OVERCOMING BIASES IN YOUR INNOVATION MODEL
Our mind **plays tricks** on us…
awareness & debugging
Aligning processes, cognition, emotion and routines
A typical **development plan**

Your plan
A typical execution
How do success and failure look like?

Most of the problems in a project appear at the end, when piloting or during sales.

Most of the problems in a project are discovered at the beginning, and the late stages are used for refining.

Source: Osorio and Elola (2010)
How did this happen?
There are many reasons...

Anchoring
Similarity bias
Continuity bias
Confirming
Association by asymmetry
Projection
Systematic distortion bias
Halo effect
False uniqueness effect
Negativity bias
Disconfirmation bias
Asymmetric insight illusion
Dispositional bias
Clouded judgment effect
Empathy neglect
Correspondence bias
Male bias

Gambler’s fallacy
Hindsight bias
“Ultimate” self-serving bias
Pessimistic bias
Conjunction fallacy
Positive outcome bias
Diagnosticity bias
Vulnerability bias
Labeling bias
External agency illusion
Intensity bias
Just world bias
Romantic bias
Bias blind spot
Empathy gaps
Common fate bias
Proximity bias

Overconfidence bias
Fundamental attribution error
False consensus error
Positive bias
Confirmation bias
Justice bias
Hot hand fallacy
Self-protective similarity bias
Self-serving bias
Optimistic bias
Sinister attribution error
Ingroup/outgroup bias
Hypothesis-testing bias
Durability bias
Self-image bias
Observer bias
Simplicity bias

Some types of cognitive bias
We often use the wrong lens to make sense of the reality we want to change, choose the wrong tools and make the wrong decisions to change it.
Innovation as a **discovery-driven journey** under high risk, uncertainty and ambiguity

<table>
<thead>
<tr>
<th>High</th>
<th>Risk, Uncertainty and Ambiguity</th>
<th>Low</th>
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<td>(100s -1000s of assumptions and hypotheses)</td>
<td><em>(10s -100s of assumptions and hypotheses)</em></td>
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It’s a learning and exploration journey
Information comes too fast...

... and we suffer from cognitive overload
Sometimes things get tough...
We fail because of our reactions on highly risky, ambiguous and uncertain environments
Teams tend to plan for solution-driven developments

Our reactions to risk, ambiguity and uncertainty makes us use coping mechanisms so we:

• act by using proven and previously successful paths for taking control in insecure environments

• have positive illusions about our own qualities and capacities, ideas, future outcomes, and control over processes and environment
Why do teams using similar processes and methods fail while others succeed?
risky and uncertain journey +
task technical difficulty +
bias +
cognitive load +
emotions
Previous research...


2. Adequate decision making has an important role in successful innovation and new product development (Brown & Eisenhardt 1995; Krishnan & Ulrich 2001; Osorio & Elola 2011)

3. Our rationality is bounded by our computational constraints for dealing with large and complex information, affecting our decision-making and affecting how we solve complex problems (Simon 1955).

1. Satisficing - “People solve problems by searching selectively through a problem space defined by a particular problem representation” (Simon 1991), and when reach to a “complete” design the solution is compared with “standards defined by aspiration levels” instead of alternative designs (Simon 1972).
Previous research…

5. **Intuition and heuristics** for decision-making under uncertainty work better in contexts known or analogous to previous problems, but fail in new and difficult problems (Tversky and Kahneman 1974, and others)

6. **Our understanding of a challenge results from our cognitive representations of that reality** (Kiesler and Sproull 1982), which is triggered by our cognitive “budget” (Gilbert, Pelham & Krull 1988) and how we potentially fall for a large list of cognitive biases (too many authors to list)

5. **The initial “framing” of problems** has direct relation with its design space and solutions, and can lead to political or internal battles (framing contests) (Simon 1969; Tversky and Kahneman 1981, Kaplan 2008, Kaplan and Tripsas 2008, Powell, Lovallo et al 2011)
There is plenty where to choose from…
# Types of development process

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<th>Software</th>
<th>Product Development</th>
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## Business Model / Startup

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## Design

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Innovation as a discovery-driven journey under high risk, uncertainty and ambiguity

**High**
(100s -1000s of assumptions and hypotheses)

**Risk, Uncertainty and Ambiguity**

**Low**
(10s -100s of assumptions and hypothesizes)

**What is the “real” problem, and why is it worthy?**
(Multiple problem representations)

**What is the best possible solution?**
(Multiple design spaces)

**How to best implement such solution?**
(Implementation strategy)

**Knowing why?**

**Knowing what?**

**Knowing how?**

Innovation as a discovery-driven journey under high risk, uncertainty and ambiguity.

