



Faculty of Design

2014

Reimagining the future: The biomimetic economy

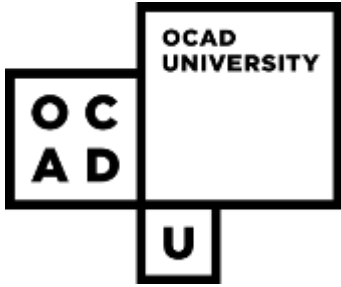
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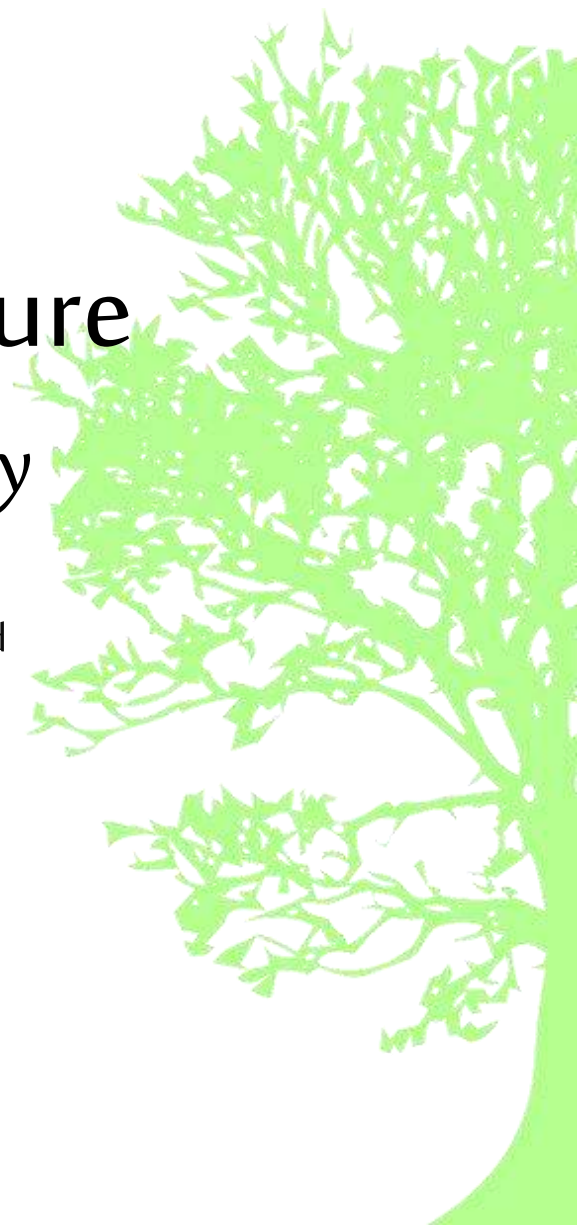
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Reimagining the Future

The Biomimetic Economy

Ryan Church | Ksenia Benifand | Nihal Ahmed

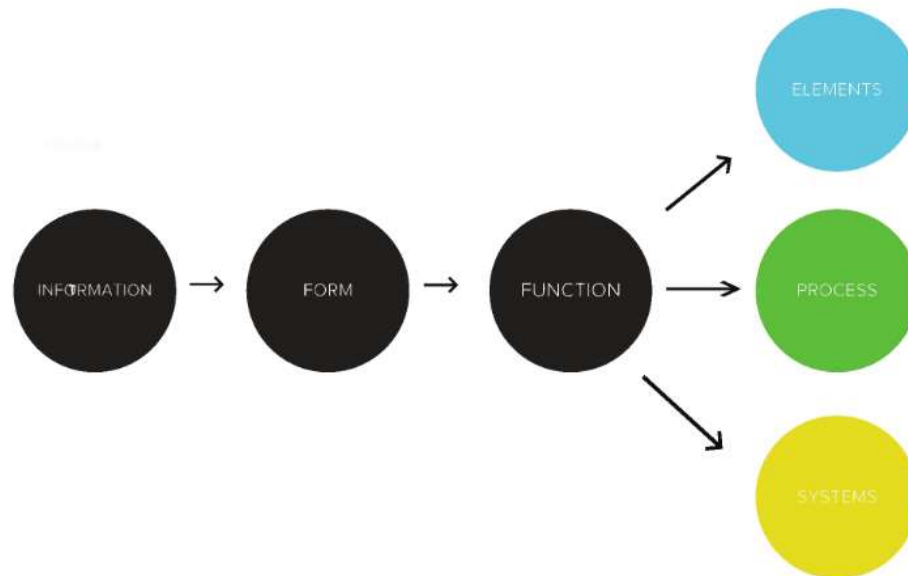


What is Biomimicry?

A science that studies nature's models and then uses these designs and processes to solve human problems.

Why Biomimicry?

