The Sustainable Materials Fallacy

Andrew Dent PhD

Material Connexion

Cross industry pollination

WE HELP DESIGNERS THINK MATERIALS FIRST!

There is no such thing as a sustainable material

It must be viable!

Waste needs to be reframed—it’s not gross!

Carbon-fiber airplane fuselage

‘Bad’ material—

But the fuel savings are dramatic

Paper is less efficient

Styrofoam is more efficient

Layered plastics

Mono materials

Very few plastics break down in the ocean

What has demand in a second life?

Rayon

PHA/B

Cellophane

Plastic

Fishing nets have the most impact

Ocean-bound plastics

Glass

Good for longevity—

Little 2nd life,

High energy usage

Metal

Disruption of the global supply chain

When striving for high volume

Design for dis-assembly

Steel

Aluminum

Bamboo

Uses glue

Cork is durable

Fungi require compost

Eco

Algae only in small batches

Material choice is not enough—think systems!

Sketchnotes: Craighton Berman

June 2020
DESIGNING for the CIRCULAR ECONOMY

Anna Queralt Fuentes
Ellen MacArthur Fund

the CIRCULAR ECONOMY

- Design out waste and pollution
- Keep products and materials in use
- Regenerate natural systems

DESIGN STRATEGIES
- Product as service
- Material choices
- Product life extension

85% of material lost each year

RENTABLE FURNITURE
PACKAGING MADE FROM ALGAE

YOU CAN'T UNSCRAMBLE AN OMELETTE

Designers have unique power

MoreLoop
Indie Designers

Important decisions
Process lock-in

Zoom in to user needs
Zoom out to the system

How might we re-invent the e-commerce shipping system?

CIRCULAR DESIGN STRATEGY WORKSHOP
CIRCULAR DESIGN CHALLENGE
#CIRCULARDESIGNERS

Sketchnotes: Craighton Berman
Accelerating Sustainable Business Transformation

Bill Robinson
New Futures Lab

Design Thinking
Shared Values
Framing Problems
Facilitation
Looking forward for data
Speculative Futures

Sustainability
Possible
Plausible
Probable
Preferable

Framing problems in times of ambiguity

'New Futures Lab'
Transforming biz for sustainable futures

'Skunkworks' for the org - reports to CEO

Phases & Horizons

The main lens for our "Guide for Good" vision & values

How are we ensuring composting & recycling?

Future Vision
80/20
Building capacity

Possible packaging
Food mobility - the systems of transport

New Systems
New biz models

Businesses are built for the outcomes they achieve

Sketchnotes: Craighton Berman
BREAKING PARADIGMS
FROM DESIGN CENTRICITY TO CIRCULAR DESIGN
DAVID DOMBROWSKI

CONSUMER JOURNEY

INFLUENCE

COMPANY

SEARCH & DISCOVERY

SHIPPING

HOME: THE SENSES

CIRCULAR DESIGN

MAKE

SAVE

MAKE $ 

SPEND $ 

DESIGN

R&D

MFG

CONSUMER

PRODUCTS SERVICES SYSTEMS

CREATE AN ECO SYSTEM OF VALUE

“CREATION WITH INTENTION”

HOW MIGHT YOUR ORG CONNECT BETTER WITH THE CONSUMER + CUSTOMER?

HOW MIGHT YOUR ORG BENEFIT FROM A DESIGN-CENTRIC WAY OF THINKING?

MOMENTS OF TRUTH IN THE CHOPPER'S JOURNEY

CONSUMER FEEDBACK

SHELF: COLOR, SHAPE INFORMATION

IDSA SUSTAINABILITY DEEP DIVE
JUNE 2020

SKETCHNOTES: CRAIGHTON BERNAN
IDSA SUSTAINABILITY DEEP DIVE

LIFE-CENTERED DESIGN
ALL LIVING ORGANISMS

WHAT ARE THE ISSUES AT HAND?

