

CREATIVITY

Why do executives seek new ideas yet prefer proven concepts?

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Map of the Term

TACTICAL

Process Optimization

Decisions are based
on **how** to make
improvements

Creativity, Noticing

Decisions are based
on **what** insights you
can come up with

RISK

Forecasting

Decisions are based on
what you're trying to
optimize

PHILOSOPHICAL

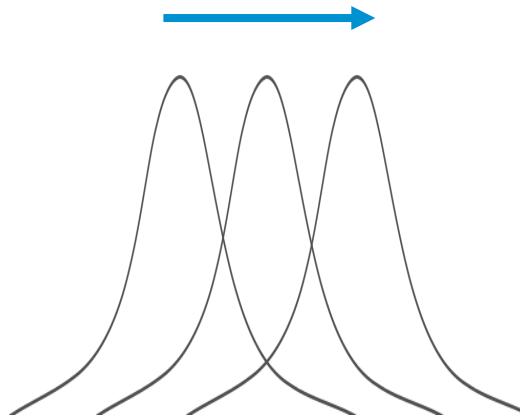
INNOVATION

Fail Fast; Gain Experience

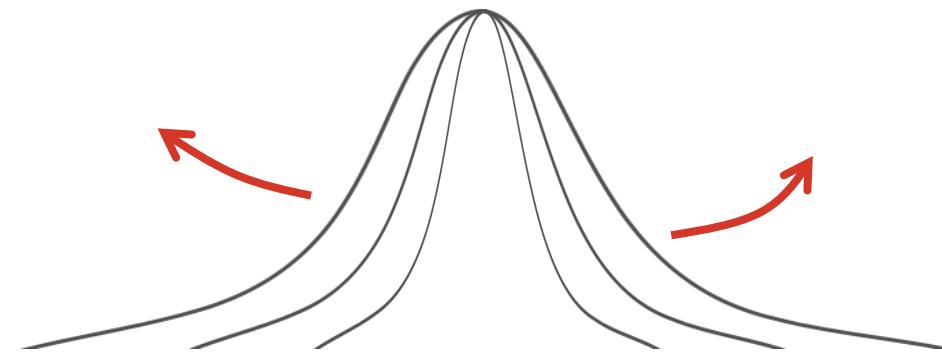
Decisions are based on
why something should be
done

What is average and what is variance?

Fundamentally innovation and risk is tied to the math of ***variances***



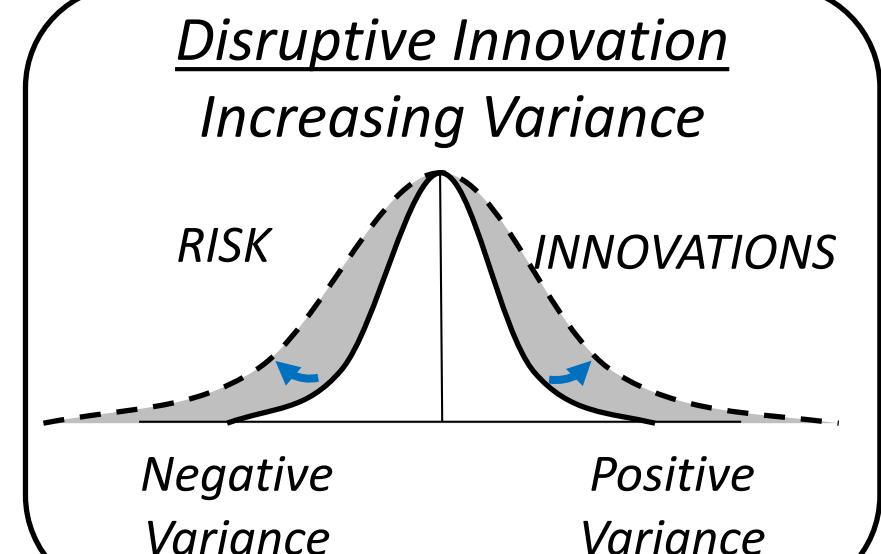
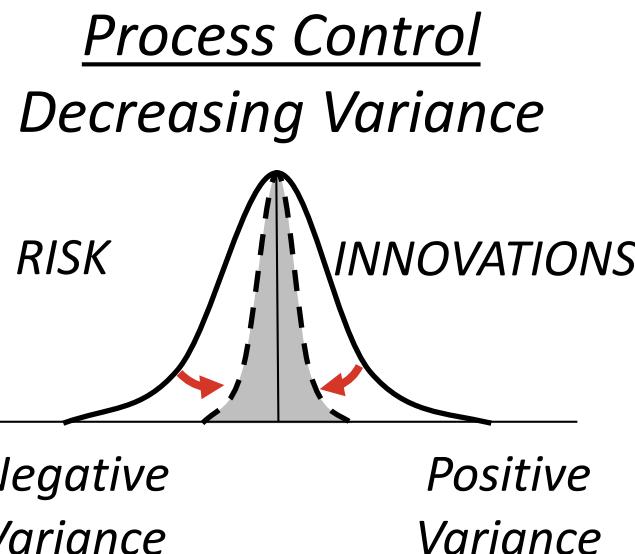
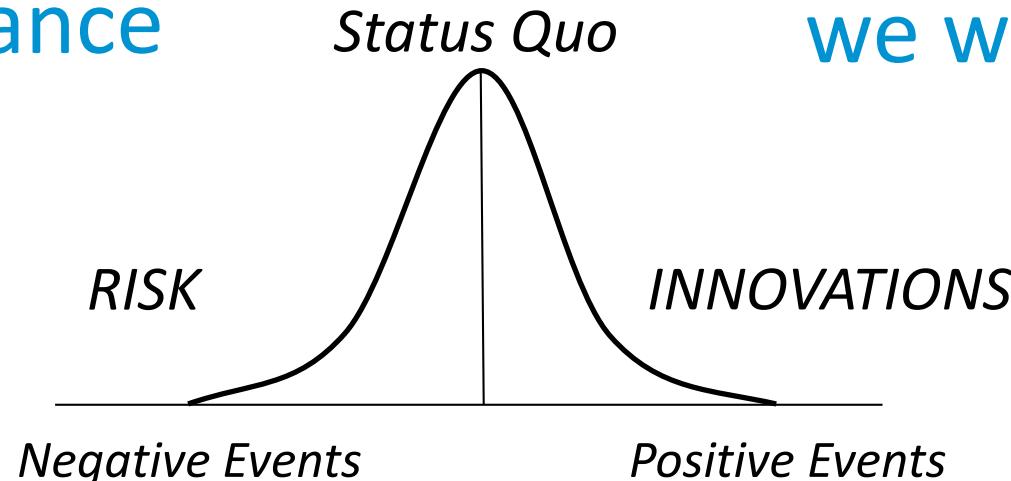
Changing the Average



Changing the Variance

For risk management,
we want low variance

For innovation,
we want high variance



How is innovation and risk related?

Do we want the Boeing Engineer
experimenting with your 777?

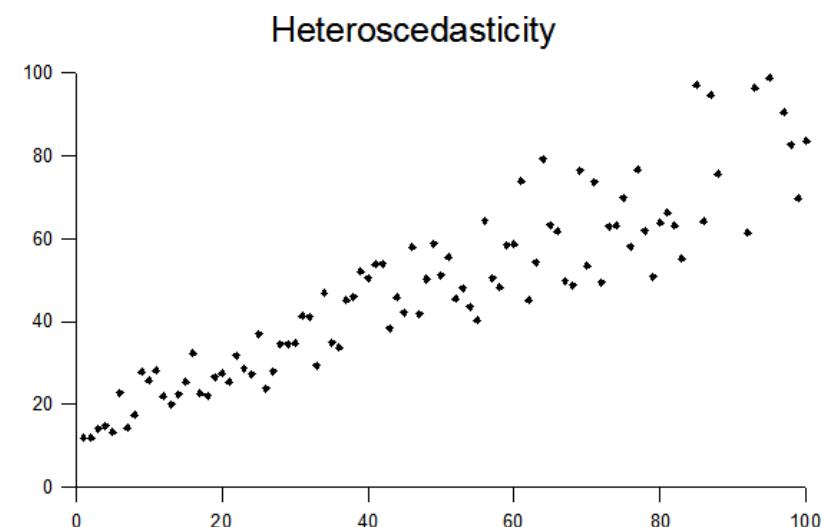
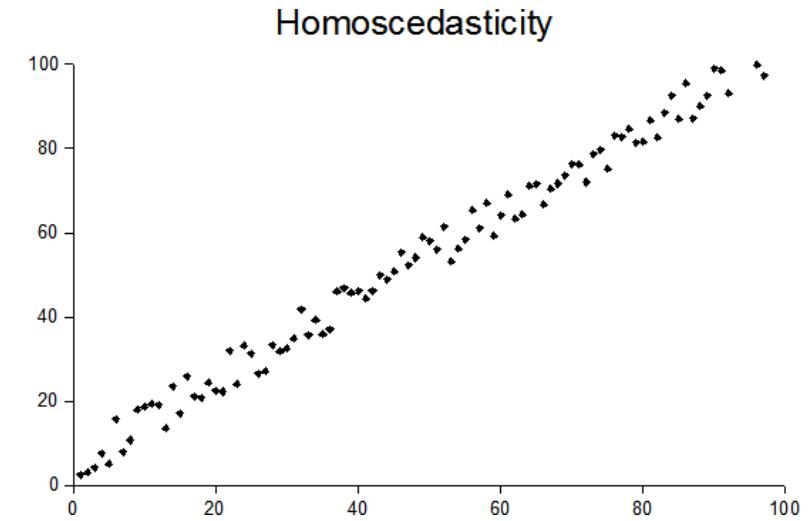


Do we want the IDEO Designer to
stay within their industrial silos?



