

Innovation in Virtual Worlds,  
and then back out into our own.

or:

How come we already  
do it better in games than  
in the real world?





Thank You



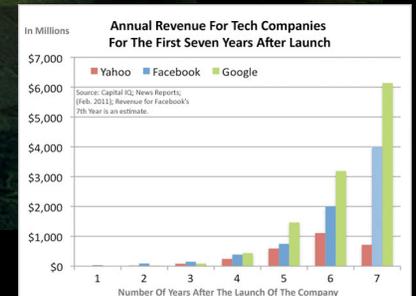
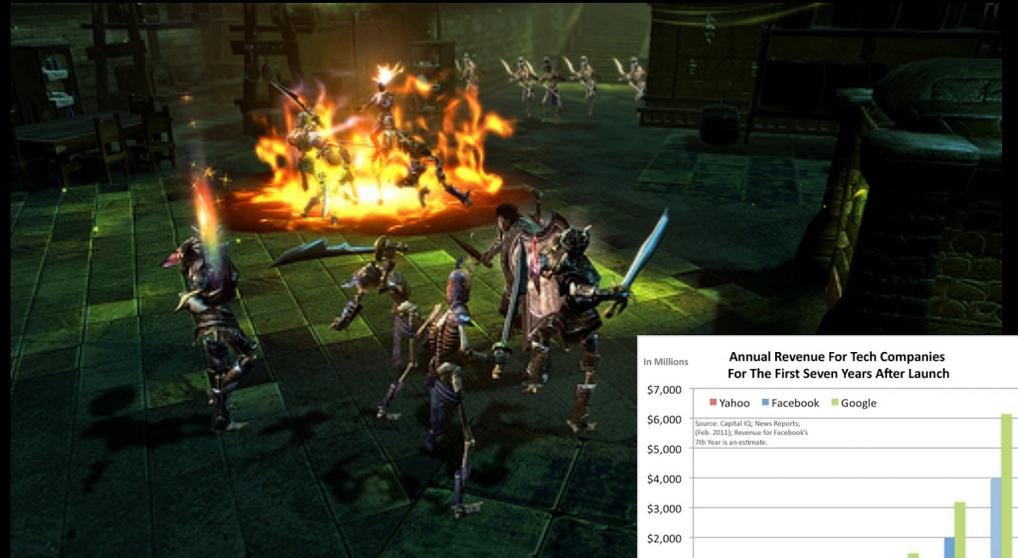
**ETC** *global*  
Carnegie Mellon.  
[www.etc.cmu.edu](http://www.etc.cmu.edu)



**Disney** Research  
SCIENCE AT PLAY



# So what are we doing well virtually?



Why does it seem as if Innovation  
thrives in gaming and virtual  
spaces?

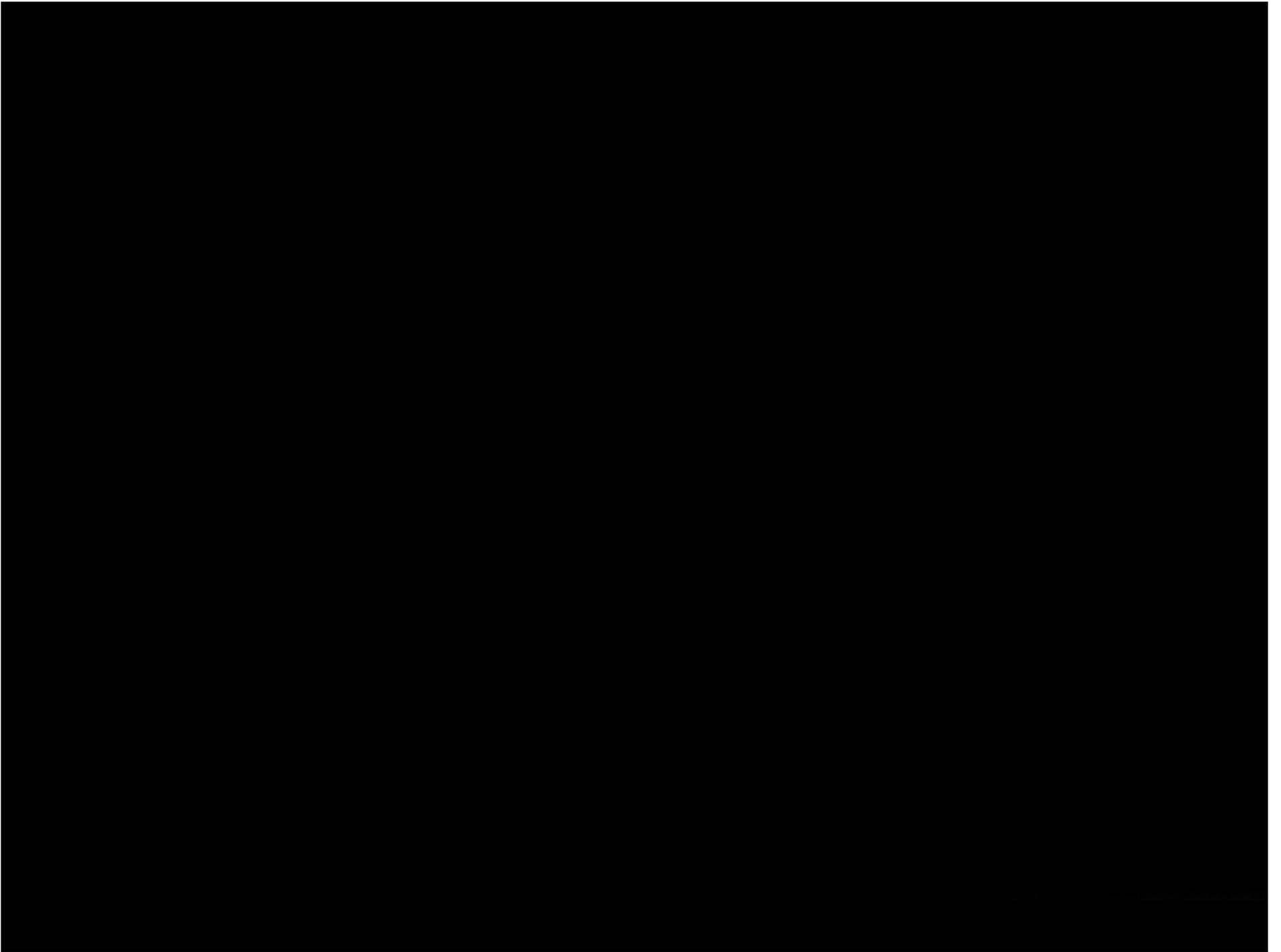
Is it just the tools?