TOP DOWN LEADERSHIP
BOTTOM-UP ACTION

W H E N E N O U G H VOICES ARE HEARD... LEADERSHIP MUST OPEN UP AND LISTEN!

METRICS FOR INTANGIBLES

A SH I F T FROM SHORT-TERM THINKING TO LONG-TERM RESILIENCE

AMBITION GOALS AND CLEAR VALUES ARE THE KEY

BUSINESS UNDERSTANDS THIS!

DO WE HUMANS EVEN DESERVE THIS EARTH?

BUT THEN I LOOKED AT WHAT HUMANS HAVE ACHIEVED!

YOU CAN MEASURE PURPOSE

WHAT ARE YOU PISSED-OFF ABOUT?

FEEDBACK ON THE CONSEQUENCES OF OUR ACTIONS

OUR CONTEXT GETS OUR WORLD VIEW - IF YOUR THINGS & MONEY DEFINE YOU... VS THE ENVIRONMENT DEFINES YOU...

CAPITALISM?

ALWAYS STRIVE FOR BROADER CONTEXTS

SKETCHNOTES: CRAIGHTON BERMAN
**IDSA Sustainability Deep Dive**

**Speaker Roundtable Day Two**

- Find alignment at the start for true collaboration.
- There is never a "perfect" solution.
- Short-term thinking makes long-term results difficult.
- Sustainability can certainly be profitable!
- Can we focus the cycle on longevity?
- Durability?
- Modularity or re-use?
- What will have the biggest impact? Can we identify the most problematic?
- What waste-stream makes the most sense for the category?
- Can we think about preserving value?
- Revitalize, reduce, reuse, recycle.
- Repair & renewal eliminates ownership - keeps objects perpetually desirable.

**This is an open-source issue - we must collaborate.**

**Seeking the right information, the journey is the motivation towards improvement.**

Paint can be refreshed - coatings allow for flexibility.

**"Cover the earth."**
IDSA SUSTAINABILITY DEEP DIVE

ELECTRIC VEHICLES: ENVIRONMENT, DESIRE AND MONEY

MOBILITY IS TRULY ABOUT MOVING PEOPLE AROUND - THE IMPACT OF AUTO-CENTRIC TRANSPORT HAS MASSIVELY IMPACTED THE CURRENT STATE

TRANSPORTATION EQUITY MEANS CONSIDERING ACCESSIBILITY FOR ALL AS WELL AS URBAN PLANNING

LOW GAS PRICES MAY SLOW ALTERNATIVES...

GARY HUSTWIT

ROUND TABLE: SUSTAINABLE TRANSPORTATION DESIGN

RASA SCHAAR

MICHAEL HILLMAN

KEVIN BETHUNE

CHUCK PELLY

MOBILITY MOBILITY

TWO TRENDS - CITIES ARE CHANGING AWAY FROM CAR-CENTRIC &.COM IS MINIMISING MASS TRANSIT

PEOPLE ARE STARTING TO SEE THE SCOOTERS AS A PART OF THE FABRIC OF THE CITY

WE NEED TO CREATE NEW AVENUES OF UTILITY - MORE THAN SOLVING SMALL THINGS

WE NEED TO KEEP THE MOMENTUM!

WE NEED TO TELL MORE STORIES IN THE SYSTEM?

BRING THE PROTOTYPES TO THE COMMUNITIES!

HEIGHTENED AWARENESS OF THE TRUTH FROM COMPANIES...

HOW CAN WE BETTER SHOW DESIGN FOR SUSTAINABILITY?

BATTERIES POSE CHALLENGES

SKETCHNOTES: CRAIGHTON BERMAN

JUNE 2020
WE'RE IN A TIME TO RESET VALUES—PERSONAL TO SOCIETAL!
WE NEED TO SUPPORT EACH OTHER MORE NOW THAN EVER
MORE NOW THAN EVER—WE NEED DIVERGENT PERSPECTIVES IN COLLABORATION

"A JOINING OF HANDS JUST BY LOOKING AND LISTENING TO EACH OTHER"

A TIME TO RE-INVENT!
DESIGN MUST FACILITATE CHANGE AND BRING A VOICE TO THE UNHEARD
A TIME FOR MORE OBSERVATION AND REIMAGINATION
IT'S OUR OBLIGATION TO BE OPTIMISTS

BEING AT HOME HAS MEANT BEING STUCK WITH OUR STUFF... AND RETHINKING OUR RELATIONSHIPS...