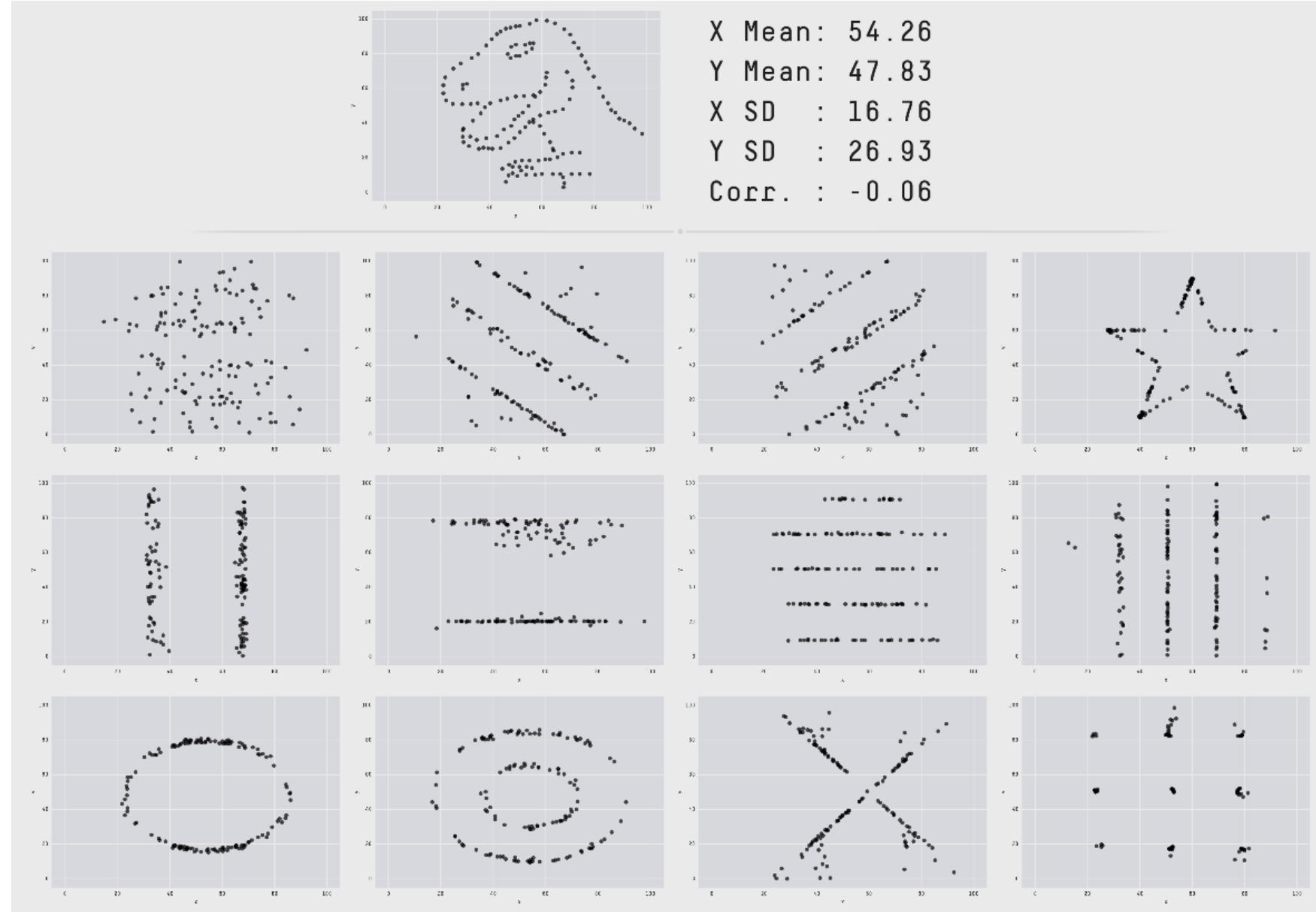
Jimmy's favorite word: Heteroscedasticity

- **Homoscedasticity** where the “noise” or random disturbance in the relationship between the independent variables and the dependent variable is the same across all values of the independent variables.
- **Heteroscedasticity** refers to the circumstance in which the variability of a variable is unequal across the range of values of a second variable that predicts it.



Importance of “noise”

- Statistically, each graphs have the same *Average* and *Standard Deviation*.
- Practically, these are all very different datasets!
- The “background noise”, or variance, gives you the context.



Changing variance changes your context

Tame problems: Solutions changes the *average*

- Therefore, you can predict what the change might entail

Wicked problems: Solutions changes the *variance*

- You cannot predict how the context will change!

Note: All linear regressions (the bulk of basic statistics) depends on the assumption that variance is constant.

They are pretty much useless when faced with wicked problems.

Managers love new ideas because:

- Changes the game
- Competitive advantage
- Hero / celebrity culture



\$15 B market
Ready-made Meals
(1950s)



Fast Fashion Icon:
0.3% on ads (as
compared to 3%
fashion competitors)



\$26 B global sales
iPod / iTunes
(2001)



4,600 backlog of the
Boeing 737 (2018)

Managers hate new ideas because

- Costly failures
- Bonus is tied to 6% return on the market
- Promotion is tied to “outrunning the slowest person”



Kitchen Entrees,
Colgate (1982)



Cologne, Harley
Davidson (1990s)



Galaxy Note 7,
Samsung (2016)



Early Airplane

Jimmy's 5 Steps of innovating a new framework

Step 1: Start with what you know.

Step 2: Deconstruct what you know.

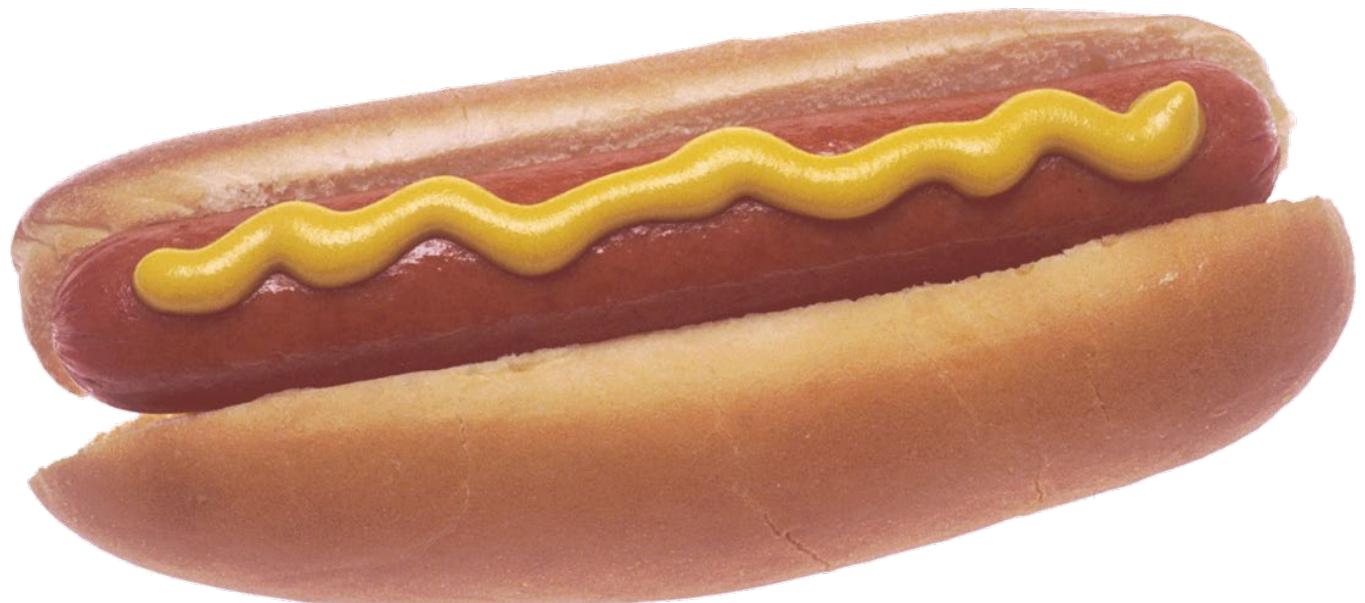
Step 3: Apply combinatorial thinking and watch for emergent properties.

Step 4: Explore the boundaries.

Step 5: Push the boundaries with "*If this is true, what else is true?*"

1. Start with what you know

- What's a hot dog?