Nature has been dealing with dynamic change for more than **3.8 billion years.**



Research Purpose

Explore how Biomimicry design principals can be applied to our economic system.

The Challenge

Businesses today are poorly prepared to deal with unexpected adverse social, environmental, and economic impacts.

Biomimicry

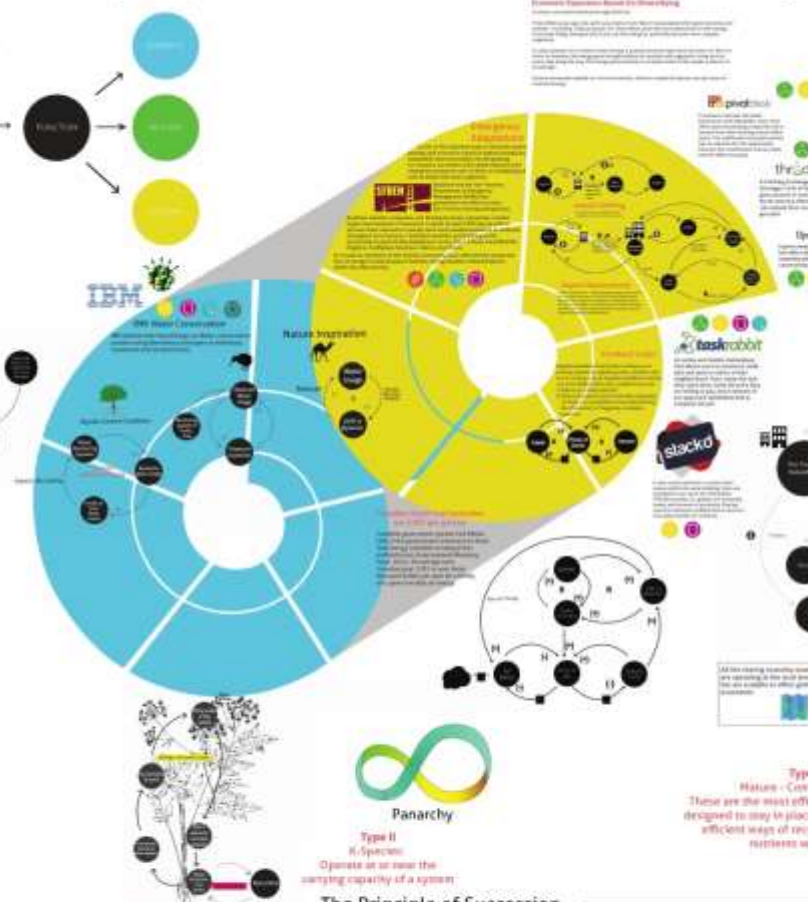
The integration of biology to search for inspiration in the study of how nature operates at all levels from the inner workings of the cell to the systems of our biosphere, to all of the beauty of nature in all creatures on earth, and how to be gained from those natural functions, in the elements and systems of earth, water, air, and fire, which give shape and form to life. Through the process of evolution, nature has been tested in the face of life - and it is no one as the designers in human-made systems which exist on this planet as a complex human position.

- INSPIRE** - Identify natural systems that provide solutions to human problems. These systems are often found in nature, but they can also be found in human-made systems.
- IMAGINE** - Apply the principles of nature to human-made systems. This is the process of translating the natural world into a human-made system.
- INVENT** - Create a new system that is inspired by nature. This is the process of creating a new system that is inspired by nature.
- INTEGRATE** - Integrate the new system into the existing system. This is the process of making the new system work with the existing system.
- IMPROVE** - Refine the system to make it better. This is the process of making the system work better.
- INNOVATE** - Create a new system that is better than the existing system. This is the process of creating a new system that is better than the existing system.
- IMPLEMENT** - Put the system into practice. This is the process of making the system work in the real world.
- IMPACT** - Measure the impact of the system. This is the process of measuring the impact of the system.
- IMPROVE** - Refine the system to make it better. This is the process of making the system work better.
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3.8 Billion Years of Research and Development



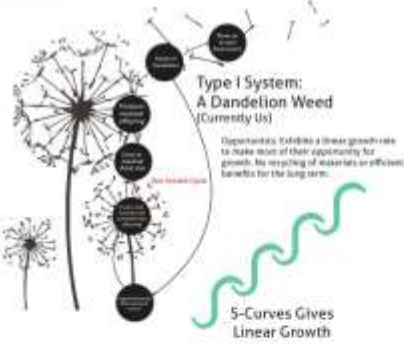
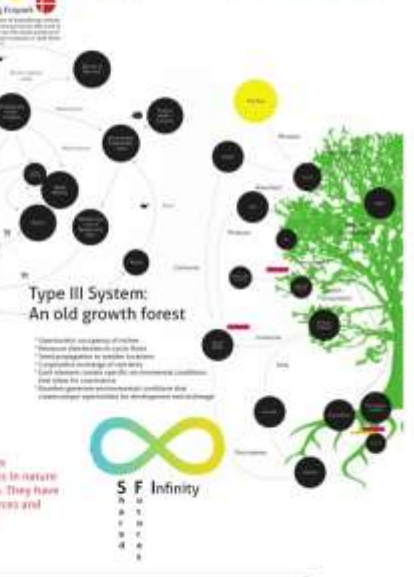
Reimagining the Future: The Biomimetic Economy



Sharing/Circular Economy



51 trillion in business opportunities.



