Exploring Alternative Models for Agriculture

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IIT Institute of Design // Systems Approach to Design
System Analysis for Agriculture

Profit motives and closed knowledge drive negative effects in industrial agriculture

_A Problematic Industrial Model_
Industrial agriculture gets a bad rap compared to community agriculture, for instance. But what is really happening in this complex system?

_Mapping Complexity_
I created a system dynamics map to illustrate the feedback loops that drive the behaviors and consequences of the industrial agriculture system.

_Money and Knowledge as Drivers_
The primacy of profit means that knowledge (R&D and IP) is viewed as a competitive advantage that must be protected through technological and legal means.
Community System Inverts Values

Flipping the Script
Community agriculture is one response to industrial agriculture. It flips the values and therefore many of the effects.

New Model, New Problems
I created another system dynamics map to show the effects of community agriculture. Profit and R&D are replaced by personhours and community knowledge, but in a noncommercial setting these assets can be in short supply, particularly in communities affected most from food justice issues.

The Way Forward
Our team believed community agriculture is a positive response to food justice issues, but we must explore a system intervention that strengthens learning and knowledge.
A Post-Human Centered Intervention

When plants and technology are considered coequal users, new design directions are possible.

_**Flipping the Orthodoxy**_

To build human capital in community agriculture, a human-centered design approach might lead to the creation of education and training programs. Instead, we took a different approach inspired by transhumanism. I created a multi-user model based on the fundamental components of agriculture: humans, plants, and technology as individuals and groups. We selected a center of gravity for our design work.

_**Give Plants More Agency**_

What if plants could simply tell you what they needed when they needed it? Embedding plant knowledge could allow for new garden models where no one has ownership or full responsibility of plants.
An IOT Device That Empowers Plants

Using technology to prototype human & plant relations

An Electronic Prototype
I designed and built a prototype with Arduino to allow a plant to communicate with people. If temperature, light, or soil moisture is insufficient, a message will be displayed on the screen asking passersby to fix it.

Designing Technology for Plants & People
The prototype validated our hypothesis that a talking plant could thrive in an environment where no one had direct responsibility for its care.

This new technology-enabled plant-human relationship can open up new garden models where no individual has responsibility or ownership of plants.
Let’s start a conversation

What complex challenges should we solve together?

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