2. Deconstruct what you know

Sausage



Sauces



Toppings



Rolls



Cheeses



3. Emergent innovations

**IDAHO**

Hot dog in a baked potato, topped with bacon bits, chives, sour cream

**DENVER**

Hot dog in a bun, chopped red onion, green chile sauce, sour cream, chopped jalapeños

**HAWAII**

Hawaiian sweet bread roll with a hole punched through it, hot dog, ketchup, mustard, fruit sauces

**MEMPHIS**

Bacon-wrapped hot dog in a bun, barbecue sauce, chopped scallions, shredded cheddar

**NORWAY**

Long hot dog wrapped in a large toasted tortilla or flatbread, ketchup, mustard

**PERU**

Sliced hot dog, fried, served with fries, ketchup, mustard, mayo (no bun)

**GEORGIA**

Open hot dog bun, sliced hot dog, cheese, chili, chopped onions, sliced pickles, oyster crackers, ketchup, mustard

**FRANCE**

Long hot dog in a baguette, covered in shredded Gruyère, then broiled

**CHINA**

Hot dog wrapped in a dumpling-like dough, sprinkled with sesame seeds and baked

**ARGENTINA**

Chorizo link in a soft hero roll slathered with chimichurri and a pickled red onion/tomato mix

**VIETNAM**

Long sausage in a french roll with julienned pickled vegetables

**CLEVELAND**

Kielbasa in a bun, French fries, hot sauce, cole slaw

**AMSTERDAM**

Long hot dog in a bun, covered in pizza sauce and mozzarella cheese, then broiled

**CHICAGO**

Hot dog, poppy seed bun, pickle spear, celery salt, tomatoes, whole pickled peppers, chopped onions, "neon" green relish, mustard

**BAGEL DOG**

Hot dog wrapped in everything bagel dough, baked and served with mustard

**KANSAS CITY**

Hot dog in a sesame seed bun, sauerkraut, melted Swiss cheese

**POTATO DOG**

Hot dog in a bun, fried potatoes, peppers, onions, mustard

**BRAZIL**

Hot dog in a split roll, pico de gallo, corn, grated parmesan, shredded carrots, diced ham, cilantro, shoestring fries

**CHILE**

Hot dog in a bun with chopped tomatoes, sauerkraut, mashed avocado, mayonnaise

**GUATEMALA**

Bacon-wrapped hot dog in an avocado-coated corn tortilla, shredded lettuce, cabbage, mayonnaise, chopped onions

**PHILIPPINES**

Bright red notched dog served with banana ketchup, rice, fried egg (no bun)

**DENMARK**

Long hot dog in a bun, pickle chips, remoulade, ketchup, mustard, fried onions, chopped onions

**SWEDEN**

Hot dog surrounded by mashed potatoes, shrimp salad, lettuce and fried onions rolled into a wrap

**CZECH REPUBLIC**

Hot dog in a roll with a hole punched through it lengthwise, coated in ketchup and mustard

**BALTIMORE**

Fried bologna wrapped around a fried hot dog with mustard in a squishy bun

4. Explore the boundaries

Largest: 125.5 lbs



Most expensive \$169



Longest: 668 ft.



5. If this is true, what else is true?

Swap rolls for pasta?



1

High-end Ingredients?



2

Function as an Appetizer?



3

Different Preparation?



4

Same Shape as a cake?



5

As a costume?



6

When is a hot dog no longer a hot dog?



That's when it becomes something *new*.

Three forms of innovation

Micro-innovation: optimizing the process

- (This is really risk-management and process optimization)
- You should be learning this in ***Operations*** classes.

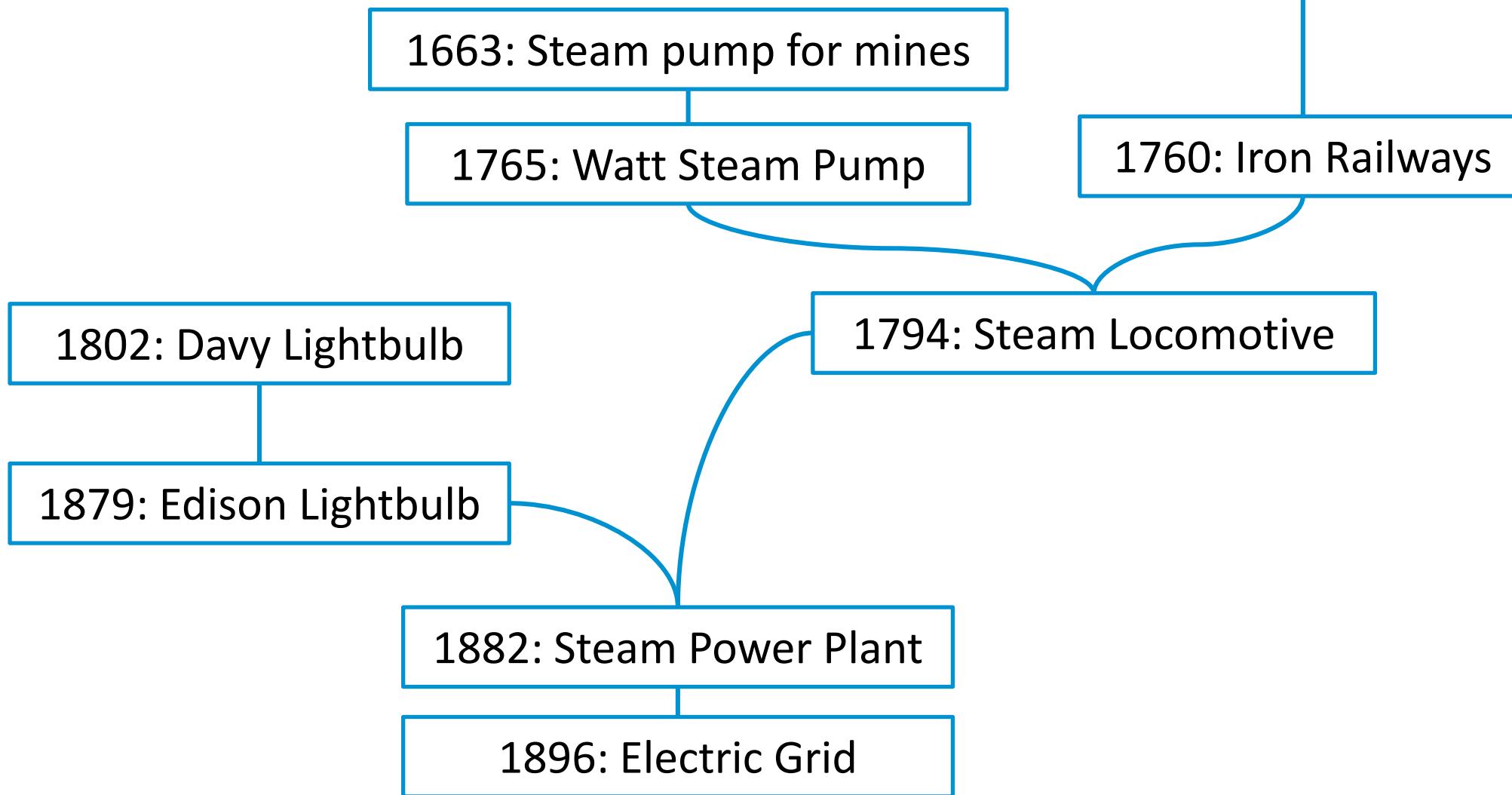
Meso-innovation: emergence of ideas through cross-pollination

- (This is really creativity, combinatorial thinking, breaking down silos, ideation, design thinking, etc.)
- You should be learning this in ***Design Thinking*** classes.

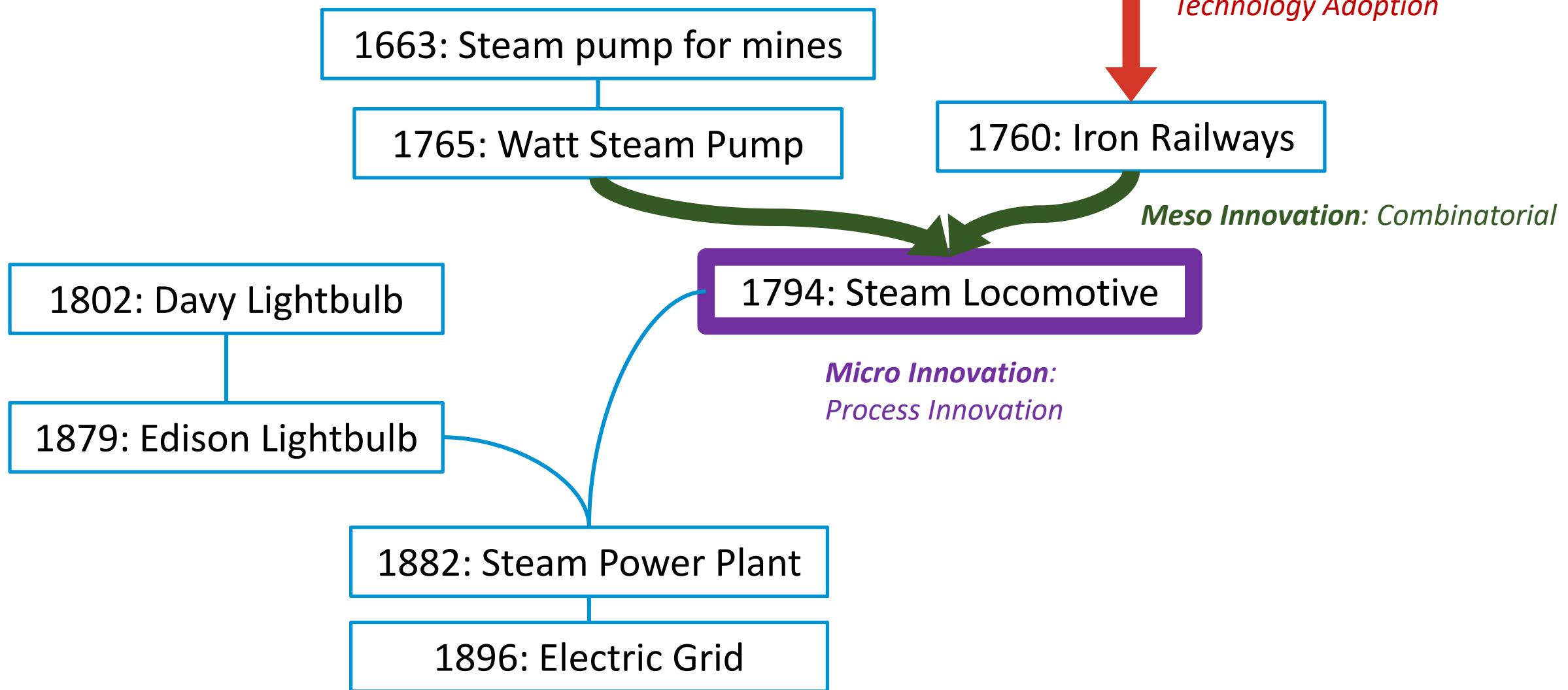
Macro-innovation: diffusion of ideas for scaling and adoption