Or an inherent mindset that comes  
along for the ride?

# The **Marshmallow Challenge**



Tom Wujec  
Autodesk



- Iteration
- Collaboration
- Facilitation

Necessary for success in the real world, comes more naturally in virtual worlds, and with Gen Y'rs.

Let's mash em together!

# Innovate?

- But How?
  - IBM wants us to “Think”



- Apple?
  - “Think Different”



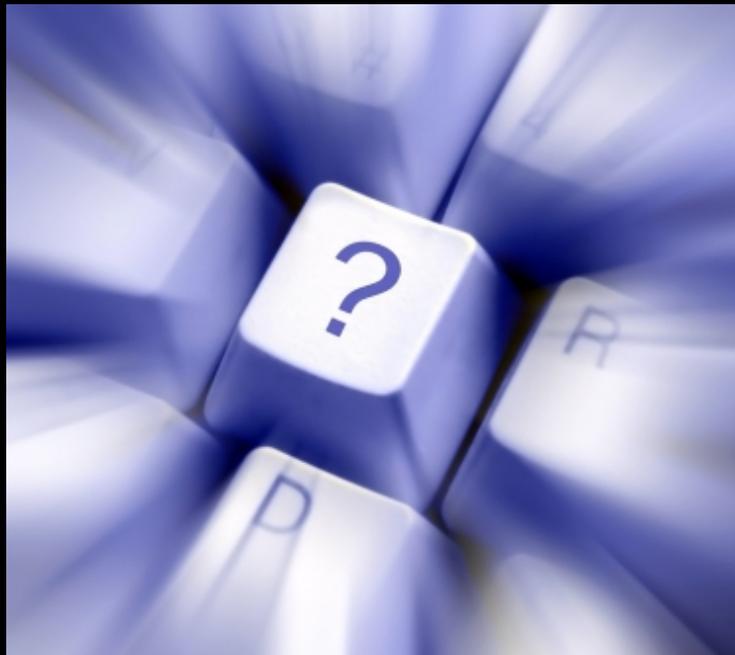
- The 70's?
  - “Think Outside the Box”



- Nike?
  - “Just Do It”



These mantras tell us WHAT to do, but does not teach us HOW to go about actually doing it.



So what is  
“Innovation?”

# Innovation



n 1: a creation (a new device or process) resulting from study and experimentation

– A change in leadership



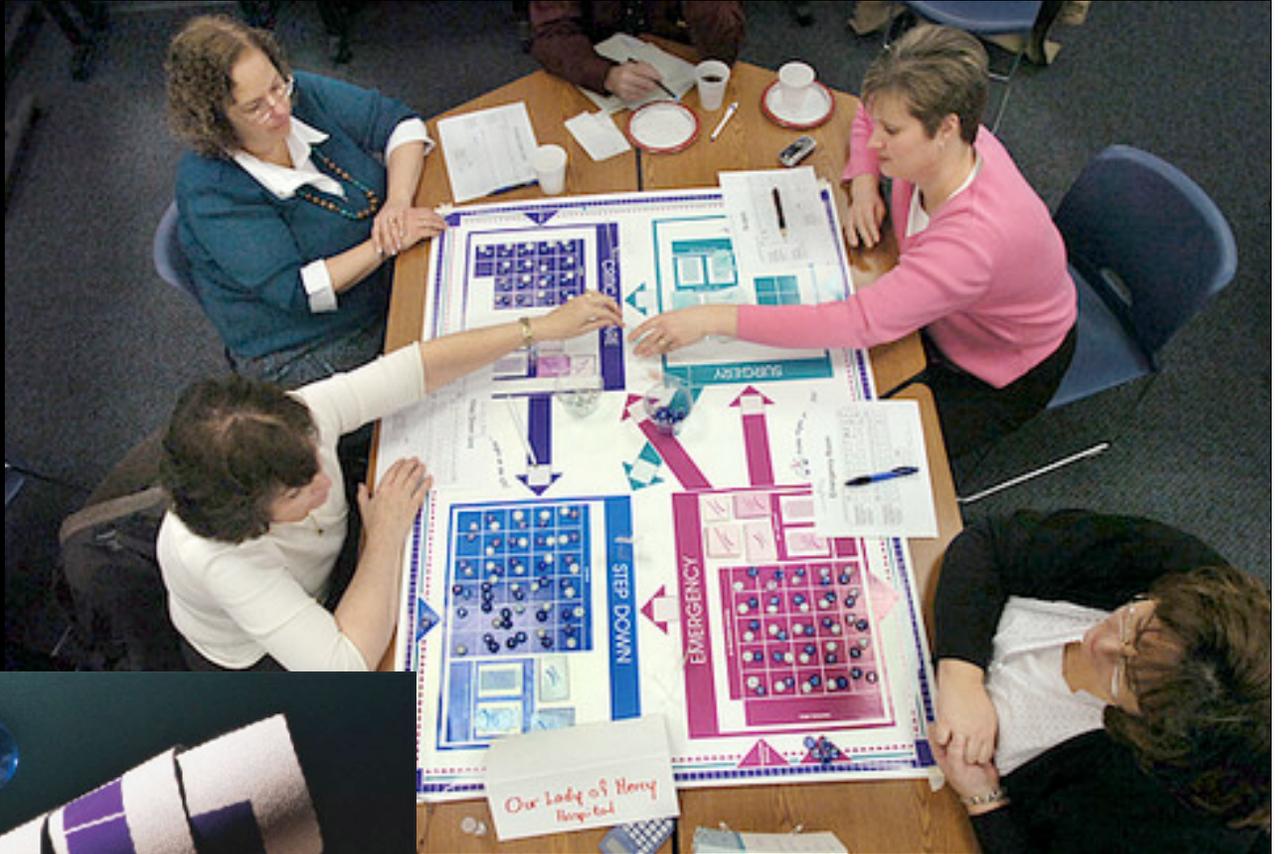
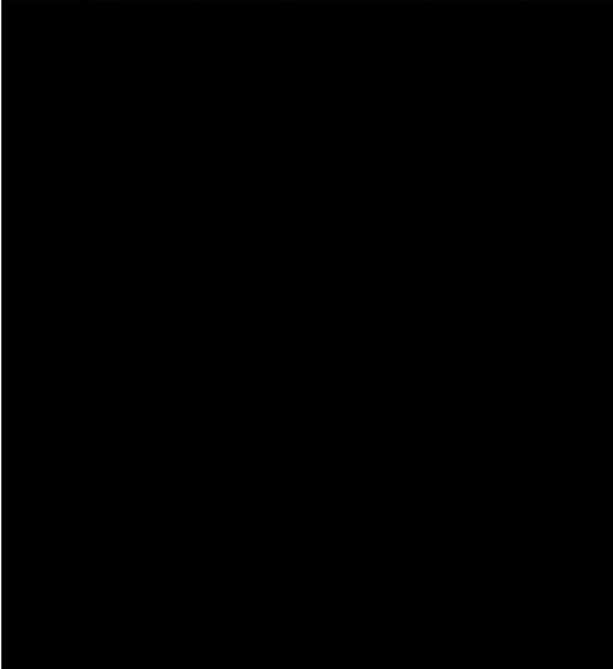
–“Good ideas come from everywhere.”