Design Principles



Resilience



Systems Based



Optimizing



Value Based

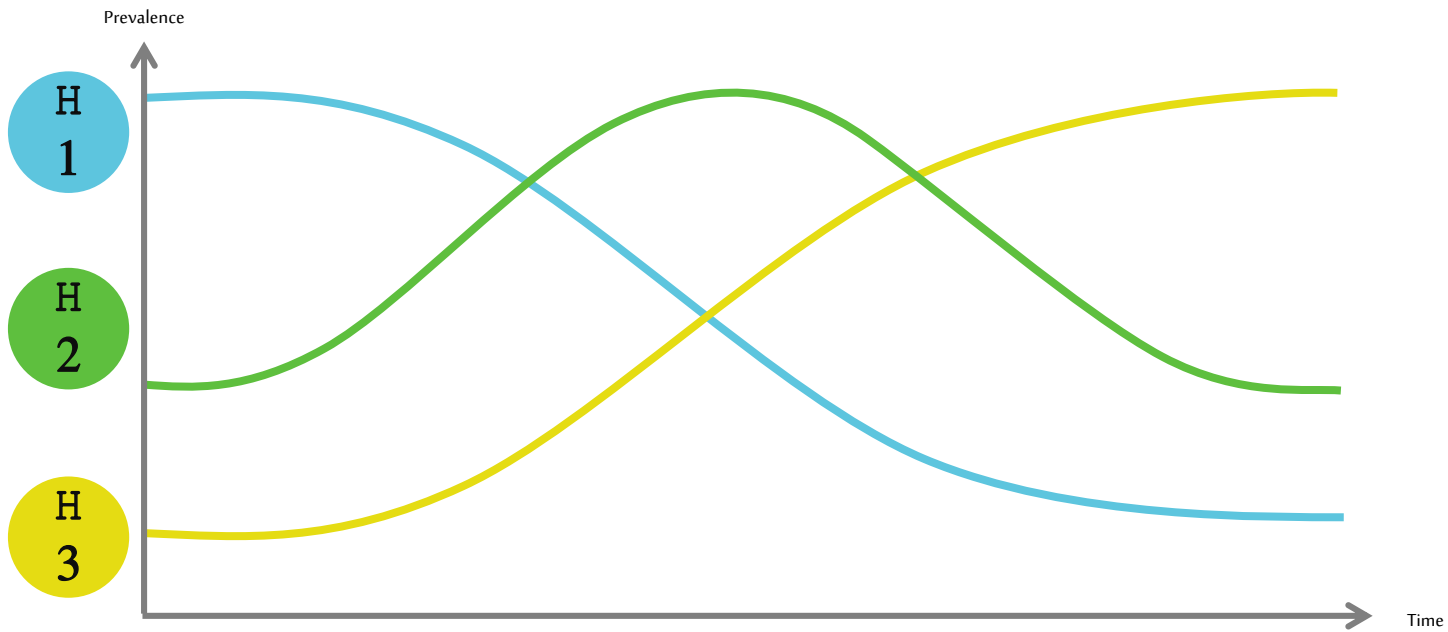


Adaptive



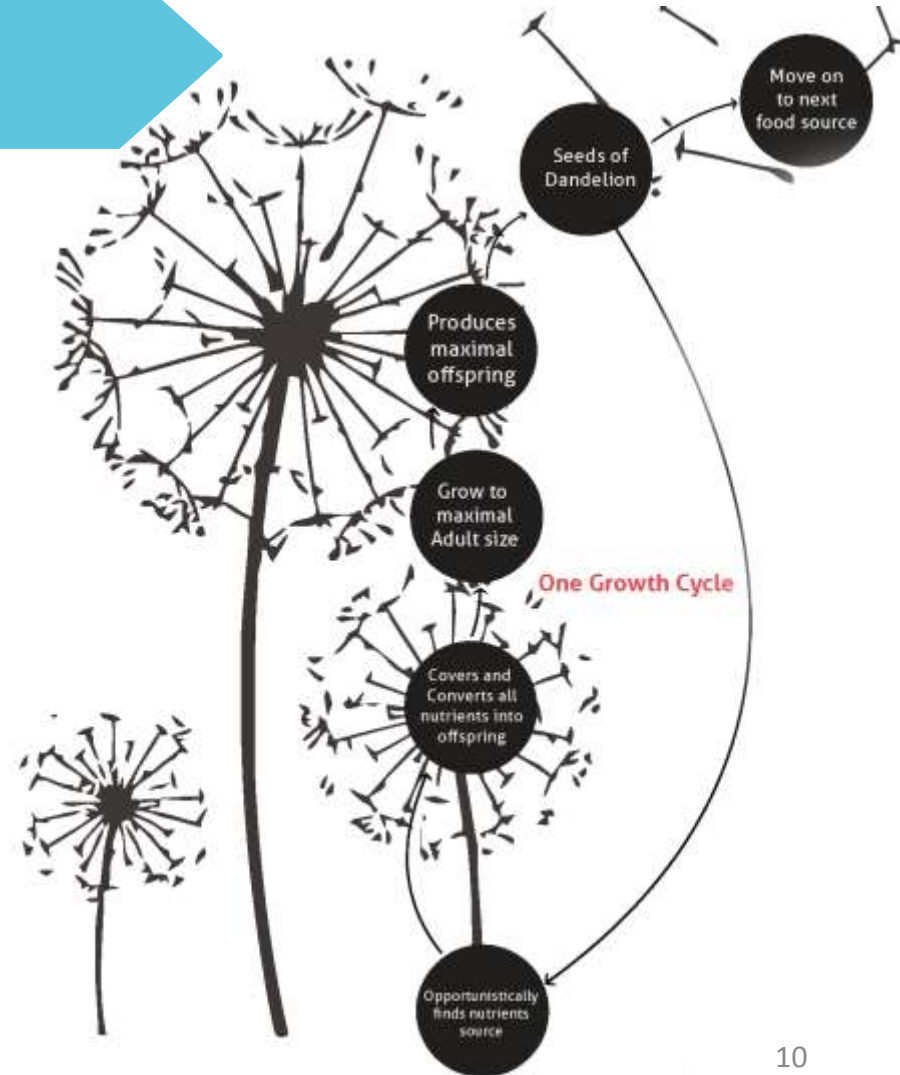
Life Supporting

