Insights, Creativity Tools, and Transformational Innovation

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Definition of Innovation

“Innovation is the Successful Commercialization of Invention.”

INVENTION + SUCCESSFUL COMMERCIALIZATION = INNOVATION

IDEA + REDUCTION TO PRACTICE = INVENTION

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Modes of Innovation

PROFIT MODEL
The way in which you make money

STRUCTURE
Alignment of your talent assets

PRODUCT PERFORMANCE
Distinguishing features and functionality

SERVICE
Support and enhancements that surround your offerings

BRAND
Representation of your offerings and business

CONFIGURATION

NETWORK
Connections with others to create value

PROCESS
Signature of superior methods for doing your work

PRODUCT SYSTEM
Complimentary products and services

EXPERIENCE

CHANNEL
How your offerings are delivered to customers and users

CUSTOMER ENGAGEMENT
Distinctive interactions you foster

Nestle, Unilever: Modes of Innovation

A classical “Bait and Hook” model:
Unilever purchased Dollar Shave Club,
and Nespresso locks in consumers with its consumer club.

Source: L. Keeley, R. Pikkel, B. Quinn, & H. Walters, Ten Types of Innovation: The Discipline of Building Breakthroughs
(Hoboken NJ: John Wiley & Sons.) 2013, Original Graphic: doblin.com/TenTypes Reproduced with permission.
Nike: Modes of Innovation

Nike integrated sensors into their shoes to communicate with fitness apps.

Skype: Modes of Innovation

Skype using a “Freemium” model to realize value.

Lyft, Uber: Modes of Innovation

Disrupting the taxi service industry.

Why are these innovations commercially successful?

- Addressed known consumer / user frustrations
- Focus on what the user already thinks and does
- Product offered on the terms of the customer
- Created new market spaces through invention
- Extended macro-trends into new prod categories
Consumer Insights
...as a Major Innovation Driver

- **Explicit (articulated)**
  - What the consumer knows they need / like / want / don’t want.
  - PRECISE understanding is what is needed to be useful
  - Generates SUSTAINING innovation. (upgrades, enhancements)

- **Latent (un-articulated)**
  - Consumer cannot or does not express explicitly.
  - May not be consciously aware of the need.
  - Discovered through observation
  - Can generate market DISRUPTIVE innovation.

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Insights from Compensatory Behaviors
The Value of Diverse Perspectives

“We can’t solve problems by using the same kind of thinking we used when we created them.”
Borrowed Business Model Provides Value Creation Opportunity for Game-Changing Innovation

“Bait and Hook” Business Model

Borrowed Business Models

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Reproducibility:- Were these examples flukes?

Can we deliberately and systematically use cross industry inspiration to solve problems?
Cross Industry Pollination - Innovation and Problem Solving

- **Non-Destructive Metal Product Testing:**
  - Highly engineered metal product
  - Client wanted to ensure reliability.
  - A technology being developed for security applications was identified
  - Could detect microscopic defects, such as inclusions, brittle grains, and hard spots.
• Turning Solid Dry Powder Pigments into Ink Jet Inks
  - Particle classification technology developed for pharma industry
  - Implemented in inks to ensure consistent particle size.
Value in the eye of the beholder...
Fresh Perspective uncovers Unrealized Value

- **Chemical - Macrocyclic Synthesis Technology:**
  - Unused technology analyzed with a fresh perspective
  - Suspected of value for anti-cancer MRI contrast agent drug synthesis
  - University professors also saw value in novel computer memory applications
  - Led to gifting the technology for further development
Lyco Works’ New Product and Service Innovation Process

Roughly Three Phases:

**Phase I**
- Delivery of Disruptive Concepts
  - Handful of new product concepts
  - Line of sight to enabling technology

**Phase II**
- Proof of Principles
  - Experiment Plan

**Phase III**
- Prototype Development
  - Plan to Develop Prototype
  - Technology Transfer

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Phase 1

• Delivery of Disruptive Concepts
  - Handful of new product concepts
  - Line of sight to enabling technology
Phase 1: “Delivery of Disruptive Concepts and New Approaches”

Comprises Three Sets of Tasks:

- **Scoping Questions**
  - Need State and Solution Scope
  - Client History
  - Client Process.

- **Analytical Tools**
  - Illuminate and Define the problem
  - Examine problems from a variety of new perspectives, and
  - Target new approaches.