–“It’s everyone’s job to innovate.”



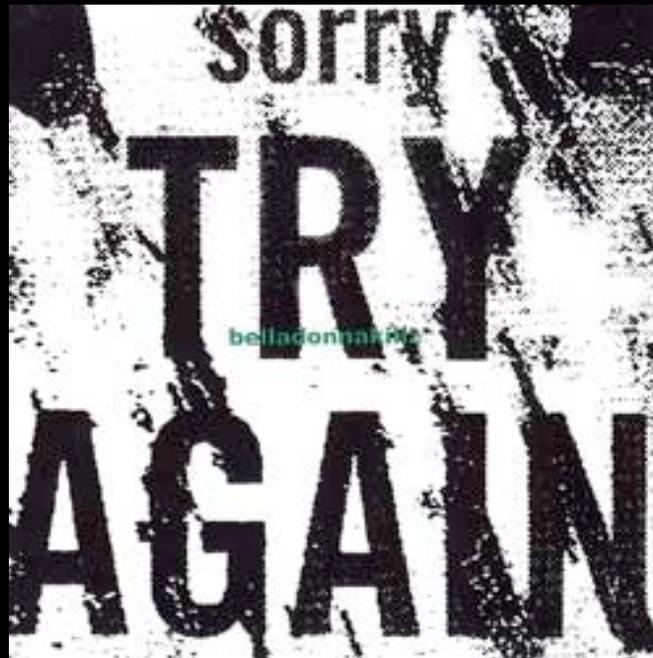






**SOrry**  
**TRY**  
**AGAIN**

belladonna



# Is Innovation “cheating?”

**cheat** \_ P [Pronunciation Key](#) (ch t)

**v. cheat·ed, cheat·ing, cheats**

*v. tr.*

To deceive by trickery; swindle:

*v. intr.*

To violate rules deliberately, as in a game: *was accused of cheating at cards.*

# What are the rules?



What one line will make this equal to  
8?

VII

What one line will make this equal to  
8?

VIII

What one line will make this equal to  
6?

IX

What one line will make this equal to  
6?

SIX

In the 1970 book “I am glad I am a boy, I am glad I am a girl.” The researchers pointed out the reasons for each to be so glad.

Boys are Football Players

Boys Invent Things

Boys Fix things

Boys are Presidents

Girls are Cheerleaders

Girls use things that boys invent

Girls need things fixed

Girls are First Ladies

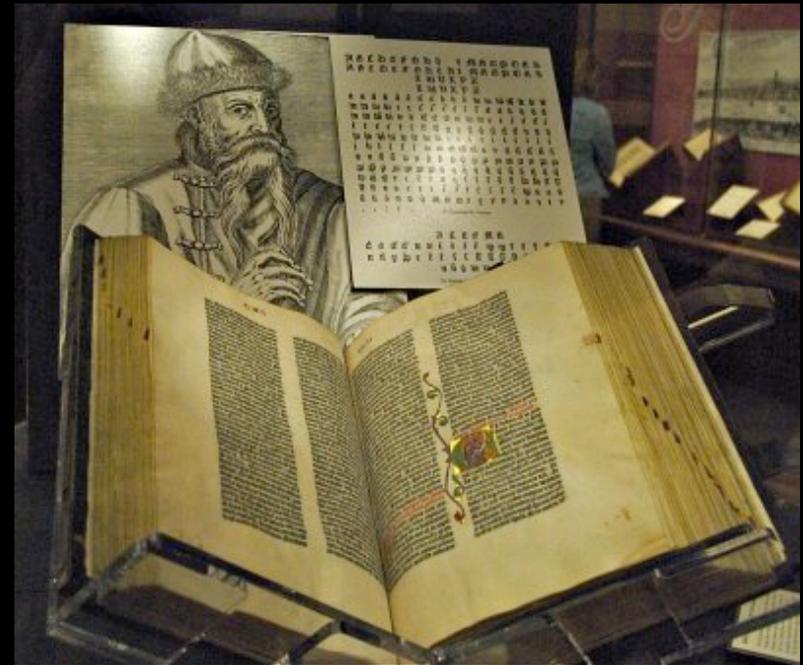
My personal fascination in driving Innovation is in the “study and experimentation” of interconnecting previously unrelated things.



History is rife with great examples of Innovation as the result of these intersections.



Around 1450 the flexibility of a coin punch was combined with the power of a wine press.

