

# ELDY S. LAZARO VASQUEZ

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Why does it matter?



# WHO IS SHE?

- Peruvian
- Masters Student in the Department of Design at the University of California Davis
- Bachelors in Architecture & Urbanism
- Practiced architecture in Peru before moving to the United States
- Researching the intersection of Human-Computer interaction, personal design, & biology



# PERSONAL DESIGN PRINCIPLES



**INSPIRATION FROM  
NATURE & SYSTEMS OF  
LIVING ORGANISMS**



**ART & DESIGN AS  
EMOTIONAL  
EXPRESSION**



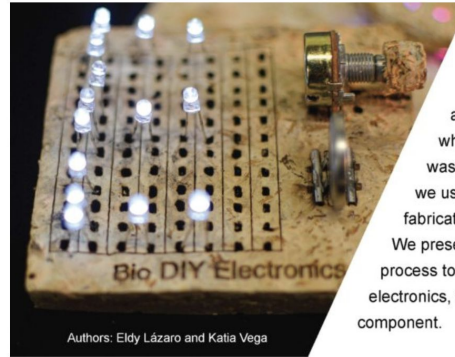
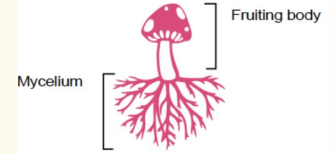
**CIRCULAR ECONOMY  
PRINCIPLES IN EARLY  
DESIGN PHASES**



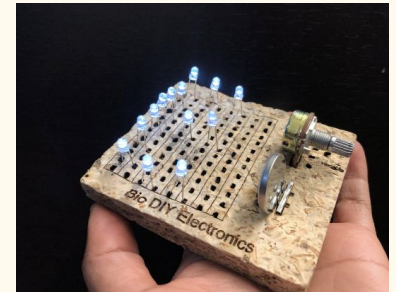
**INVESTMENT IN STEM  
EDUCATION**

# Mycelium Electronics

- 2019 Publication of “From plastic to biomaterials: prototyping DIY electronics with mycelium”
- Collaborated with Katie Vega
- Goal was to apply the use of bio-materials to electronics
- Mycelium a mushroom root network
  - Electrically conductive
  - Biodegrades within 90 days as organic, compostable waste
- Applications: embedding electronics, electronics enclosures, & mycelium as an electronic component



**Abstract:** This research aims to extend the boundaries of bio-materials application into electronics. Mycelium is the root of a mushroom and it can be used to make a composite material which degrades in up to 90 days as common organic waste. In order to create more sustainable prototypes, we used mycelium composites with common digital fabrication techniques for replacing plastic in electronics. We present our method for growing mycelium, our design process to use mycelium-composite material to embed electronics, to make enclosures, and to use it as an electronic component.



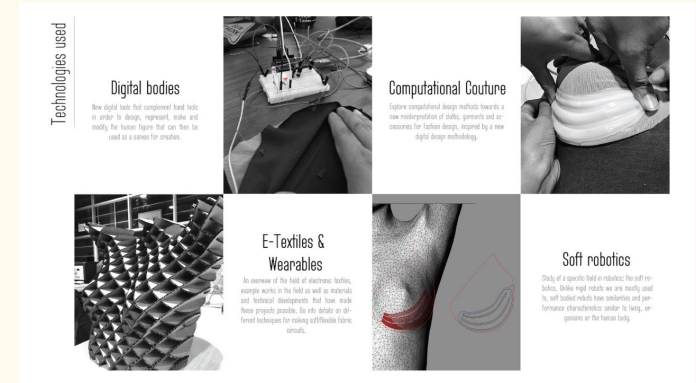
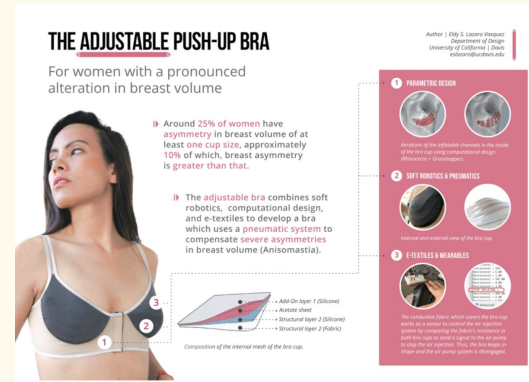
# Sustainable Prototyping Life Cycle

- 2020 Publication of “Introducing the Sustainable Prototyping Life Cycle for Digital Fabrication to Designers”
- Collaborated with Katie Vega & Hao-Chuan Wang
- Introduced the application of bio-based materials as an alternative for digital fabrication
- The four phases:
  1. Raw materials acquisition
  2. Manufacturing and Distribution
  3. Use
  4. End of Life
- Goal was to increase environmental awareness during prototyping



# Auto-adjustable Bra

- 2019 Publication of “Auto-adjustable bra for Women with a Pronounced Alteration in Breast Volume”
- Goal is to compensate for breast asymmetries
- Critical Technologies:
  - Soft robotics
  - Computational design
  - E-textiles
- Use of an air injection system for material adjustment
- Adaptive, wearable technology





# Why does it matter?

**SUSTAINABLE  
ENGINEERING  
PRACTICE**

**BIODEGRADABLE**

**COLLABORATION  
WITH NATURE**

**BIOMATERIAL  
EXPLORATION**

**REDUCES E-WASTE FOR  
RAPID PROTOTYPING**

**ADAPTIVE  
TECHNOLOGY**





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**THANK YOU.**