HOW DO YOU FOSTER STUDIO COLLABORATION REMOTELY?
RE-DEFINING WHAT ‘FACE-TO-FACE’ MEANS
GATHERING OF PEOPLE—GATHERING OF IDEAS!

A GLOBAL SHARING OF THIS MOMENT — THE GOOD AND THE BAD AND THE UGLY
IDSA Sustainability Deep Dive

Welcome!

Corona virus has paused the world...

Let's take an 'oath' to sustainability!

A conference is just the start...

Taking sustainability from chaos to complexity to curiosity.

A project to buy no clothes for one year.

Let's start!

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<td>Process Materiality Guides</td>
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IDSA SUSTAINABILITY DEEP DIVE

GRANT GOLDBERG

TARFORM ELECTRIC MOTORCYCLES

SUSTAINABLE MATERIALS & CIRCULAR SYSTEMS

COMPOSITE BODY PANELS + U.V. PROTECTION

MICRO-ORGANISM PIGMENTS + NATURAL FIBER REINFORCEMENT

START-UPS CAN MAKE THIS CORE

LARGE COMPANIES HAVE RESOURCES

LOGISTICS MATTER

PRODUCER/CONSUMER RELATIONSHIPS MATTER

WITHOUT A SYSTEM, MATERIALS DON'T MATTER

PRESERVE THE BEAUTY & UTILITY OF NATURE

A NEW BREED OF MOTORCYCLES THAT RESPECTS NATURE

LIGHTER MEANS LESS WEIGHT

COMPOSITES ENABLE THIS

BUT ARE VERY HARD TO RECYCLE

WE CAN'T EXPECT OUR BUYERS TO BURY A BIKE!

A TREE IS BIODEGRADABLE, BUT IT TAKES DECADES

REPLACE THE NATURAL FIBER FROM COMPOSITE AND RE-USE

BIOLOGICAL LOOP

TECHNICAL LOOP

INFINITE RECYCLING

CHEMICAL RECYCLING

A LAST RESORT DUE TO ENERGY!

SKETCHNOTES: CRAIGHTON BERNER

JUNE 2020
**Idsa Sustainability Deep Dive**

**June 2020**

**The Enlightened Industrial Designer**

*Hylnur Atlason*

- How do you integrate sustainable thinking into design consulting?
- We know the impact, but are we having impact?
- Ideas executed poorly—lead to massive waste.
- Extraction, production, shipping.
- Eternal impact, a few seconds of use.
- Is design a force for good or a waste-making machine?
- Designers need to broaden our scope to make real impact!
- Central to our process.
- Communicate to clients: motivate them.
- The Enlightened Client

- Audit of the process
- Challenge the aesthetic
- Rethink packaging
- MFG planning

- Not always granola
- Direct to consumer

Engaging the community

*Sketchnotes: Craighton Berman*
REUSABLE PACKAGING WILL REVOLUTIONIZE the CONSUMER EXPERIENCE

