DESIGN + INNOVATION: DRIVERS OF THE BIOECONOMY

Rodrigo Martinez
Life Sciences Chief Strategist
IDEO
@RodrigoATCG
IN CONCLUSION...

1 // THE MOST CRITICAL SHIFT IN BUSINESS STRATEGY IN THE NEXT DECADES IS BEING FUELED BY THE DISCIPLINE OF DESIGN

2 // THE CONCEPT OF BIOECONOMY WILL BE OBSOLETE IN THE NEXT FIFTY YEARS, MAYBE EVEN LESS
BUSINESS STRATEGY EVOLUTION


PRICE

CAPABILITIES

PORTFOLIO

NETWORKS?

LEAN STARTUP

DESIGN THINKING

EXPERIENCE

ADAPTABILITY?

PEOPLE
HOW IS THE CONTEXT IN WHICH PRODUCTS & SERVICES ARE DESIGNED AND MADE CHANGING?
PART OF THE MAGIC...
BUT ALSO...
BUT ALSO...
DESIGN & INNOVATION PROCESS ~ 1960 IS ANALOG

MANUFACTURING

INSPIRATION

PROTOTYPE

TOOLS

SKETCH
GONE TO MARKET*

2010 2011

57 52

TOTAL

GONE TO MARKET = Products, services, and experiences launched to the public or used by audiences internal to our clients.

TOTAL 109
GONE TO MARKET*

2010 2011

TOTAL 57 52

~ 50% are digital products or services

ALL OF THEM DEVELOPED WITH DIGITAL TOOLS

* ALL OF THEM DEVELOPED WITH DIGITAL TOOLS
DESIGN & INNOVATION PROCESS ~2012 IS INDIFFINISHABLY ANALOG + DIGITAL
ONGOING PROCESS SINCE THE 1950’S
ONGOING PROCESS SINCE THE 1950’S

Underlying Technology / Science

Simple objects / products

Simple tools

Complex objects / products

Complex tools

APIs
Digital libraries
CAD
Rhino, ADOBE, Solidworks

Watson
iPhone
Networks,

...
TECH REVOLUTION ‘STAGES’

Underlying Technology / Science

Simple objects / products

Simple tools

Complex objects / products

Complex tools

Ag 
Ind. 
Dig.
TECH REVOLUTION ‘STAGES’

Underlying Technology / Science

Simple objects / products

Simple tools

Complex objects / products

Complex tools

WHO, WHERE, & HOW?

Dig.
World Maker Faire Program New York 2012

This year's program is jam-packed with fun interactive exhibits and presentations. To plan your time at Maker Faire, check out the schedule below, download the printed program guide, view a map of the Event Center, and get the app for your smartphone (please note the app will update to accommodate last-minute changes). To learn more about each exhibit and the makers behind all the ingenuity, visit our Meet the Makers page.
SO WHERE ARE WE IN THE BIOREVOLUTION?

Underlying Technology / Science

Simple objects / products

Simple tools

Complex objects / products

Complex tools

New platform

Ag

Ind.

Dig.

Bio
SO WHERE ARE WE IN THE BIOREVOLUTION?

- Underlying Technology / Science
- Simple objects / products
  - Simple tools
  - Complex objects / products
  - Complex tools
  - New platform
    - Bioplastics
    - Biofibers
    - Biofuels
    - Electricity from microbes, ...
    - GMO crops
    - Insulin & other meds
// WHO IS DOING THIS STUFF?

// WHAT TYPES OF THINGS ARE BEING DONE?

// WHERE AND HOW DO I PLAY?

and yes, why will the bioeconomy become obsolete?
george church at his lab
regenesis, george church and ed regis
40 BILLION COPIES

regenesis, george church and ed regis
How would you design nature?

Synthetic Biology is a new approach to engineering biology. By applying engineering principles to the complexity of living systems, scientists and engineers are making biology a new material for design.

Synthetic Aesthetics, a project run by the University of Edinburgh and Stanford University, is bringing together synthetic biologists, designers, artists and social scientists to explore collaborations between synthetic biology, art and design.
Synthetic Biology
LIVING AMONG LIVING THINGS
Exploring how to create living designs through scientific collaboration and experimentation.
We are probing the possibilities of synthetic biology applied to the realm of consumer goods. We have considered three possible future scenarios aimed to create dialogue and questions about this emerging field of science.