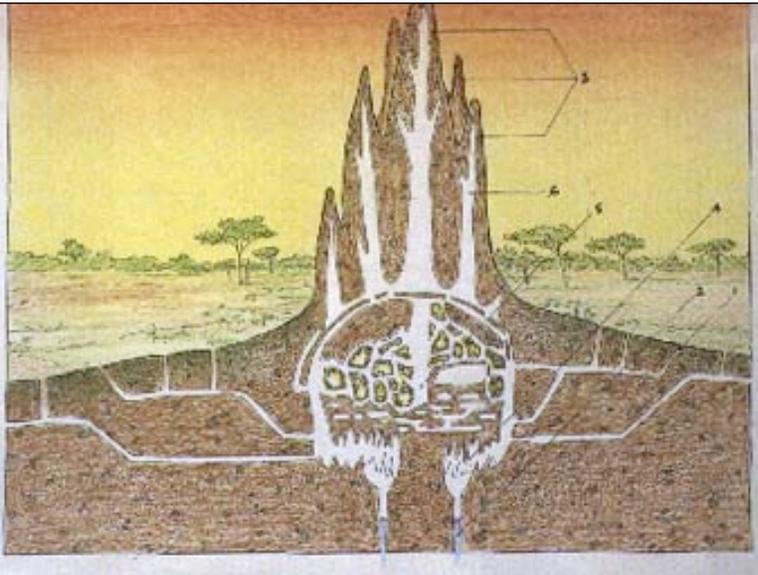




FREEDOM  
FLEXIBILITY  
CONFIDENCE





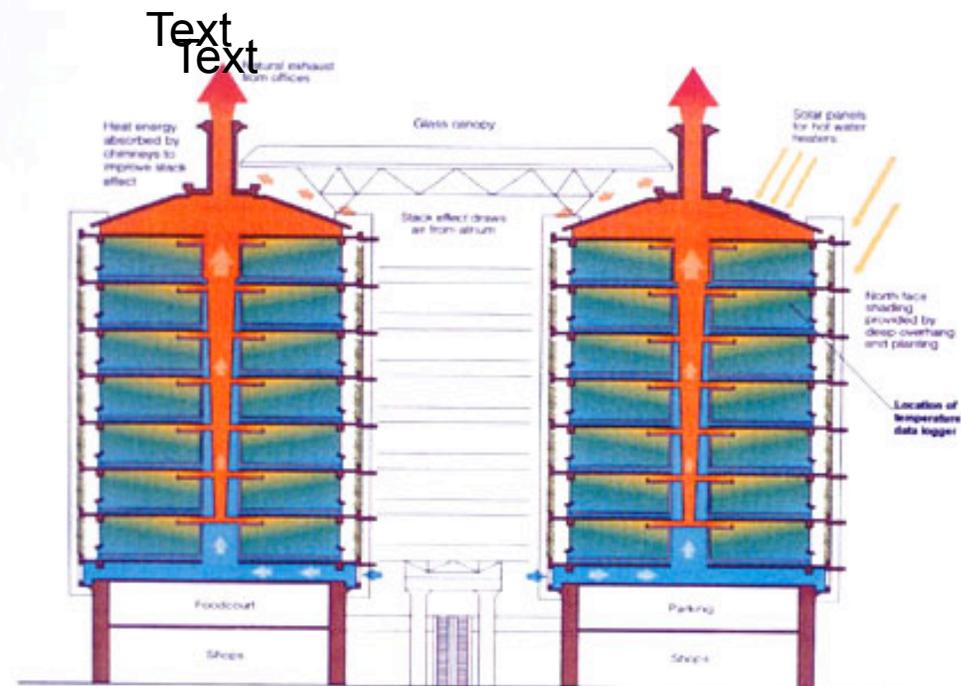


The **Eastgate Centre** in Harare, Zimbabwe has no conventional air-conditioning or heating, yet stays regulated year round using design methods inspired by indigenous Zimbabwean masonry and the self-cooling mounds of African termites!

Eastgate's owners have saved \$3.5 million alone because of an air-conditioning system that did not have to be implemented.

- Energy costs are 90% LESS than a conventional system.

**Eastgate, Harare**  
- 'a breath of fresh air'





A recent IBM ad points out. "The guy who invented sliced bread didn't invent bread or slicing, but applied new technology to an age-old problem."

Otto F. Rohwedder Invented the bread slicer in 1912. He was a jeweler. He did not sell a unit until July 7<sup>th</sup>, 1928.



Baker Frank Bench increased his bread sales 2000 times in the first two weeks after he introduced pre-sliced loaves.

## Building Virtual Worlds Class - Core to MET at CMU

- To take students with varying talents, backgrounds, and perspectives and put them together to do what they couldn't do alone.
- The key thing is that there are no "idea people" in the course; everyone must share in the mechanical creation of the worlds. And everyone is peer reviewed by the rest of the team for specific feedback critical to future growth.
- No shooting violence, no porn.
- Randomly generated teams of 4. Switched up every two weeks.
- Stand back and watch the awesome!







Virtual Space on the Screen



Virtual Character

Performing by Actual



JAM-O-DRUM







# Why isn't everyone Innovative?

It's Hard! It Requires:

- Cultural Changes
- Risk
- Predicting Surprise
- Study and Experimentation

# Cultural Differences



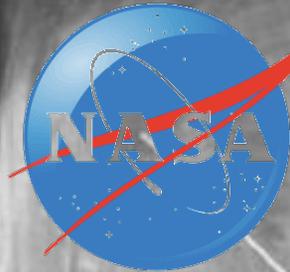
# **Cultural Differences**

- Across disciplines.**
- Across the globe.**
- Across time.**

Cultural differences are the biggest reason offshore outsourcing deals fail or run into problems as reported by 2/3rds of execs.

# **Meet the Millenials**

**47% of your workforce  
by 2014**



# Generation Y Perspectives



The world is **connected** today in ways that are **shattering** traditional communications concepts.



For this generation, neither work nor entertainment is passive.

It is an *interactive experience*  
And their *lives* and *outlooks* have been shaped by this.

*“Getting heard and having a say are not only easy they seem natural ”*

- Attempts by America's major corporations to innovate new products almost always fail.

- The same legacy skillsets, primarily acquisitions, that make them so successful at squeezing profits from manufacturing and marketing products often make them inept at creating them.

-We ask the wrong questions, and we chase the wrong leads.

In 73% of Japanese Computer Companies surveyed, complaints were important sources of new products and services.

Only 26% of American companies reported innovation driven by negative feedback.

Ernst & Young / American Quality Foundation.

Complaints are one of the best forms of research you can perform. And yet it is simply not part of our current culture to consider.

# Ask the proper questions.

*“How do we sell lemonade?”*

- What is the actual goal? To make money? Refresh people? Unload a lot of lemons? This question is very leading, rephrase it based upon the actual goal, not a presumed result.

*“In what ways might we refresh our guests?”*

There are scads of opportunities here, not just lemonade.