JASMIN DRUFFNER, LOOP

REUSABLE PACKAGING as a BRAND ASSET - WISDOM from the PAST

LOOPE is an E-COMMERCE PLATFORM... THAT SHIPS in REUSABLE MODULAR CONTAINERS

FROM a DISPOSABLE SUPPLY-CHAIN to a DURABLE ONE

RENEWED and REUSED

DEPOSIT-BASED

SHIPPING CONTAINER

change the experience

AXE with GRACE

FROSTED

ICE CREAM

3 PARTS

EASY CLEAN

DOUBLE WALL

change of ownership

CLOSED LOOP

CHALLENGE CATEGORIES

CHALLENGE CATEGORIES

DURABILITY

CLEAN-ABILITY

LCA

STAINLESS STEEL

BEER

TAB

OIL

AGE with GRACE

FROSTED

ICE CREAM

TOOTHPASTE

PREMIUMIZATION

INNOVATION

1 USE

10¢ Cost

1¢ Cost PER USE

$3 Cost PER USE

10¢ PKG Cost

$3 PKG Cost

100 USES

SKETCHNOTES: CRAIGHTON BERMAN
DESIGN for HUMANITY
JAY PETERS, GROW

THE SOLE MEANING of LIFE is to
SERVE HUMANITY

HUMAN CENTERED
DESIGN

WE MUST
EVOLVE
BUSINESS

HUMANS at the CENTER

DESIGN LEADERSHIP
PURPOSE-DRIVEN

THE 4 HORIZONS
of DESIGN for HUMANITY

EXTERNAL IMPACT

MINDSET
VISIONARY
INTEGRATOR
OPTIMIZER

INTERNAL IMPACT

MOTIVATION (WHY?)
EXTERNAL BENEFIT
INTERNAL

RESPONSIBILITY (WHO?)
COMMUNITY
INDIVIDUALS

APPROACH (WHAT?)
CONSEQUENCE
OUTPUT

SKETCHNOTES: CRAIGHTON BERMAN
THE GOOD FUTURE DESIGN ALLIANCE
KATIE STOREY

A NEW RADICAL PATH FORWARD FOR DESIGN/BUILD

I KNEW I WAS PART OF THE PROBLEM.

REDUCING WASTE BY 50% BY 2025

WHAT IF THE ENTIRE INTERIORS INDUSTRY ALL AIMED FOR THIS?

500 MILLION TONS ANNUALLY

12.2 MILLION TONS OF FURNITURE

30% OF SF LANDFILL IS CONSTRUCTION WASTE

WE CAN NO LONGER IGNORE OUR IMPACT ON THE ENVIRONMENT OR OUR COMMUNITIES

HOW CAN WE PARTNER WITH THE MAKERS?

MANUFACTURERS MUST STEP UP

MAKE BETTER

BUY LESS

PARTNERSHIPS

AN ALLIANCE OF DESIGN/BUILD FIRMS TO MAKE A COMMITMENT, GET RESOURCES, DRIVE IMPACT

AND PRODUCT MAKERS!

JOIN US!

SKETCHNOTES: CRAIGHTON BERMAN
INTENTIONAL DISCONTINUITY
KEVIN GANGEL
UNSTOPPABLE CONVERSATIONS

BUSTING PARADIGMS
TRANSFORMATIVE CHANGE

WE LOOK FOR TRANSFORMATION
IN THE WRONG PLACE

INFORMATION?
EXPERIENCE?

HEALTH IDEAS
RIDING A BIKE

CONTEXT?
YOUR WORLD-VIEW

PHENOMENOLOGY

DEFAULT THOUGHTS
INEFFECTIVE ACTIONS AND INACTIONS
UNWANTED CIRCUMSTANCES

INTERNAL THOUGHTS
THINGS YOU MUST CHANGE
THINGS YOU CAN'T CONTROL

CONTEXT FOR TRANSFORMATION

DEPENDENCE ↔ INDEPENDENCE ↔ INTER-DEPENDENCE

ORDINARY LEADERS

VS

UNSTOPPABLE LEADERS

OPTIMIZATION OVER TIME
ACCELERATING CONTEXTUAL SHIFTS

SHUT UP AND LISTEN!
IDSA Sustainability Deep Dive

Dr. Leyla Acaroglu
Disrupt Design

Designing Systems change

Systems + Sustainability + Design

"the unschool"

Humans have created linear systems - nature uses regenerative systems

The Disruptive Design System

Mining → Landscaping

Building

Recycling validates waste - it cognitively justifies waste

There's no such thing as waste in nature!

The Anthropocene: the geological time in which humans have impacted Earth

What can we do about this?