Three Horizons

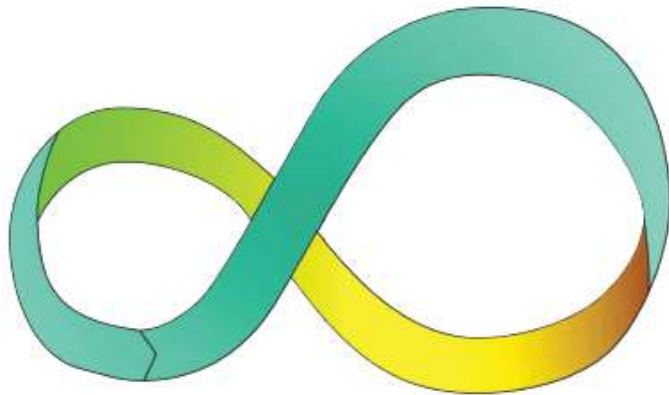


Source: Anthony Hodgson

Type I System

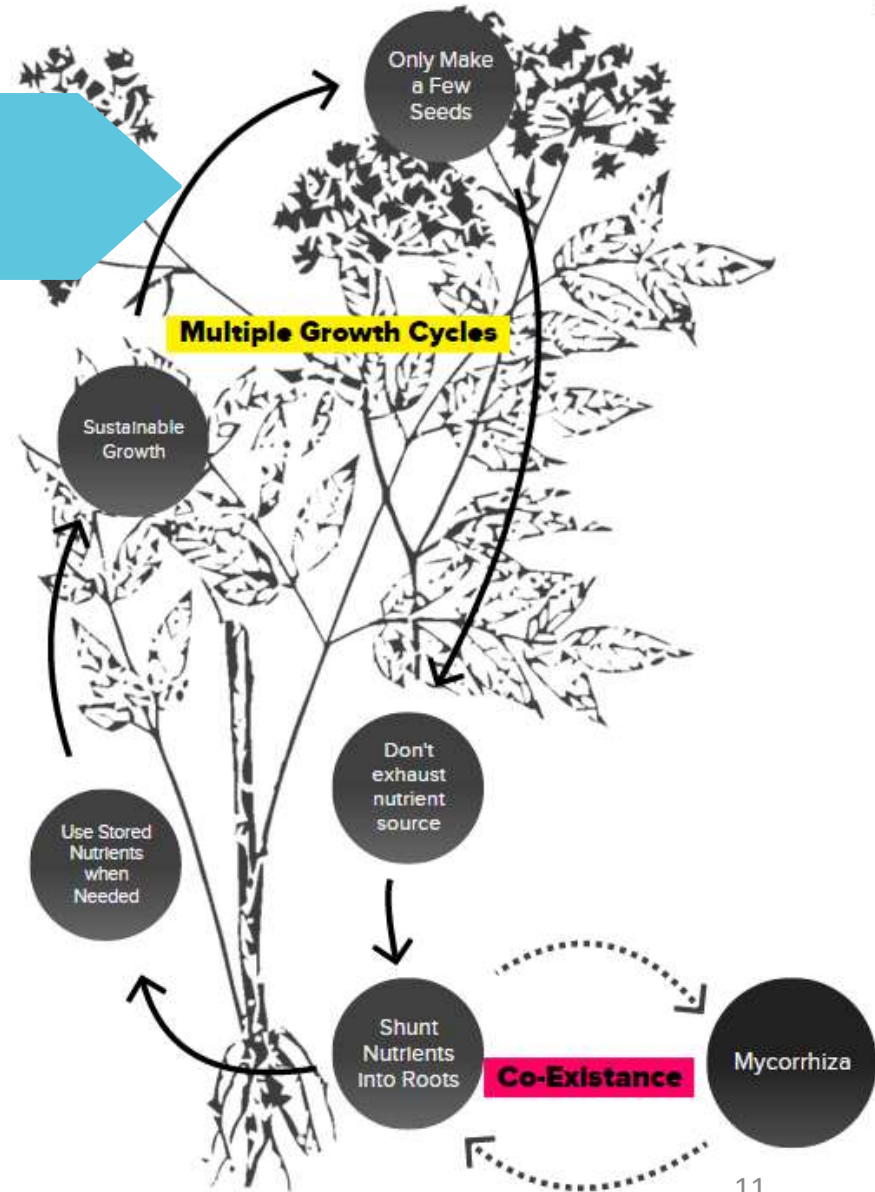


Type II System



Panarchy

**Type II
K-Species:**