- (This is really sales, marketing, and driving behavior changes)
- You should be learning this in ***Marketing*** classes.

Innovations emerge from converging technologies



Innovations emerge from converging technologies



Here are some frameworks we've looked at *(in just 3 residencies!)*

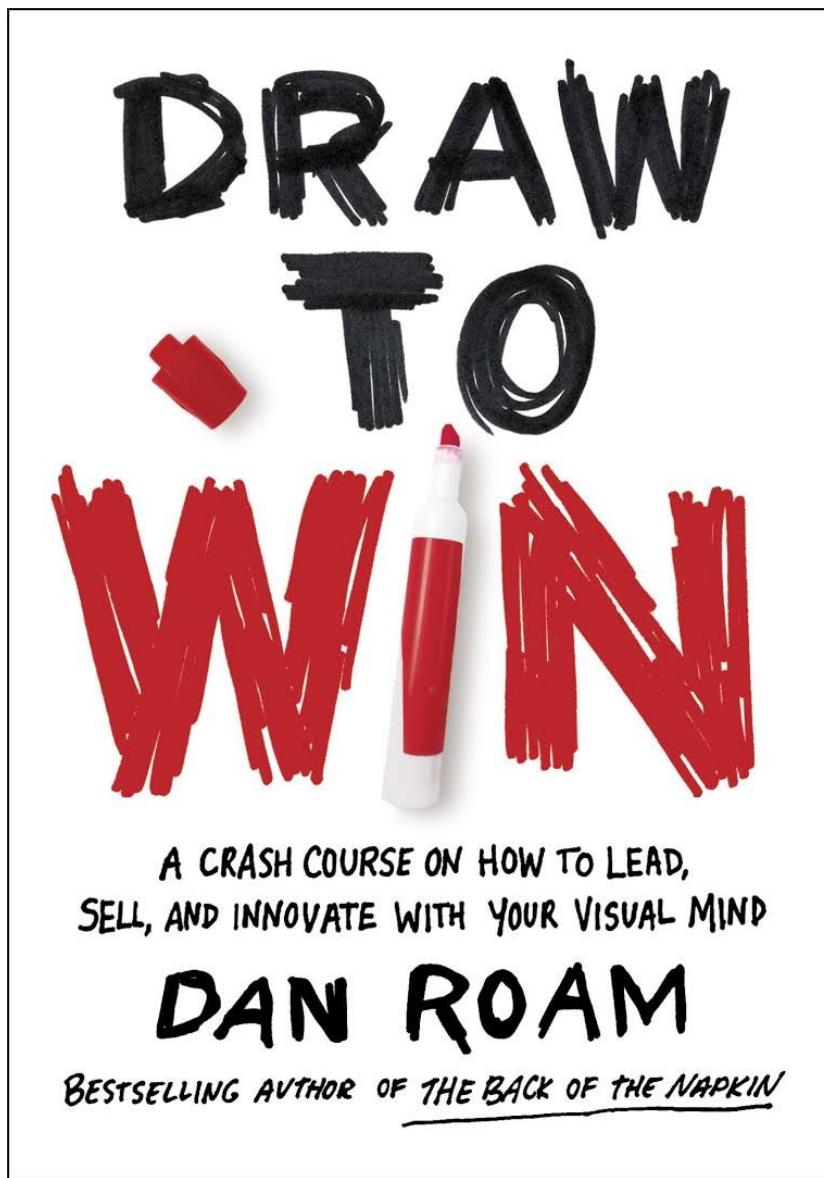
- Johari Window (known/unknowns)
- Why? What if? How?
- Porter's 5 forces
- 5 C's of Situational Awareness
- 4 P's of Marketing
- Scenario Planning
- Muddling Through
- Wicked Problems
- Clumsy Solutions
- How to Cope
- Perceptual Anchors
- Jimmy's rules on meso-innovation

Let's go one level up of abstraction.

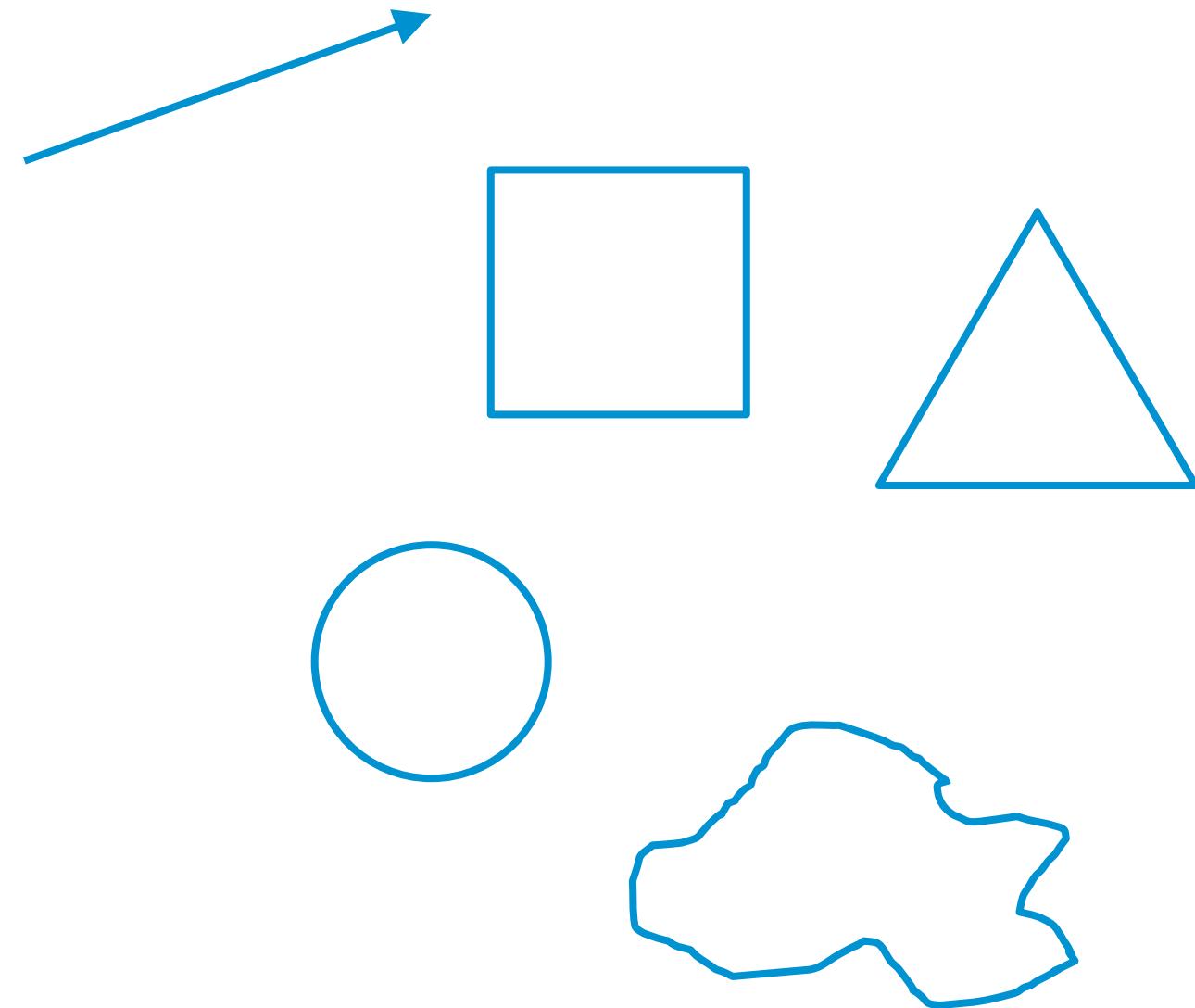
How can we innovate new frameworks?

Step 1: Start with what you know!