*“In what ways might we.....”*

*“How might we.....”*

*“Yes, if.....”*



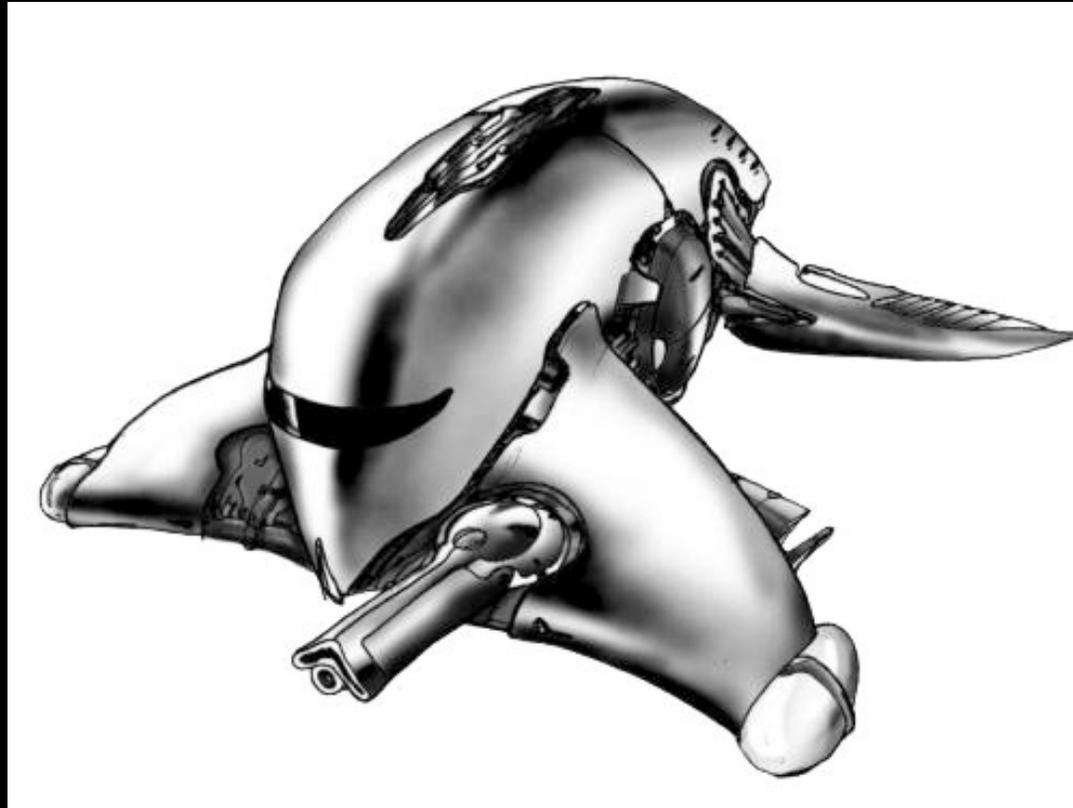
# Risk



Innovation requires risk. There are some compelling reasons to fear initiating risky things.



Risky things always have an element of the unknown.



There are compelling reasons to fear the unknown.



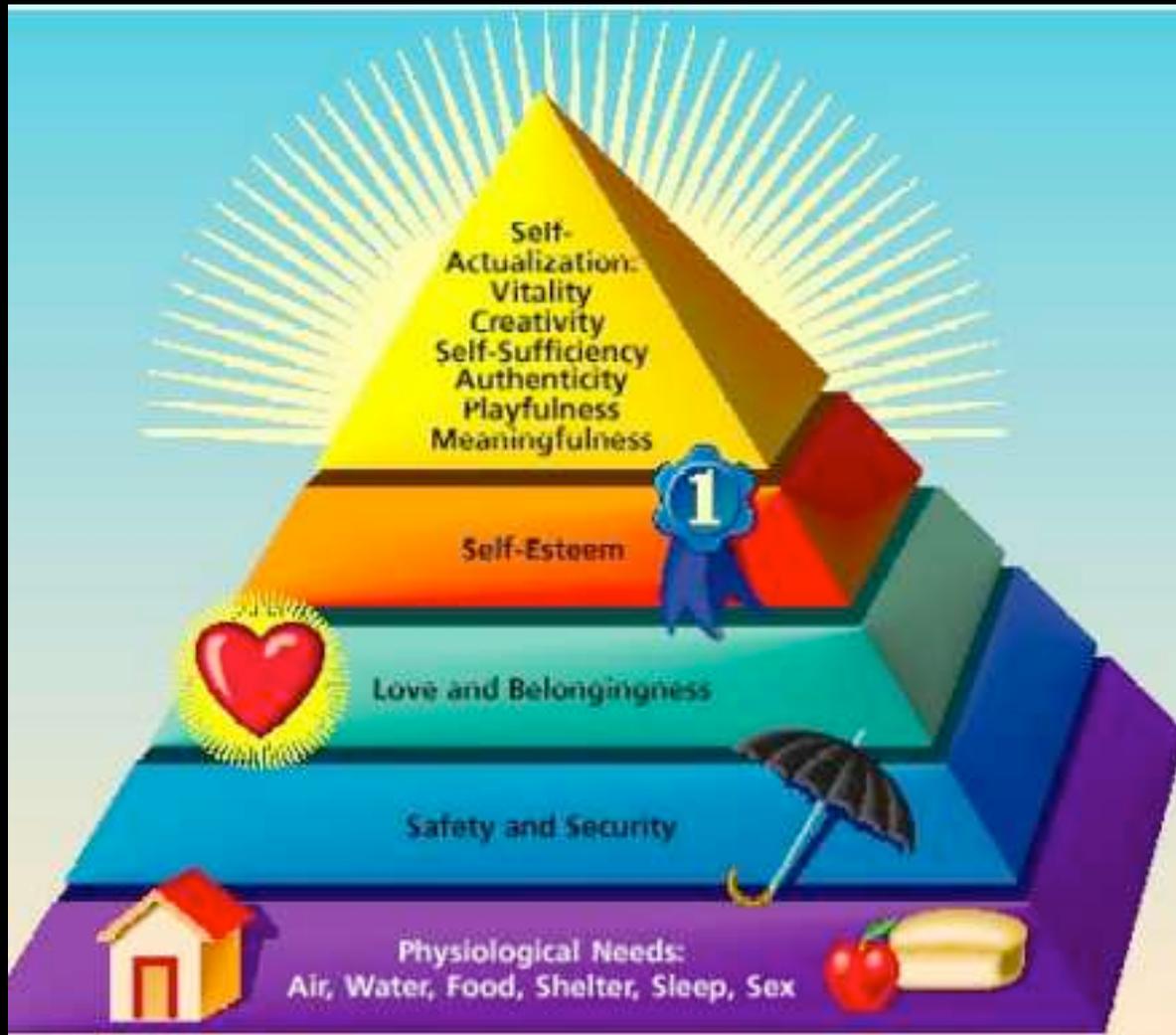
But the most paralyzing issue related to risk is that we fear taking it.