Operate at or near the
carrying capacity of a system



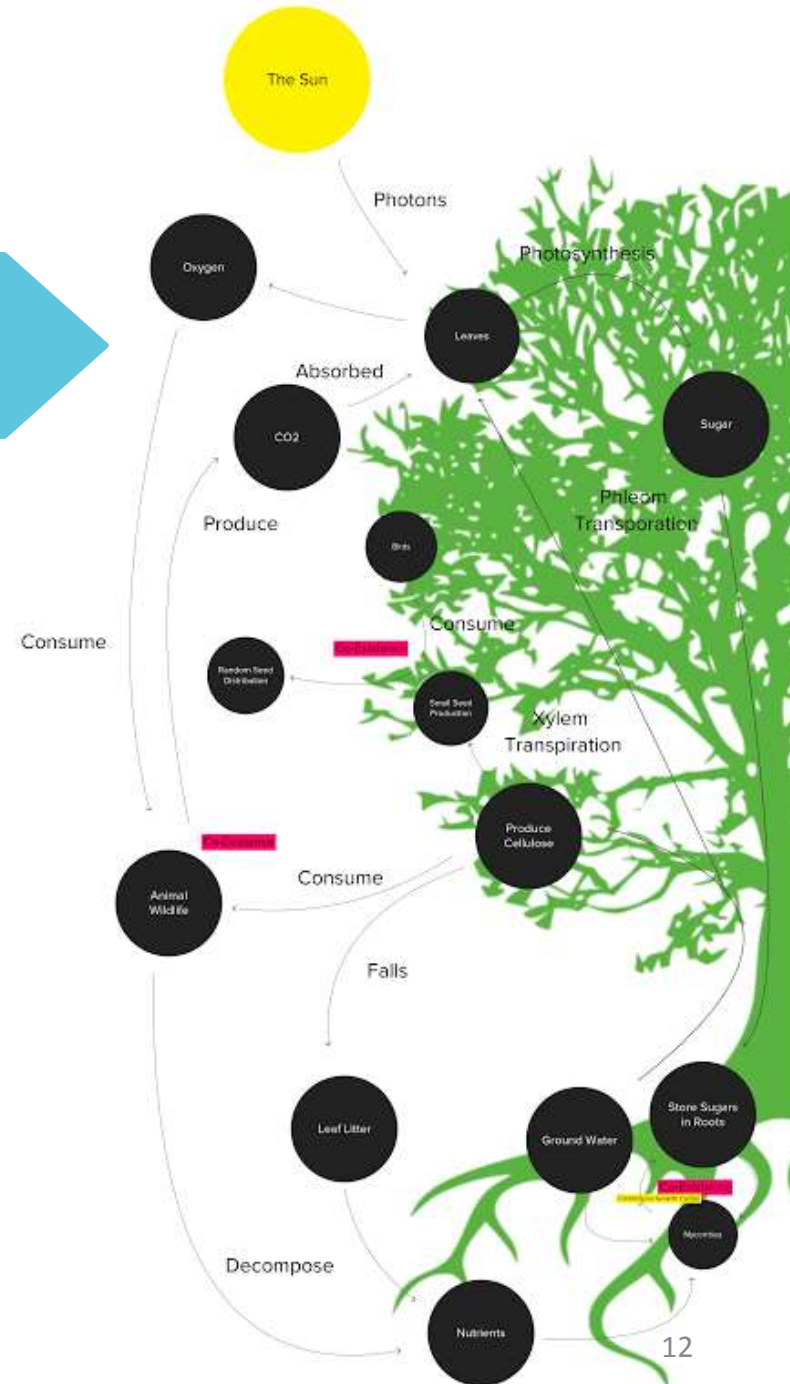
H3

Type III System



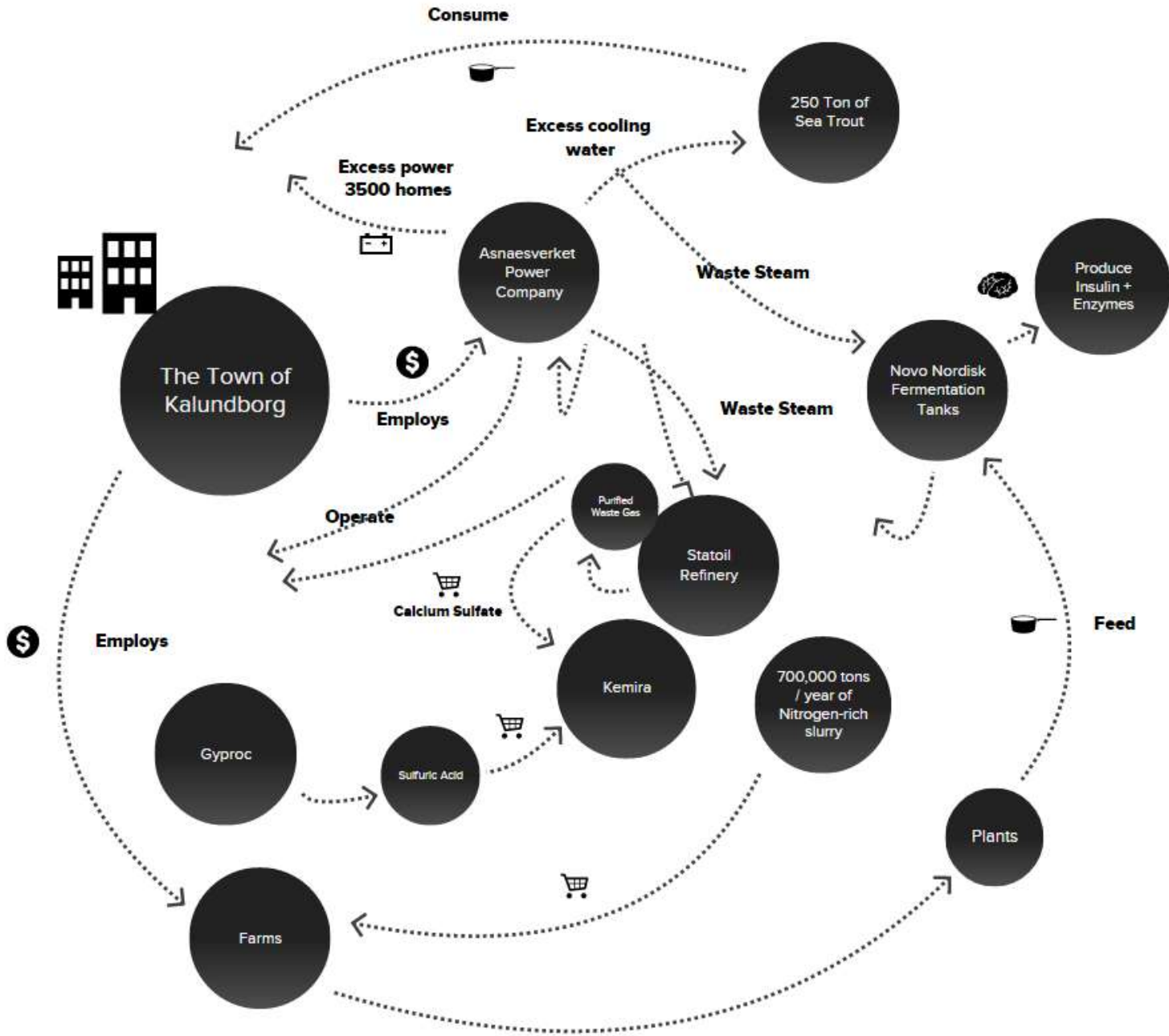
Shared
Futures
Infinity

Type III:
Mature - Complex Systems



Kalundborg Ecopark

First full realization of industrial symbiosis. Companies collaborate to virtually eliminate waste, and use the by-products and waste as net new input.