The basic shapes I use



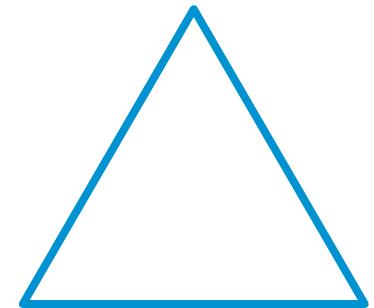
Step 2: Deconstruct what you know. What are the constituent parts of a framework?



The basic shapes I use

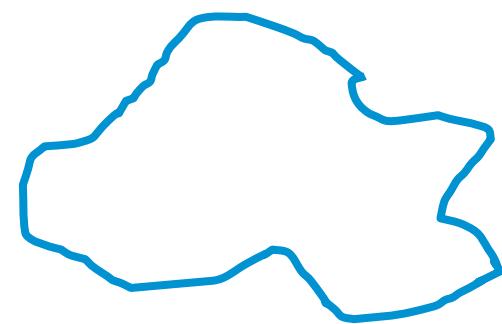
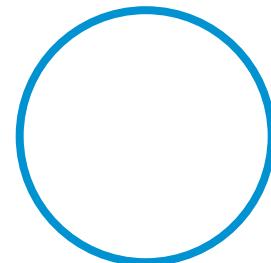
Arrows represent flows and movement (the VERB).

They help determine direction of a decisions



Shapes represent facts, people, and things (the NOUN).

They help determine the what/who are involved



Odd shapes need to get simplified to a geometric shape. All frameworks I've run across are aesthetically pleasing.

General Types of Frameworks

- You want to start with things that will always be true. That way you know the framework is well grounded. These three things are always true

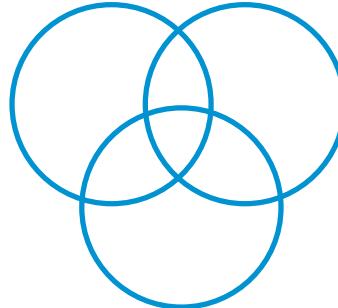
Type A: FLOWS



Flows maps our your next few decisions.

Technically complete, no social information.

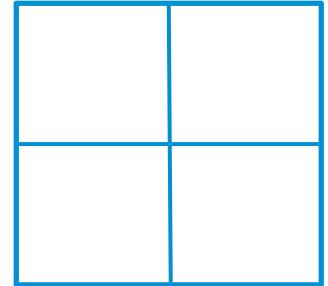
Type B: CATEGORIZING INFORMATION



Reminds you to ask all of your questions

Only as strong as the information you have.

Type C: MATRIX



Socially just and highly customizable

Can feel arbitrary.

Type A:



Type A: The basic things that flow

Time → Trace how processes move



Cash → Trace how money moves



- By definition, products, services and value propositions flow in the opposite direction.

Geography → Trace how objects move



- Bill Payment Process (as much as 35 steps at \$10-40 / invoice)

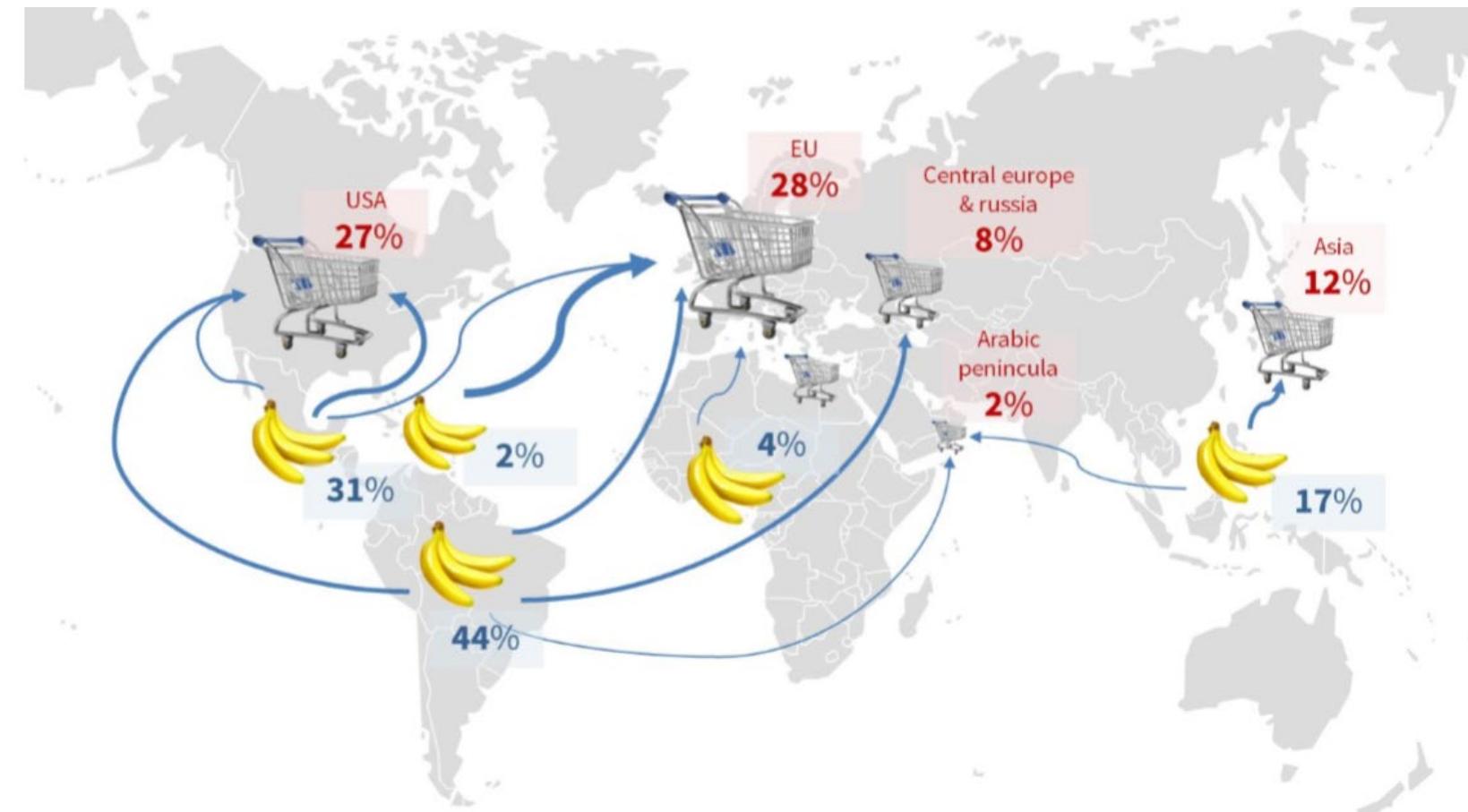
Type A:



Do other things flow?

Yes, but they tend to be variations of the first three.

- Flow of Energy
- Flow of Information
- Flow of Bananas



Type B:


Type B: Organizing Information

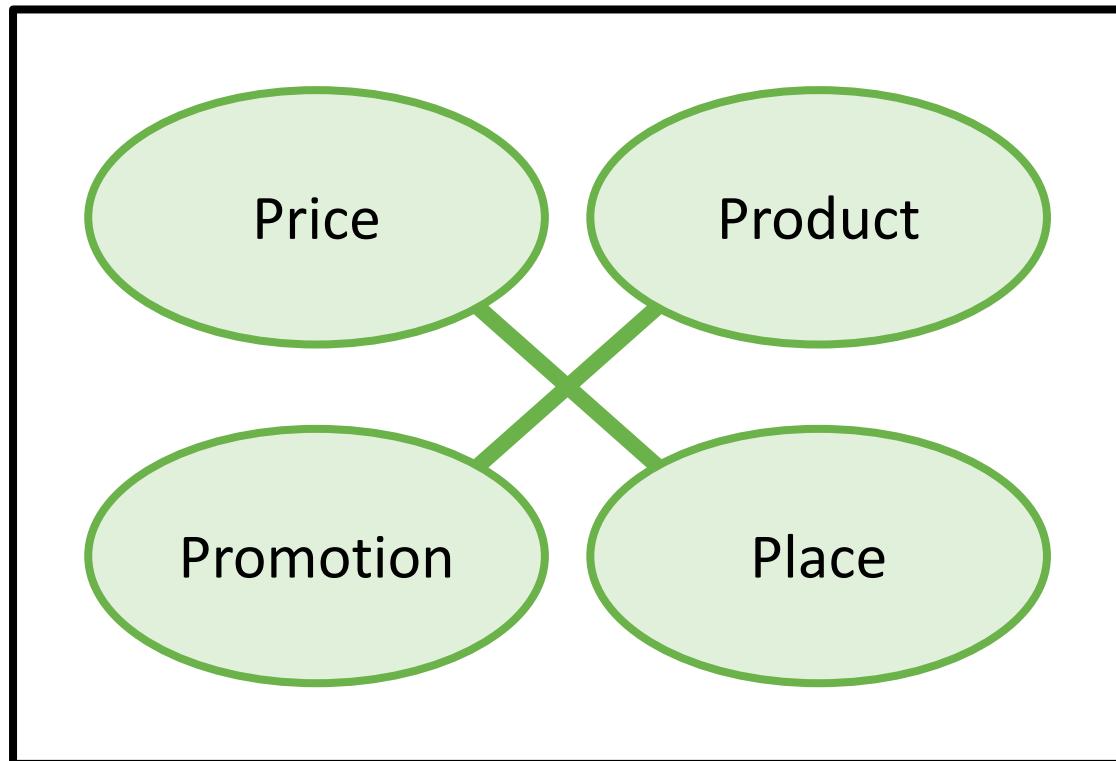
We studied these in Residency 1. These frameworks “organize” your organization and consist of a set of questions that should be asked to make sure you’re well-balanced and considering the situation fully.