The Anatomy of Action

UN Social Media Campaign

The Circular Classroom

Design Education for Students

Earth overshoot day is coming...
Change is imperative...
Designers have the tools for change

Cultural change requires creating new value

Value Cycle → Tech Cycle

Bio Cycle → Value Cycle
SUSTAINABILITY THROUGH ENVIRONMENTAL PHILANTHROPY

LIZ WHITELEY, 1% FOR THE PLANET

A COMMITMENT TO TAKE ACTION TODAY

ENVIRONMENTAL EXTERNALITIES INTEGRATED INTO MARKET FACTORS

1% OF PROFITS

NON PROFIT NETWORK

BUSINESSES CAN MAKE REAL CHANGE!

Paying rent for the use of the planet

3000 Biz Members

ELEVATION OF BRAND & PRODUCT

PARTNERSHIP ADVISING

DESIGNING A GIVING STRATEGY, SETTING GOALS

ANNUAL CERTIFICATION

VERIFICATION OF COMMITMENT

POSITIVE FEEDBACK LOOP

AMPLIFY & INSPIRE OTHERS

BOXED WATER PLANTED 100 MILLION TREES

STASHER COLLAB. WITH PLASTIC POLLUTION PARTNERS + DONATION

APLAT A BIGGER GOAL BEYOND SALES

NON PROFIT NETWORK

50% MONETARY

UP TO 25% PROMOTIONAL SUPPORT FOR PARTNERS

UP TO 25% DONATION (TIME, PRODUCT)

SUNSKI COMMIT TO FUTURE ACTION

COMMUNITY & VALUES

POWER OF COLLECTIVE ACTION

CRAIG MATHIEU + PATAGONIA

STARTED IN 2002 AS A PART OF PATAGONIA

SKETCHNOTES: CRAIGHTON BERMAN
IS the HUMAN RACE SUSTAINABLE?
LORRAINE JUSTICE, PHD

- HOW LONG DO WE HAVE?
  - Movie silent running
  - 20-30 years?
  - 200 years?
  - 100-600 years?
  - If we can live off planet as bio-hybrids

- CAN the HUMAN RACE SURVIVE?
  - Yes
  - BUT...
  - Political activism is a must!
  - Change the cultural & financial models!
  - Regulate the technology!

- BIG DATA
  - We have the data - who's using it?

- DESIGN NEEDS EXPERTS and NEW SKILL SETS!

- WE NEED MORE PEOPLE

- KEEP GOING

- CIRCULAR ECONOMY

- ORGANIZE & MOBILIZE

- WE HAVE CHANGED THE WORLD BEFORE... LET'S DO IT AGAIN

- ETHICS
  - "Human-centered design is now too narrow"

- JUNE 2020

SKETCHNOTES: CRAIGHTON BERMAN
The Power of Design to Create a Better Future

But always in service of human needs and growth.

Creating a broader vision?

Influences have grown... critical thinking has not kept up.

What is the role of design in the future?

EQUITABLE
GENERATIONAL
SUSTAINABLE

User-centered design is too selfish.

Leverage our reach

Anticipate the future, facilitate change.

Use our life forces

Now and Back-casting 20 years

Smart Mobility

Facilitation of change help with discomfort

A focus on the entire lifecycle

A strategic sustainability map

Massive change disrupt status quo

Vision

Creativity
Inspiration
Beauty
Reflection
Humility

Anticipate & visualize

Inner child
Clarity
Simplicity

Life-Centric
Wisdom
Effect

Designers:
- Tactical to strategic
- Humanities & science
- Responsibility and power

A return to

But always in service of growth

What is the new way to measure progress?

Can we seek a new balance?
NIKE SPACE HIPPIE
OPTIMISTIC URGENCY
NOAH MURPHY-REINHERTZ, NIKE

"THERE IS NO FINISH LINE"

FOAM PATTERN → RECYCLED IN-SOLE
RUBBER GRIND → CRATER FOAM

WE NEEDED STRUCTURED COMMITMENTS
CARBON WAS #1
BUT NEW INNOVATIONS TAKE TOO MUCH TIME!