Circular Economy



New way of thinking about material flows, production and patterns of consumption.

Underutilized Assets



1.3 billion tonnes of food per year are wasted.



25 % of clothing goes unworn in an average closet in North America



Private cars sit idle for 95% of their time



The average power drill, gets 12 minutes of use over the course of its life



\$1 trillion
in business
opportunities.

(Includes material savings, increased productivity, new jobs and creation of new product and business categories.)

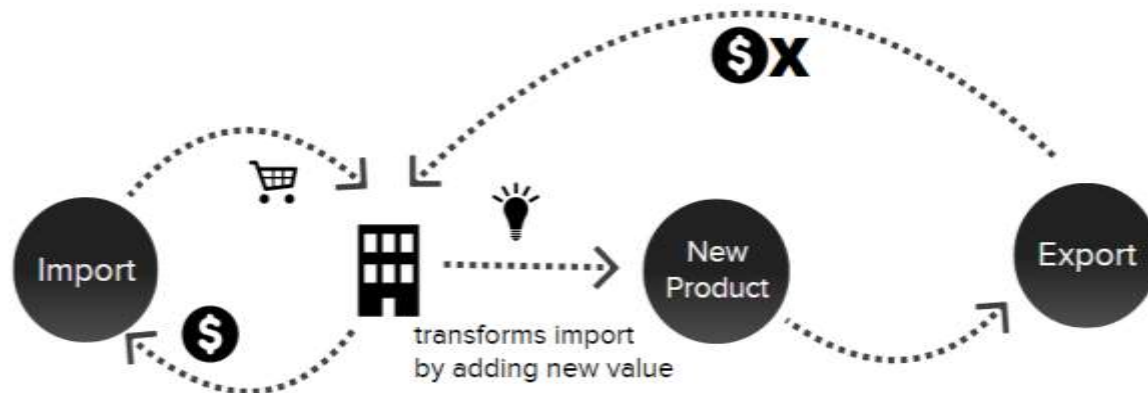
- Ellen MacArthur Foundation featuring analysis from McKinsey.

Diverse Economies

In nature, successful ecosystems expand through diversity. Diverse economies also expand in a rich environment, created by diverse use and reuse of goods and services.

Import Stretching

New value is added to an existing good or “import” and is turned into a new product for export.