- Porters 5 forces
- 4 P's of Marketing Mix
- 5 C's of Situational Awareness

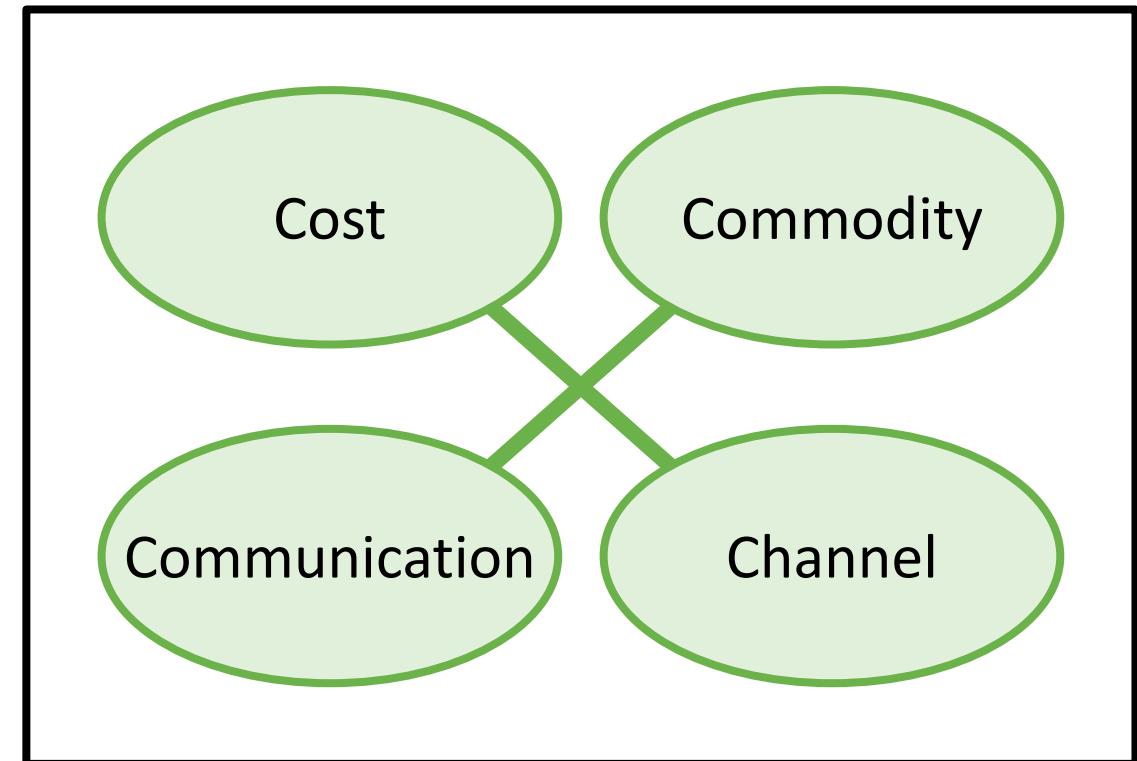
Innovation: Framework-shifting techniques

- Different frame of references will ***shift*** your answers

Marketing Mix 4 P's
Product viewpoint



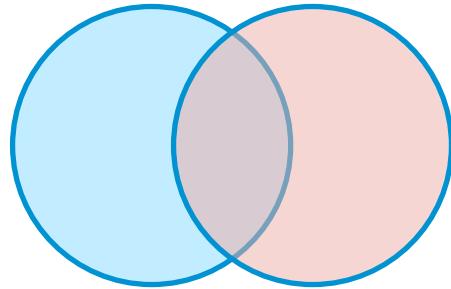
Marketing Mix 4 C's
Consumer viewpoint



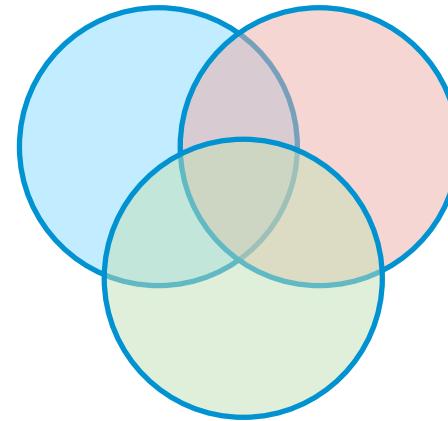
Venn Diagrams

Type B:

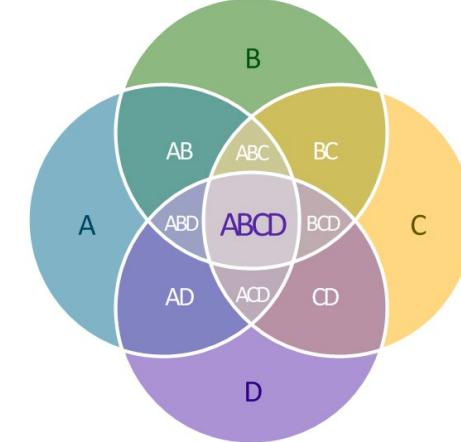

2-variable



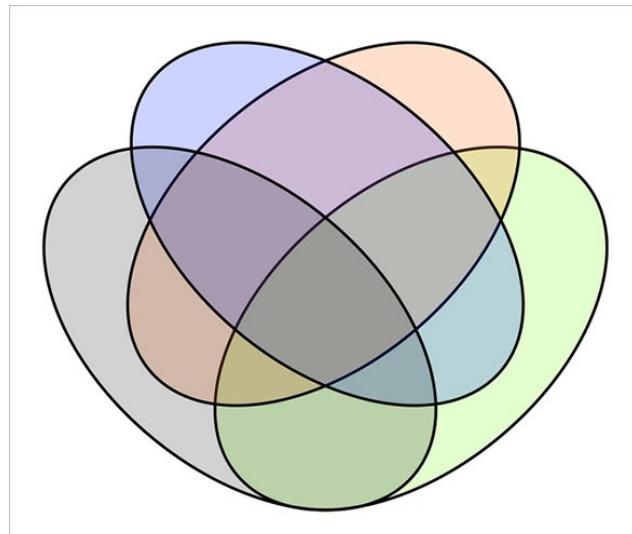
3-variable



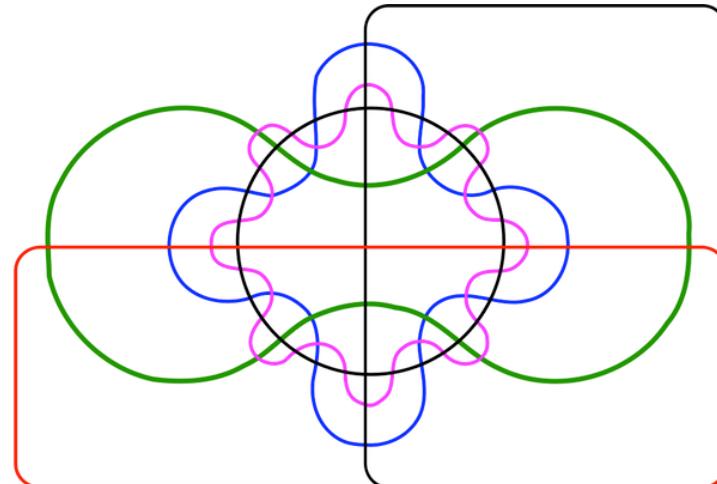
4-variable (Incomplete)



4-variable (Complete)



6-variable (Complete)