- **Innovation** as a discovery-driven journey under high risk, uncertainty and ambiguity.
Mode for Experimentation

- **Idea generation**
- **Modifying understanding on dimensions, needs and insights**
- **Generating unified multidimensional concepts**
- **Innovation Brief for system-level design**
- **Test prototypes**
- **Identify and analyze failures**
- **Get feedback from users**

**Prototyping**

- **Develop and refine concepts by dimension**
- **Refine and improve prototypes**
- **Identify sources of problems**
- **Try improved prototypes**

**Testing**

- **Is it necessary to continue refining?**
- **Use feedback capturing matrix**
- **Analyze usability**
- **What could have cause failures?**
- **What did we miss?**

Source: Osorio (2012)
Average frustration over a process (1-10 range)

Tasks of the process
Average frustration over a process (1-10 range)

- Reframing
- Discovering Empathy-focused Needs
- Discovering Insights
- Generating Point of View
- Concept Definition
Average frustration over a process (1-10 range)

Tasks of the process

Need for guidance

Need for autonomy

Tasks of the process
Average frustration over a process, by cohort (1-10 range)
We have associated frustration with frequency and type of errors along innovation processes.
Interrelated dimensions for enabling innovation

- Processes, methods and tools
- Thinking & making routines
- Cognitive limitations
- Emotional limitations
## Innovation competencies

### The common ones…

1. Analysis
2. Synthesis
3. Empathizing
4. Systems thinking
5. Communication
6. Managing and deciding under high uncertainty, risk and ambiguity
7. Team leadership and management

### The innovation-specific ones…

8. Identifying sources of innovation
9. Discovering latent needs
10. Reframing and modifying understanding
11. Creating and exploring ideas
12. Generating multiple concepts and design spaces
13. Learning to fail through prototyping and experimentation
14. Executing innovation projects

If they are in red-bold it means they are of higher cognitive complexity
Potential points of failure

1. Project origins
2. Planning for uncertainty
3. Planning for pre-development
4. Problem framing
5. Assumptions and hypotheses
6. Generative research
7. Exploring explicit needs
8. Exploring observable needs
9. Exploring tacit needs
10. Exploring latent needs
11. Narrative analysis
12. Reframing used needs
13. Synthesis of qualitative data
14. Divergent ideation
15. Synthesis of ideas
16. Creating design spaces
17. Concept development
18. Inspirational prototyping and testing
19. Evolutionary prototyping and testing
20. Validation prototyping and testing
21. System-level design
22. Production ramp-up
23. Launch
24. Process performance metrics
25. Project management philosophy

In red are the hardest for people to let their experience aside
People try to gain control by reducing and isolating risk and uncertainty
In innovation, we need to amplify and manage risk and uncertainty.
Ideas vs. challenges (with emotionally engaging intent)
Reframe your challenge to understand it in a completely different way
Discovery-driven planning (McGrath & MacMillan 1995)
Understand intuitive leaps as acts of recognition
Discover the **Emotional Gap** (actual vs desired)

Source: Visser et al (2005)
Look for understanding functional, basic, social and emotional needs (and their whys)
For accomplishing **each task with high performance**, there are **guiding attitudes**, and a series of **interrelated competencies** that need to be mobilized.
For **mobilizing each competency with high proficiency**, there are a number of **cognitive and emotional limitations** that need to be conquered
For conquering these cognitive and emotional limitations teams need to reach proficiency in thinking and making routines
If you have comments & questions please...
- email: cosoriou@mit.edu
- twitter: @carlos_osorio
- or let’s talk during the break 😊
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