Rats. Messed up again!



# Maslow's Hierarchy of Needs



- Each lower need must be met before we can go up to the next level.

- An interesting phenomenon related to Maslow's work is that in spite of a lack of evidence to support his hierarchy, it enjoys wide acceptance

Statistically,  
the single best  
thing you can  
do to allow  
innovation to  
thrive, is to  
support those  
who embrace  
the challenge.



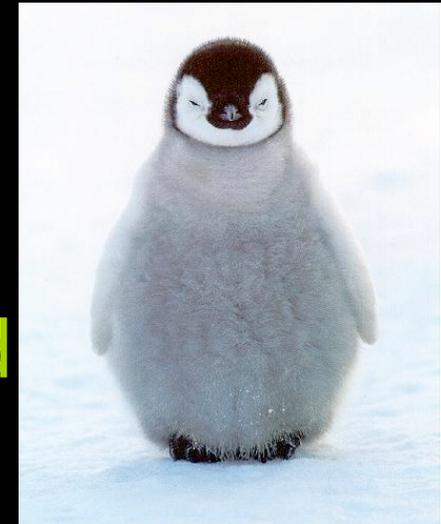
Regardless of age, gender, or discipline, all humans achieve a higher rate of success if they are simply expected to do well.



Celebrate risk by rewarding failure as a result of Innovative risk.

- Think long term, IBM reviews its researchers every year (for bonuses), and then every three years for rank and salary. As risky initiatives often can take that long to manifest their true potential.

- The gaming community, CMU and others have implemented the “Penguin Award” to reward those brave enough to dive in first.

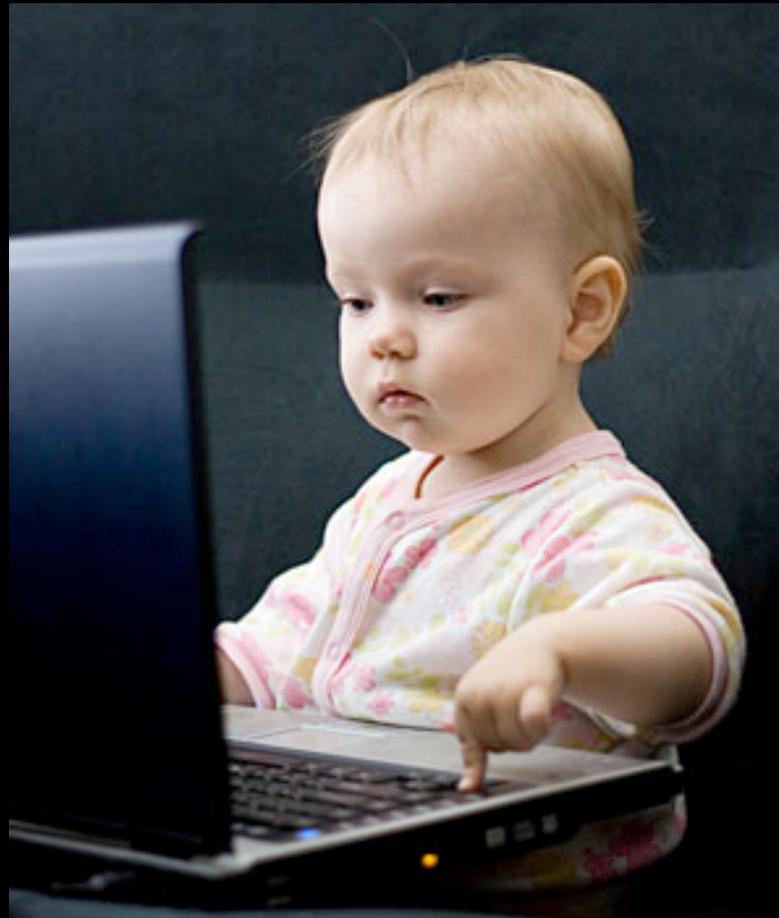


# Predicting Surprise



- A recent report commissioned by Congress determined that the “top ten jobs in 2010, will not have existed in 2004.”

- Which means that we are educating ourselves and our children to do jobs that do not yet exist, likely with technologies that have yet to be invented.



Innovators or not, we are all going to have to start predicting surprise to thrive.

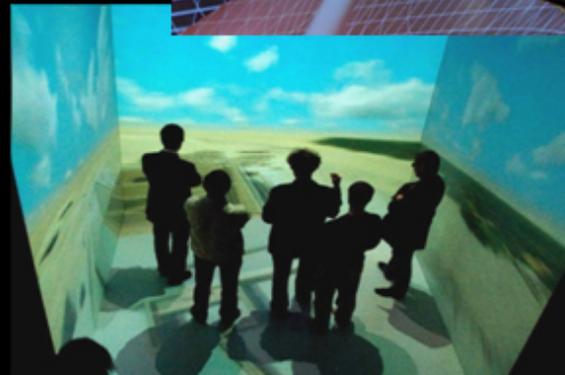
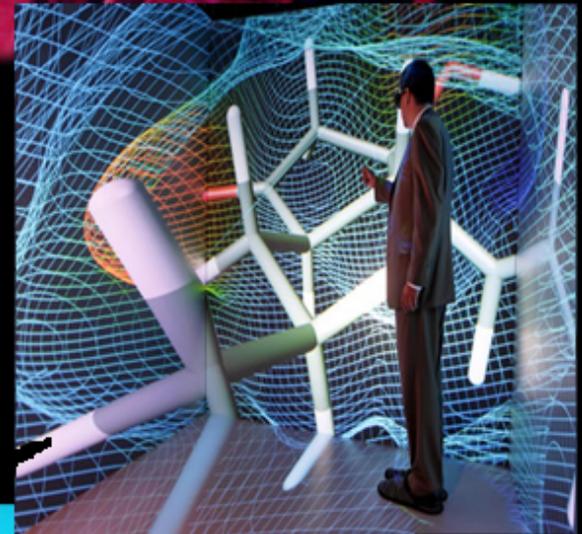


“Known Unknowns”  
“Unknown Unknowns”

- Eric Haseltine, NSA

# Known Unknowns

- The future as based upon intelligent assumptions, the presumed advancement of network connectivity, the continued advancement of display technology, etc.