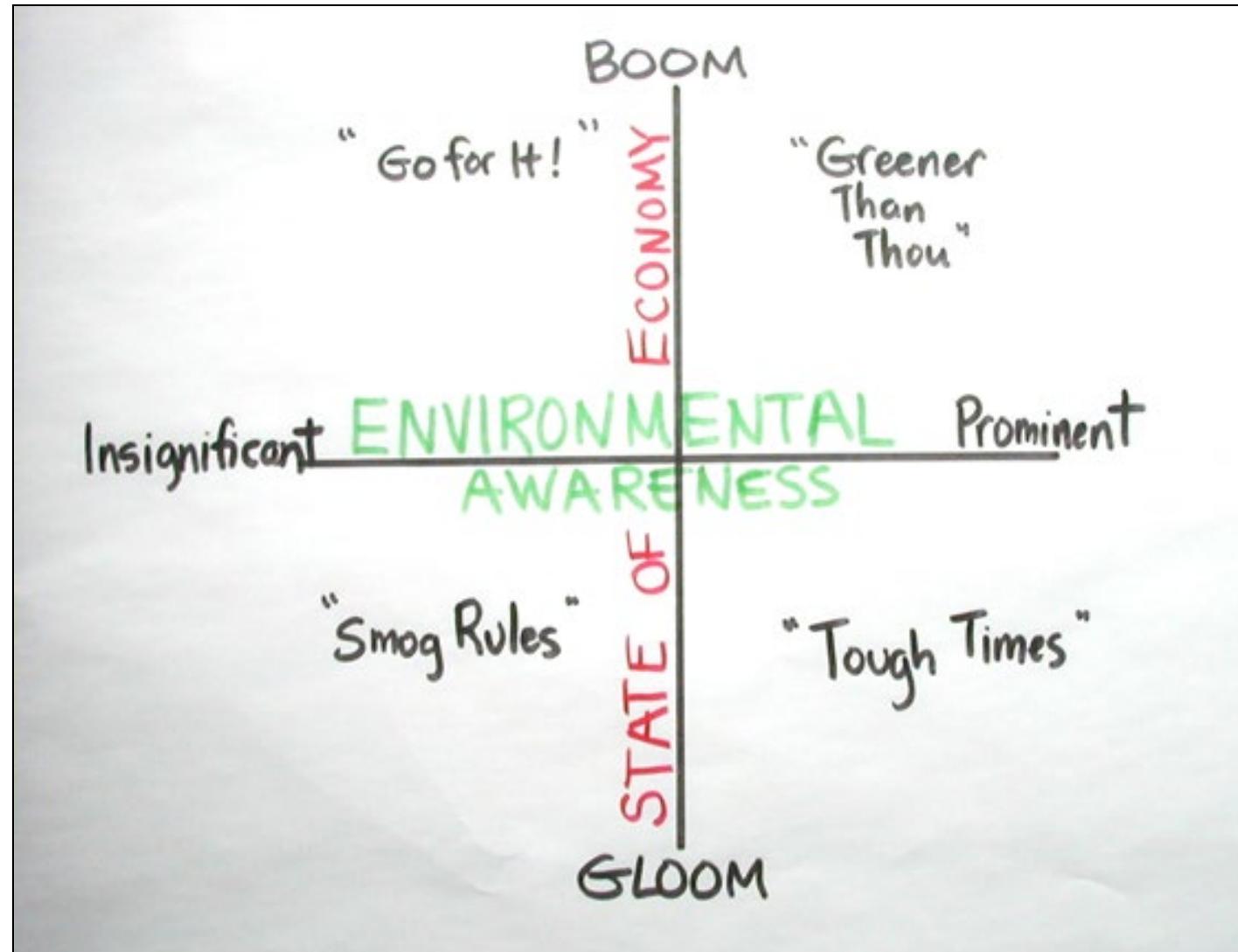
Type C:


Type C: Matrixes from Residency 1

		Certainty of an event occurring	
		Certain (Known)	Uncertain (Unknown)
Identification of the event	Identified (Known)	Known Knowns	Known Unknowns
	Unidentified (Unknown)	Identified Knowledge	Identified Risks
		Unknown Knowns	Unknown Unknowns
		Untapped Knowledge	Unknowable Risks

Type C:

Matrix: Descriptor of Worlds



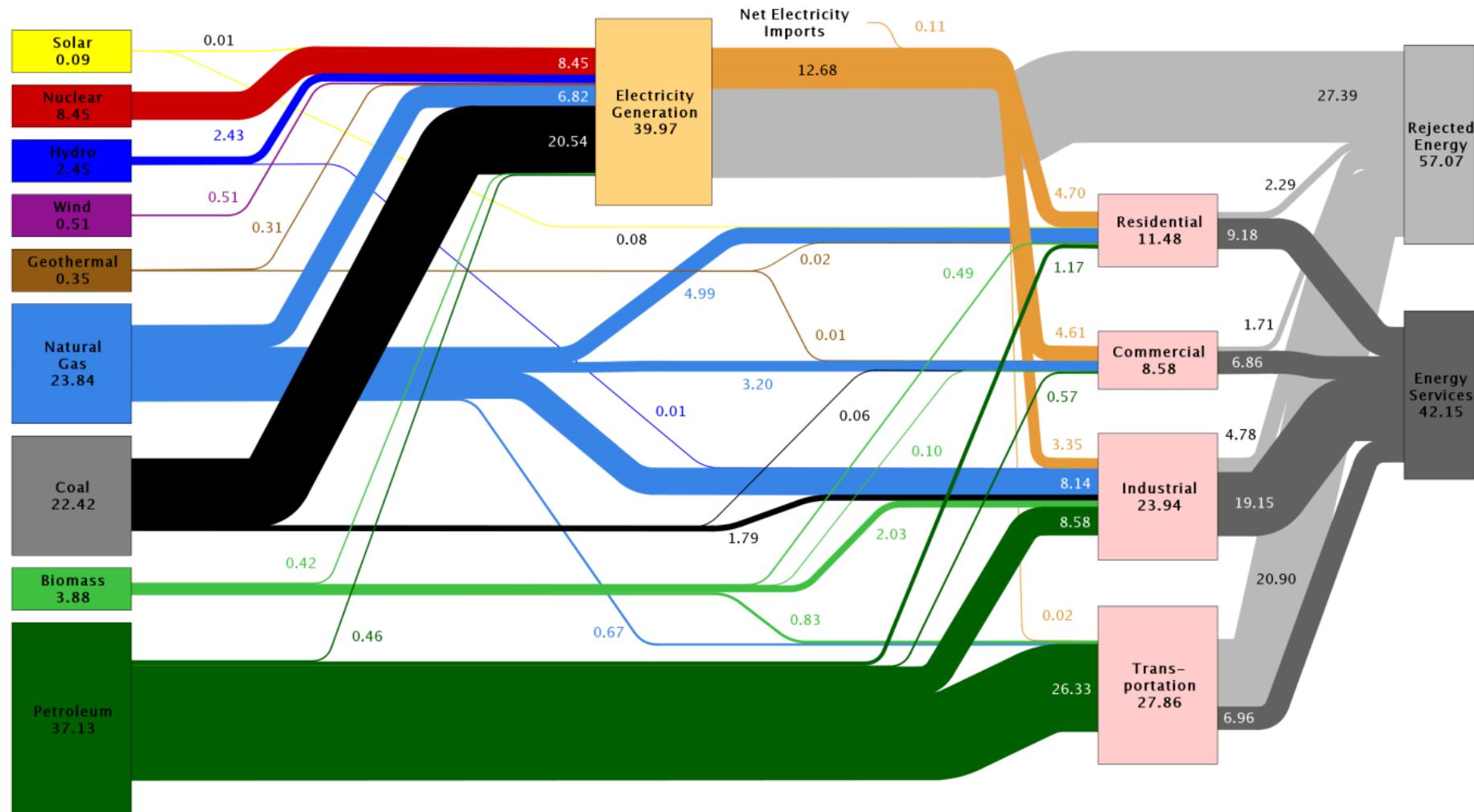
Step 3: Combine Frameworks and look for emergent properties

Can we create our own frameworks?

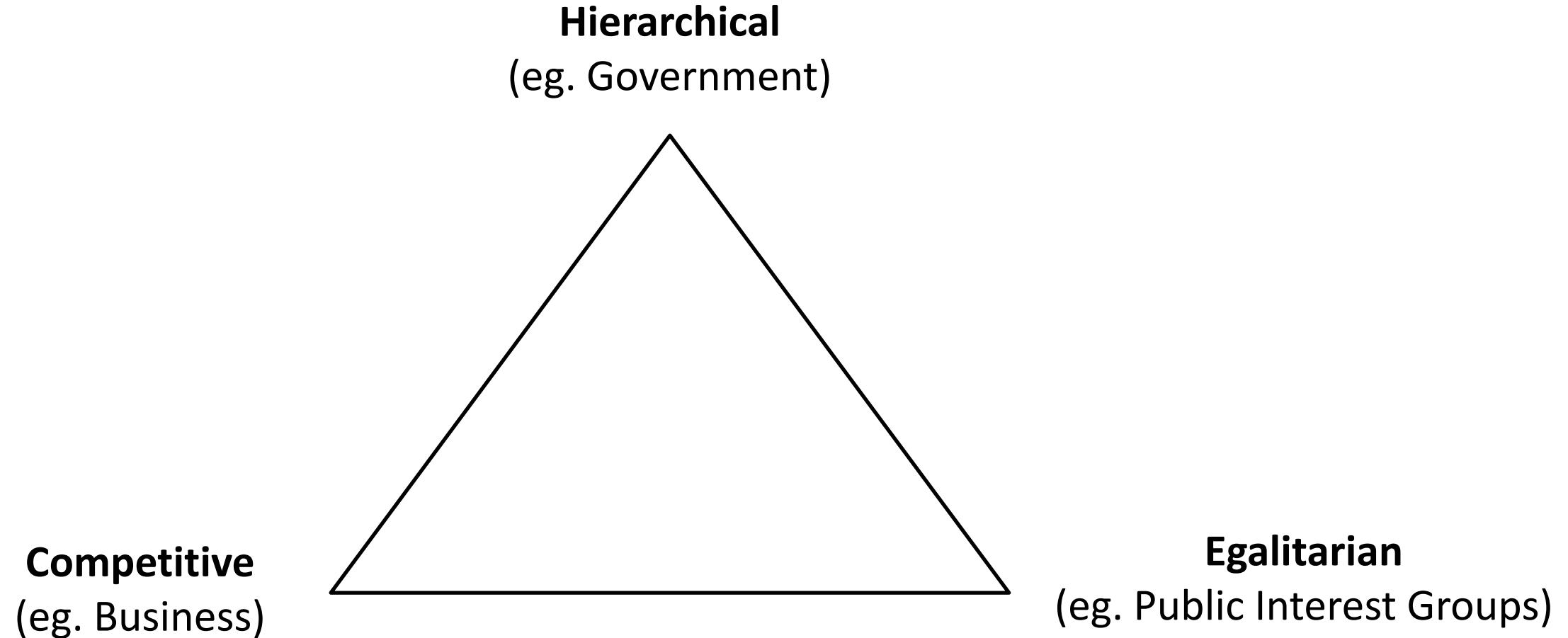
Yes!