- **Creativity Tools**
  - Support analytical tools
  - Used in discovery of new perspectives and novel approaches to needs states.
  - Disrupt sequential thinking and provide lateral thoughts.
“Delivery of Disruptive Concepts and New Approaches”

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Problem Analysis

“95% of Problem Solving is first Defining the Problem”

- Goal is to systematically dissect problems, re-frame them, and turn them on their head so that new approaches can be explored.
Problem Analysis

“95% of Problem Solving is first Defining the Problem”

- **Causal Analysis:**
  - Useful for complex problems with many variables, as well as understanding why some problems are intractable.
  - The problem is analyzed in terms of root causes - continuing to ask “Why?”.
  - Provides insights and understanding that can lead to new approaches.

- **Functional Decomposition:**
  - A system of interacting objects, phenomena, and functions are analyzed in terms of their action upon one another.
  - Provides insights and understanding that can lead to new approaches.
Example - Causal Analysis: Electron Beam Weld Defect Analysis (simplified)
Example #2 Functional Decomposition
Applied to Indoor Surface Soiling Problem

- The Sun
  - IR Light
    - Window Glass
    - Brownian Motion
- Viz. Light
  - UV Light
    - Air Molecule
    - Kinetic Energy
  - Dust
    - People
    - Animals
    - Carpet
- Convection
  - Air Current
    - Air Conditioning
  - Air
- Surface
  - Boundary Layer
    - Air Molecule Kinetic Energy
    - Gravity
    - Remotes
  - Binds
  - Transports
  - Binds
- Dust
  - Transmits
  - Binds
  - Illuminates
  - Scatters
- Surface
  - Binds
  - Reduces
Example # 2: Functional Decomposition Applied to Cooking Food (simplified)

- Amino Acids
- Maillard Reactions
- Aldehydes/ketones
- Protein
- Carbs
- Starch
- Sugars
- Solvent
- Flavor
- Flux
- Lipids melt + conduct
- Metal - conducts, supports
- Water carries small molecules into air
- Food absorbs + decomposes
- Coating Repels
Example #2 Continued
Functional Decomposition Cooking Food

Small molecules in air

Taste begins with olfactory stimulation

From cooking

Vaporization

Maillard Reaction Products (Meaty Flavor)

Small molecules dissolve + bind.

Taste buds recognize

Saliva: - Dissolves - Transports - Digests

Saliva gland secretes.

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Functional Decomposition: Preparing to Shave
“Delivery of Disruptive Concepts and New Approaches”

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Creativity and the Brain

Where are you most Creative?

At your desk, of course...

Creativity associated with a neuron firing pattern termed “transient hypofrontality” (Dietrich)

   In the Shower...

   At the Gym...

   Stuck in Traffic...
A Few Favorite Creativity Tools...

Lateral Thinking on Demand

- Six Thinking Hats
- Stimuli
- Provocations
- Kill the Sunset Shot
- Backcasting
- Other People’s Shoes
- Random Input methods
- Greenhouse
Problem Example # 3: How to keep traffic flowing?
Creative Thinking Tools: Use of Stimuli
How to keep traffic flowing?

Stimulus: What about other systems?
How to keep traffic flowing?
Stimulus: What other things need to be kept moving?
How to keep traffic flowing in Atlanta?
Stimulus: How do schools of animals keep moving?
How to keep traffic flowing?

Stimulus: How do schools of animals coordinate motion?
Creative Thinking Tools: Provocations

Should be bold and mechanical to elicit lateral thinking

- Provocation
  - Chance
  - Deliberate
    - Stepping Stone (a mechanical operation on something that exists)
      - Reversal
        - e.g. - buy the gas for the car after making the road trip.
      - Exaggeration
        - e.g. - TV remote control has only one button.
      - Distortion
        - e.g. - Cook potatoes before digging them up.
    - Escape (take away something taken for granted)
      - Wishful Thinking
        - e.g. - Roof indicated a leak before it rains.
      - e.g. - Electricity no longer flows through wires.
Transformational Innovation and Cross-Industry Perspectives

- External perspectives are almost essential to truly transformational innovation.

- Industry “Cross Pollination” can spur innovation and problem solving.

- Methodology exists for repeatable, systematic lateral problem solving.