What if we could nurture organisms tailored to meet our bodies’ needs?
An engineered organism could live off the cotton balls that people use to apply skin care products. The microbial culture contained in the wool produces a regular supply of skin care product.

What if we could play a greater role in designing biodiversity?
Engineered plants to detect chemicals in the environment. The data collected could be used to produce genetically custom-made seeds to increase biodiversity instead of monoculture.

What if packaging could produce its own contents?
An enzyme probiotic drink, for instance, could rely on bacteria to form a physical solid; it could remain in a dormant state until liquid is poured into it, turning it into a healthy beverage for consumers.
Synthesis Exchange Laboratory
Design of a six-day intensive lab course for artists, designers, scientists, engineers and others

SYNTHESIS
SYNTHETIC BIOLOGY EXCHANGE LAB
EXPLORING THE CULTURAL DIMENSIONS OF
THROUGH A WEEK-LONG INTERDISCIPLINARY
AND SERIES OF PUBLIC EVENTS

1. ABOUT
2. PARTNERS & SPONSORS SYNTHESIS PARTNER THE ARTS
3. SYNTHESYS SYNTHESIS LABOUR’S FIRST BISTRO EXHIBITIONS
4. HANDBOOK A DIY-FRIENDLY HANDBOOK AND INTERACTION DESIGN
5. TEXTS EXTRACTS FROM THE SYNTHESIS HANDBOOK, ARCHIVES
6. PROGRAMME SIX DAYS IN THE LAB, SEVEN MODULES, SEVEN ARTIST
7. CONTRIBUTIONS THE SYNTHESIS TEAM (TINA ALEXANDRA S.
8. CALLING THE FIRST SYNTHESIS EXCHANGE LABORATORY, 2011
9. PARTICIPANTS PARTICIPATE IN THE PROJECTS FOR THE FIRST
10. WHAT’S NEXT NEXT? THE NEXT SYNTHESIS LABORATORY

Synthesis is a six-day intensive exchange laboratory for artists, designers, synthetic biologists, engineers, and others to collaboratively explore synthetic biology’s issues and techniques and its social and cultural implications, within the laboratory setting.

Synthetic Biology is an emerging area of research, which applies engineering principles to biology. The aim is to "make biology easier to engineer". Producing new drugs and materials for medical applications, new routes to making biofuels and chemicals and enabling the building of novel genetic circuits, it could have profound implications for the way we perceive and use living things.

Project website
autodesk, david benjamin, the living
Clotho is for engineering synthetic biological systems and managing the data which is used to create them. It also provides a mechanism to begin the process of creating standardized data, algorithms, and methodologies for synthetic biology.

1. Connect
   Connect to repositories of biological data

2. Select
   Choose the apps you want to get your job done

3. Specify, Design, Assemble
   Create the biological system you desire

4. Share
   Share your designs with other groups and institutions

5. Develop
   Create your own apps and share them with the Clotho community
naturenext, koert van mensvoort
BIOECONOMY CA. ~2010

Underlying Technology / Science

Simple objects / products

Simple tools

Complex tools

Complex objects / products

New platform

Synbio software?

Bioplastics
Biofibers
Biofuels
Electricity from microbes, ...

GMO crops
Insulin & other meds
THE ECONOMY CA. ~ 2060
(ANALOG>DIGITAL>BIOLOGICAL>DIGITAL>ANALOG...)
SO WHERE & HOW DO YOU WANT TO PLAY?
SO WHERE & HOW DO YOU WANT TO PLAY?

Underlying Technology / Science

Simple objects / products

Simple tools

Complex objects / products

Complex tools

New platform

DESIGN as a business philosophy/tool
> Invest in the bioplatform, not just your products/industry
> Create specific scenarios for your products/context
> Play with others - low stakes
IN CONCLUSION...

1 // THE MOST CRITICAL SHIFT IN BUSINESS STRATEGY IN THE NEXT DECADES IS BEING FUELED BY THE DISCIPLINE OF DESIGN

2 // THE CONCEPT OF BIOECONOMY WILL BE OBSOLETE IN THE NEXT FIFTY YEARS, MAYBE EVEN LESS