Example: Energy as a Supply chain

SUPPLY → **TRANSPORTING** → **DEMAND**



Example: Clumsy Solution



Combining the two gives us a 3x3 matrix

Energy as a Supply Chain

Energy as
a Wicked
Problem

	Generation	Transmission	Consumption
Hierarchical			
Competitive			
Egalitarian			

Observe Emergent Properties

Energy as a Supply Chain

	Generation	Transmission	Consumption
Hierarchical	<ul style="list-style-type: none"><i>Nuclear Security</i><i>Distributed Generation</i><i>Fuel Tax</i>	<ul style="list-style-type: none"><i>Policy Drivers</i><i>Regulation</i><i>Pipeline Siting</i>	<ul style="list-style-type: none"><i>Cyber-Physical Security</i><i>Carbon Tax</i><i>Public Transit</i>
Competitive	<ul style="list-style-type: none"><i>Financial Structures</i><i>Angel Investing</i><i>Renewable PPAs</i>	<ul style="list-style-type: none"><i>District Heating</i><i>Wholesale Energy Markets</i>	<ul style="list-style-type: none"><i>Advanced Manufacturing</i><i>Energy Efficiency</i><i>Insurance</i>
Egalitarian	<ul style="list-style-type: none"><i>Developing World</i><i>Carbon Advocacy</i><i>Mining</i>	<ul style="list-style-type: none"><i>Agriculture</i><i>Waste Management</i>	<ul style="list-style-type: none"><i>Social Justice</i><i>Water as-a-right</i>

**Energy as
a Wicked
Problem**

How would a class on Waste be different if taught as a Transmission vs. Consumption class?

Innovation Step 4: Exploring the Boundaries

**Energy as
a Wicked
Problem**

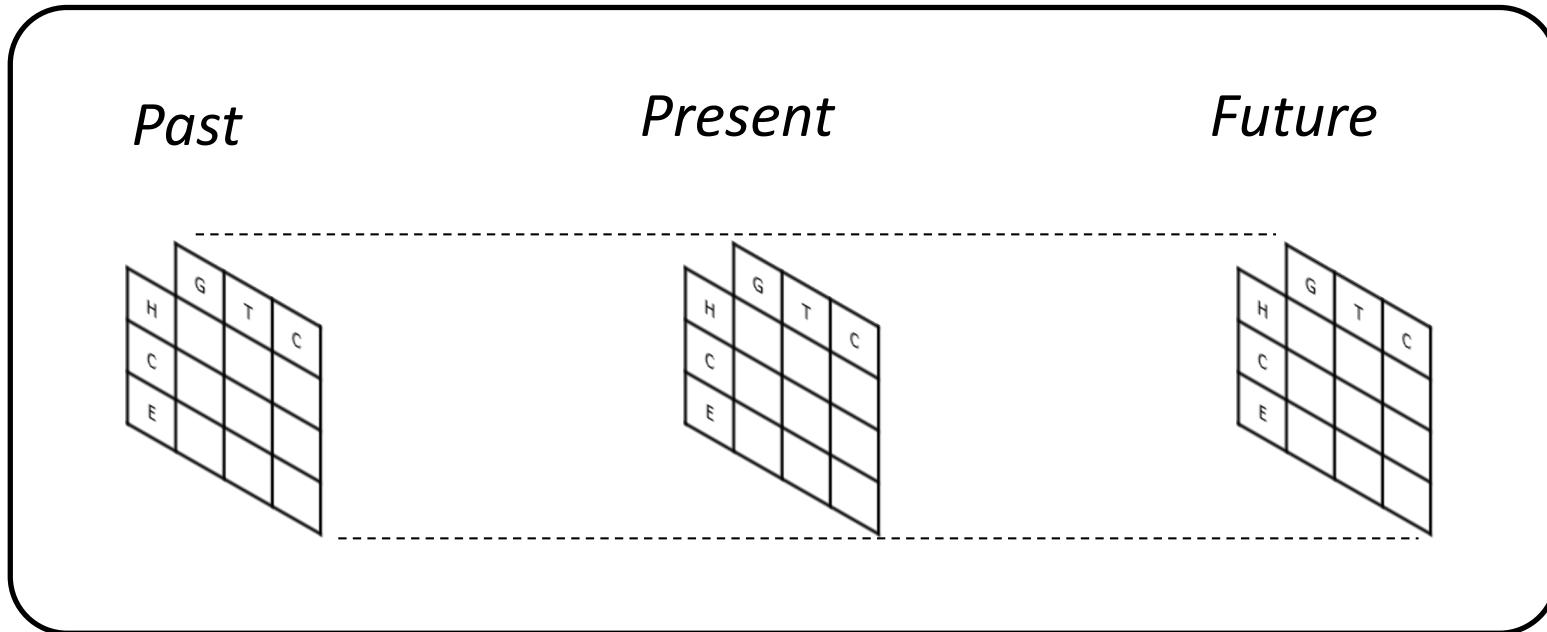
	Generation	Transmission	Consumption
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Ask yourself: Does this framework encapsulate everything I **need to** in my boundaries?

Mining

Pollution

Extending the Boundaries by adding Time



Over 50 classes developed in the Sustainable Energy Solutions Certificate
at PGS Seattle using this framework.

Innovation Step 5: If this is true, what else is true?

Can this monitor other flows:

- Can this be applied to water? → Yes.
- To agriculture? → Yes
- To transportation? → Yes.

Smaller Scale:

- For a building? → Probably

Larger scale:

- To your supply chain...? → With some thought, maybe.

Innovation Step 5: If this is true, what else is true?

Can this model be applied to other wicked problems?

Poverty?

Gun Control?

Health Care?

...

I don't know. What do you think?

Your ELs

For the past 2 months, you've been in *data gathering mode*.

- We actually didn't care what you learned or heard, just that you were gathering it.

Today, it is time to start *organizing your data*.

- Start combining the ideas and thoughts you've heard to reveal innovations.

As you organize, you'll start to notice trends.

- If you're really good, you'll start to notice what's missing.

Those trends and gaps are the insights you'll be providing to your clients.

Simplify!

Richard Feynman, the late Nobel Laureate in physics, was once asked by a Caltech faculty member to explain ***why spin one-half particles obey Fermi Dirac statistics.***

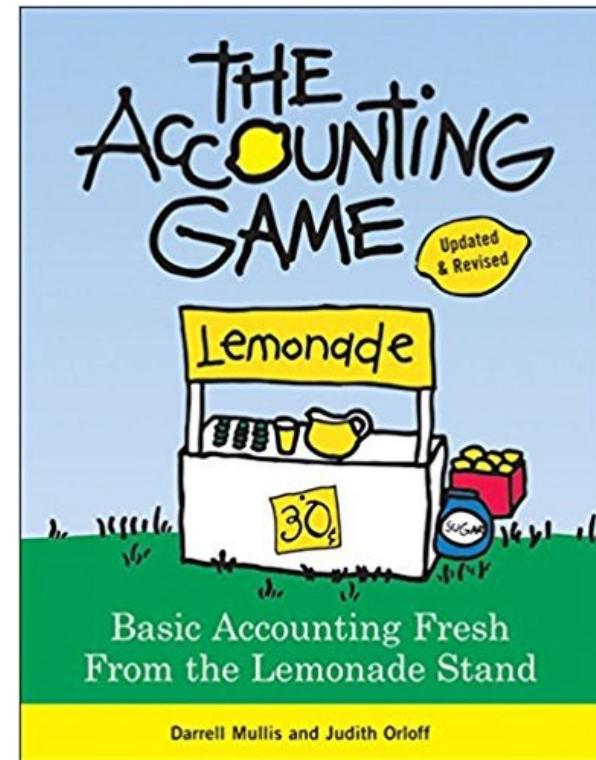
Rising to the challenge, he said, ***"I'll prepare a freshman lecture on it."***

But a few days later he told the faculty member, "You know, I couldn't do it. ***I couldn't reduce it to the freshman level. That means we really don't understand it.***"



Simplify in business: The Crayola Test

- Explain so your grandparent can understand (sometimes a bit abstract)
- Only invest in companies that can be explained with a single sheet of paper and a box of crayons.
- If you can't, then you can't explain your value proposition succinctly.



In Summary

- Risk and Innovation both require the management of ***variance***
 - Risk Management ***minimizes*** variances
 - Innovation Management ***maximizes*** variances
- There are several strategies for innovation
 - Micro-innovations are innovations that do what you do today but better.
 - Meso-innovations are about emergent properties of new combinations of ideas.
 - Macro-innovations are about adoption and diffusion of ideas (Residency 5).
- There are three types of basic frameworks: Flows, Data organization, and Matrixes
- Generally, there are 5 steps to Innovation, including deconstructing and reconstructing information and exploring / extending boundaries.