Case Study

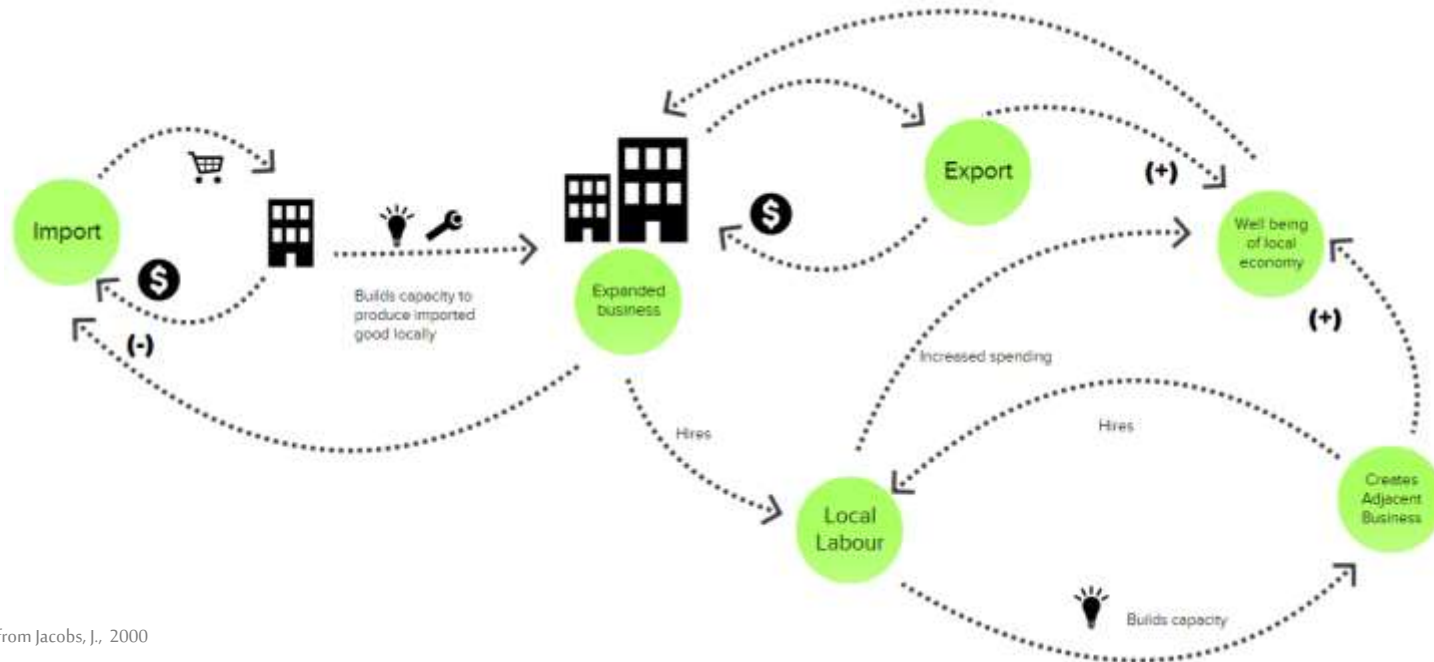


Rent your jeans for a year, after that you have 3 options: 1) keep it, 2) switch it, 3) send back.



Import Replacement

Developing capacity to make things locally that used to be imported from afar.



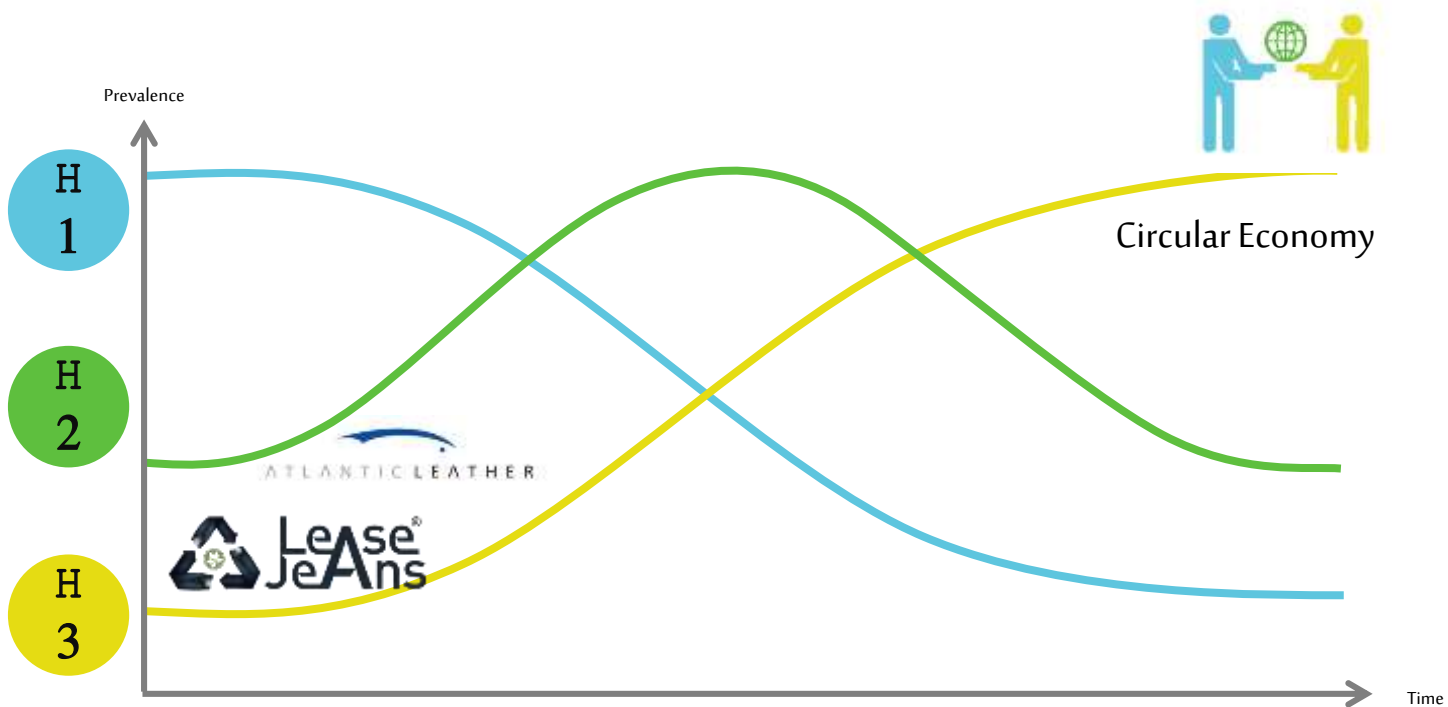
Case Study



Icelandic company using fish scales for fashion forward shoes and clothing.



Three Horizons



Source: Anthony Hodgson

Next Steps

- Rethinking product design and production
- Fostering collaborative relationships across value chains
- Socializing new modes of consumption

"Look deep into nature, and then you will understand everything better."

- Albert Einstein

Thank You!

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