# Unknown Unknowns

- **Barbossa: Aye, we're good and lost now.**
- **Elizabeth Swann: Lost?**
- **Barbossa: For sure, you have to be lost to find a place that can't be found, elseways everyone would know where it was.**



Surprises live in negative space.

# Communication and Concentration



# Study and Experimentation



# Innovation is Persistence



“Beekeepers get stung, plumbers get wet.”

# 1964 Ford Mustang



- **Ford Edsel, 1957**

- Known as the Titanic of the industry, this overhyped, oversized, and overpriced car had abysmal sales. Customers even scoffed at the stodgy name. After just over 2,800 of the 1960 models were churned out, the Edsel was history. Chastened, Ford did its research and tuned into customers' call for stylish affordability, launching the legendary **Ford Mustang** in 1964.



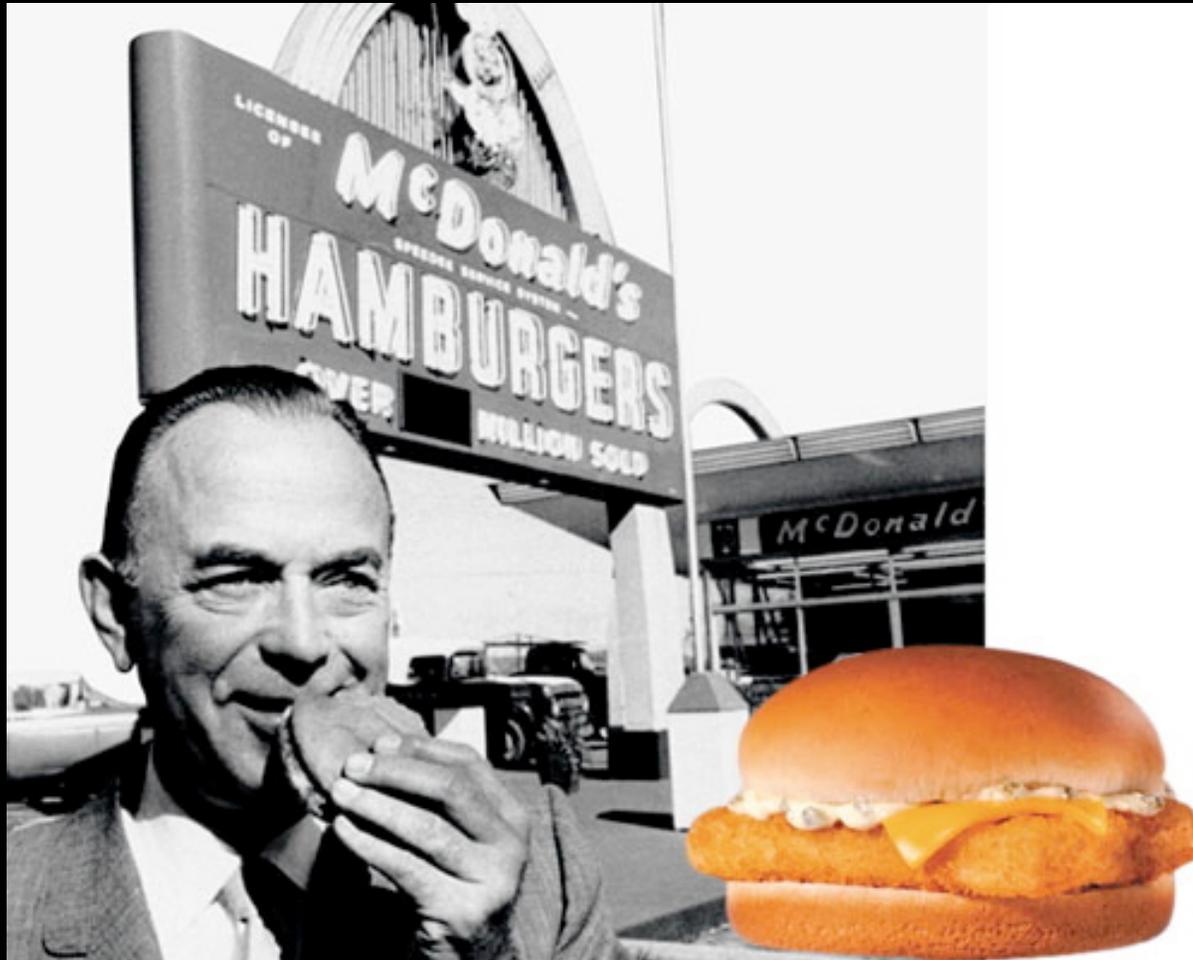
- Xerox Model 914



- Xerox  
Model A Copier (the "Ox Box"), 1949  
The first manually operated xerographic printer, the Model A was slow, messy, and hard to use. Businesses were unconvinced and largely stuck with carbon paper. But 10 years later, Xerox launched the fully automated Model 914, transforming modern office work.



- **McDonald's Filet-O-Fish, 1963.**



- **McDonald's Hula Burger, 1962**
- Founder Ray Kroc tested this cheese-topped grilled pineapple on a bun for Chicagoans who avoided eating meat on Fridays. But customers abstained. The company learned meatless didn't have to mean wacky, and the next year a franchise owner came up with a tastier alternative for hamburger-free Fridays: the **Filet-O-Fish**, now a McDonald's classic.



- **Pfizer Sildenafil, 1991**
- First tested on humans in 1991, **Sildenafil** didn't prove effective for its initial indication: angina, or chest pain. After patients reported unusual side effects, the compound was tested for alternate purposes.



- In 1998, **Viagra** was introduced, and the blockbuster has been a household name ever since.