TAKING THE MELTING & EXTRUDING OUT...
OUR TRASH IS HIGH PERFORMANCE
HOW CAN WE AVOID USING MORE ENERGY FOR TRANSFORMATION?

RE-USE OF MATERIALS
IN-SITU UTILIZATION
TEXTILE WASTE → SPACE WASTE YARN

"TRANSFORMING AN ABUNDANT RESOURCE INTO VALUE"

TECH INNOVATION
CULTURAL INNOVATION

THERE'S NO RESUPPLY MISSION COMING TO EARTH

SKETCHNOTES: CRAIGHTON BERMAN
BIOMIMICRY, PRODUCT DESIGN AND THE CIRCULAR ECONOMY

BOOTH GALEWYCH
BIOMIMICRY 3.8

BIOMIMICRY

- The conscious emulation of nature's genius
- The perfect way to practice the circular economy
- Living systems trend towards circular

THE SYSTEM DOES NOT EXIST IN ISOLATION

STORAGE BARREL BREAKS DOWN

BIO CUSHIONS THAT HAVE SIMPLER STRUCTURES

THE CIRCULAR ECONOMY IS THE WHAT... BUT HOW?

WHAT IS YOUR INTENTION?

PROBABLY NOT TO MAKE TRASH...

NOT A LOOP-A NETWORK

POLYMERS ARE NOT THE PROBLEM

SYNTHETIC IS THE PROBLEM

NATURAL COMPOSITION & STRUCTURE CAN PERFORM!

MATERIALS CHANGE FORM—NEVER GO AWAY

DOES 0

CARPET TILES WERE GLUED TO THE FLOOR...

NATURE CONNECTS TOGETHER!

MUTUALLY BENEFICIAL RELATIONSHIPS IN NATURE AND SCALE REALLY MATTERS

CORPORATE COLLABORATIONS ARE KEY

MATCH THE CONTEXT TO THE CHALLENGE

FEED BACK LOOP

EASY TO DO, NOT STATIC

MATCH THE CONTEXT TO THE CHALLENGE
BEHIND the BIKE

STEFAN YTTERBORN
CAKE ELECTRIC MOTORCYCLES

WHEN I REALIZED I WAS NO DIFFERENT THAN ANYONE ELSE... I REALIZED HOW DESIGN COULD IMPACT PEOPLE

THE OBLIGATION and the PROMISE

WE DON'T SPEAK ABOUT DESIGN at CAKE - WE TALK ABOUT VALUES & AMBITIONS

COLLECTIVE RESPONSIBILITY

SUSTAINABILITY is a PROCESS - WE NEED TO INSPIRE PEOPLE

NOT A SHORT-TERM PROCESS!

IT'S LIKE SKIING WITHOUT SLOPES!

SOLAR CHARGE

SILENT

NO CLUTCH, NO GEARS

the PACE of CONSUMPTION SETS the CONTEXT

INCLUSIVE THROUGH ITS SIMPLICITY

COMMITTING TO LONG-TERM ENDURANCE

PERFORMANCE DELIVERED by STYLE - NOT JUST STYLING

BRINGS INNOVATION, PERFORMANCE

PREMIUM vs LUXURY

the POWER of FRESH EYES!

PROPOSING ALTERNATIVES for TRANSPORTATION

“SEEKING NEW PERSPECTIVES and INSPIRATION”
INTERCONNECTED SUSTAINABILITY
TUCKER VIELMEISTER

“Be ashamed to die until you have won some victory for humanity.”
—Horace Mann

My job is to turn spinach into candy.*

But the world is changing fast...

There are few professions more harmful than I.D.
V. PapaneK

Let’s keep the mass impact—but eliminate the negative

Can we get small? Nano?

Numbers? Size? Intelligence?

We need big solutions!

Can we decycle carbon?

Recycle? Upcycle? Decycle?

What about micro energy?

Future Life Exhibition

* Why not learn to enjoy spinach?