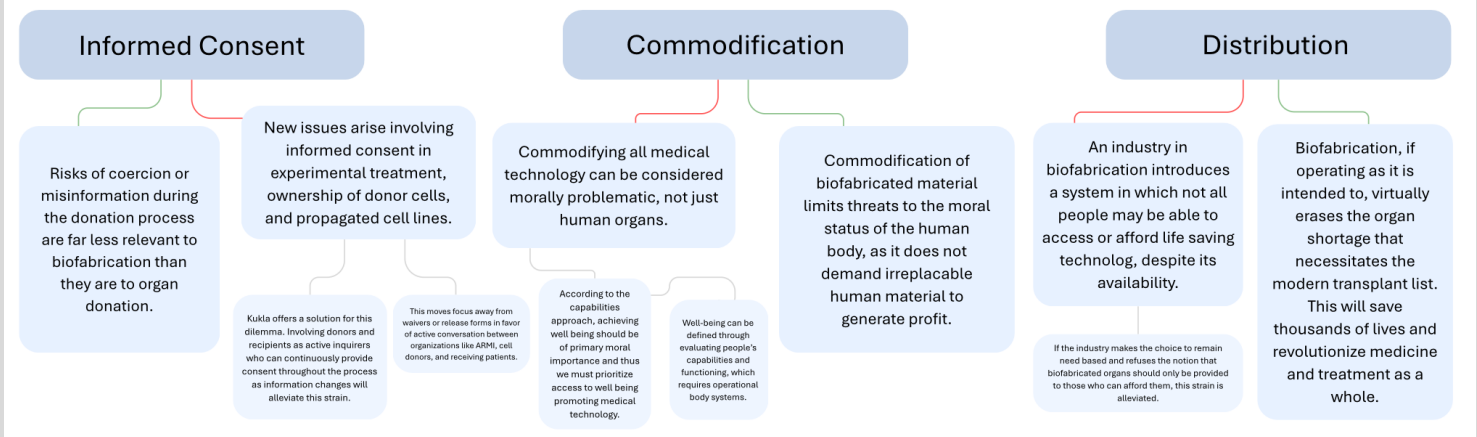
Distribution

- Capabilities Approach assesses a moral obligation to open access to biofabricated materials, compares to transplant list.

Commodification

- Stephen Wilkinson's *Bodies for Sale* used to compare the moral status of engineered and donated organs.

How do we argumentatively examine these ethical tensions?



Preliminary Results and Conclusions

Informed Consent

- Informed consent is less relevant to biofabrication, as donor coercion is less relevant.
- ARMi must ensure their consent agreements fit evolving industrial procedures.

Distribution

- Biofabrication may address the organ shortage, but poses new challenges for the existing systems used for access and distribution of organs.
- Need a way for these organs to be equitably distributed in the absence of regulated transplant lists.

Commodification

- Commodification of biofabricated material may not cause commodification of *human* biomaterial.
- ARMi's focus profitability is a point of pressure, financial motives risk ethical compromise.



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Ongoing Research

- Policy review to determine where our current regulatory system fails to address these ethical tensions.
- Deep literature review on commodification and social justice in healthcare.
- Further literature review may establish new ethical strains beyond the three mentioned.
- Connection with ARMI's ethics board for a position is in progress, waiting for student seat approval.
- Ethical pillars will be expanded upon through a full philosophical manuscript, which will be submitted for publication.
- This manuscript will be distributed to local biofabrication initiatives (ARMi & UNH Bioengineering).
- Engage more students in this work through SURF-IT next summer.
- Collaborating further with the Initiative for Bioethics and Public Life at UNH to open doors for future students in this field.

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