- Question questionable ideas, as they inspire you to develop better solutions.



A close-up photograph of a single, smooth, golden egg resting in a nest made of dry, light-brown straw. The egg is the central focus, with a soft highlight on its upper right side. The straw is tangled and textured, creating a natural, textured background. Overlaid on the center of the image is the text "How do I 'be' innovative?" in a bold, black, sans-serif font. The text is arranged in two lines: "How do I 'be'" on the top line and "innovative?" on the bottom line.

**How do I “be”  
innovative?**

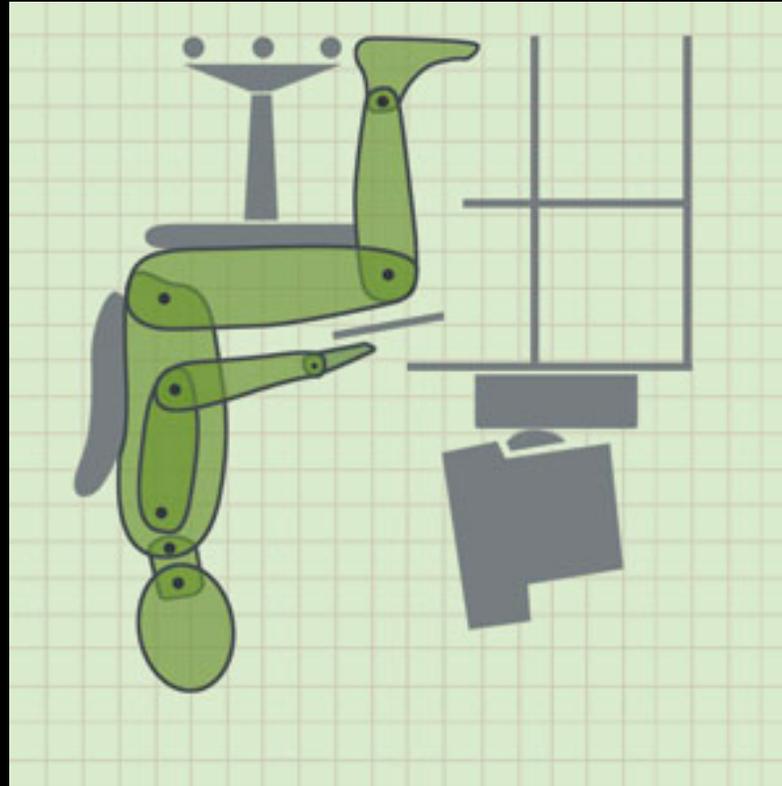
**Be disruptive.**



©Melanie Weidner 2005 [www.ListenForJoy.com](http://www.ListenForJoy.com)



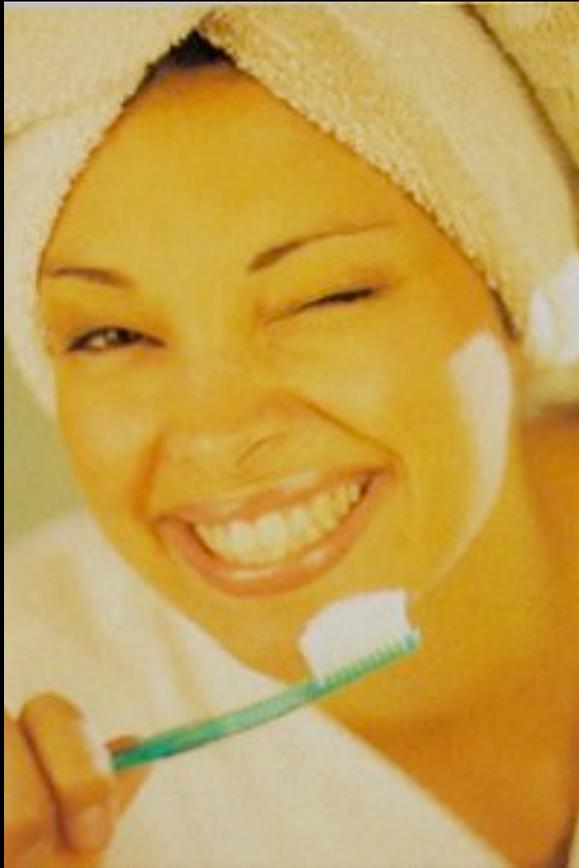
# Change Habits



**Rotate your office**



Get smarter.



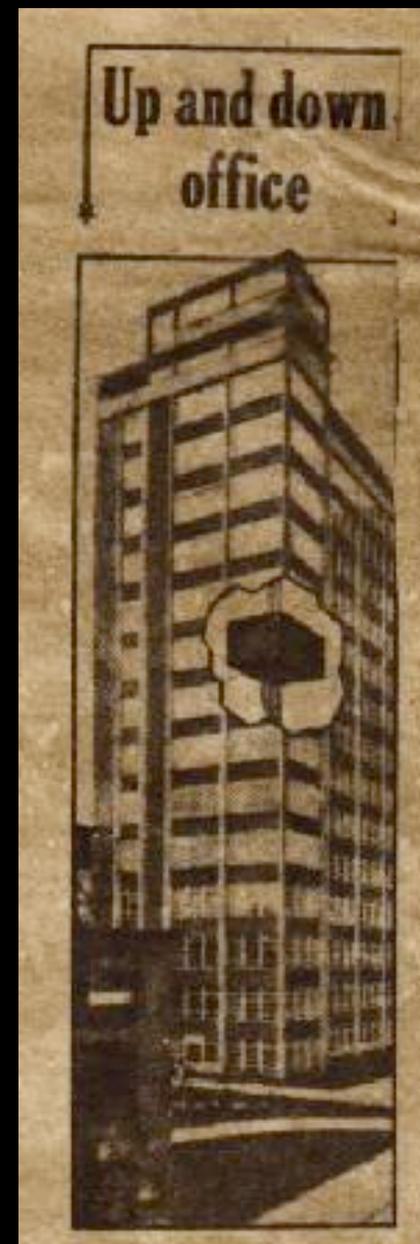
**Actively grow grey cells.**

Re-distribute the  
core competencies  
you already have.



What do you do?

What can you do?



The Bat'a's Skyscraper - 1938  
Czech Republic

Simple changes we can all do  
to foster intersections for  
innovation and beyond.



# Acknowledge Role Models



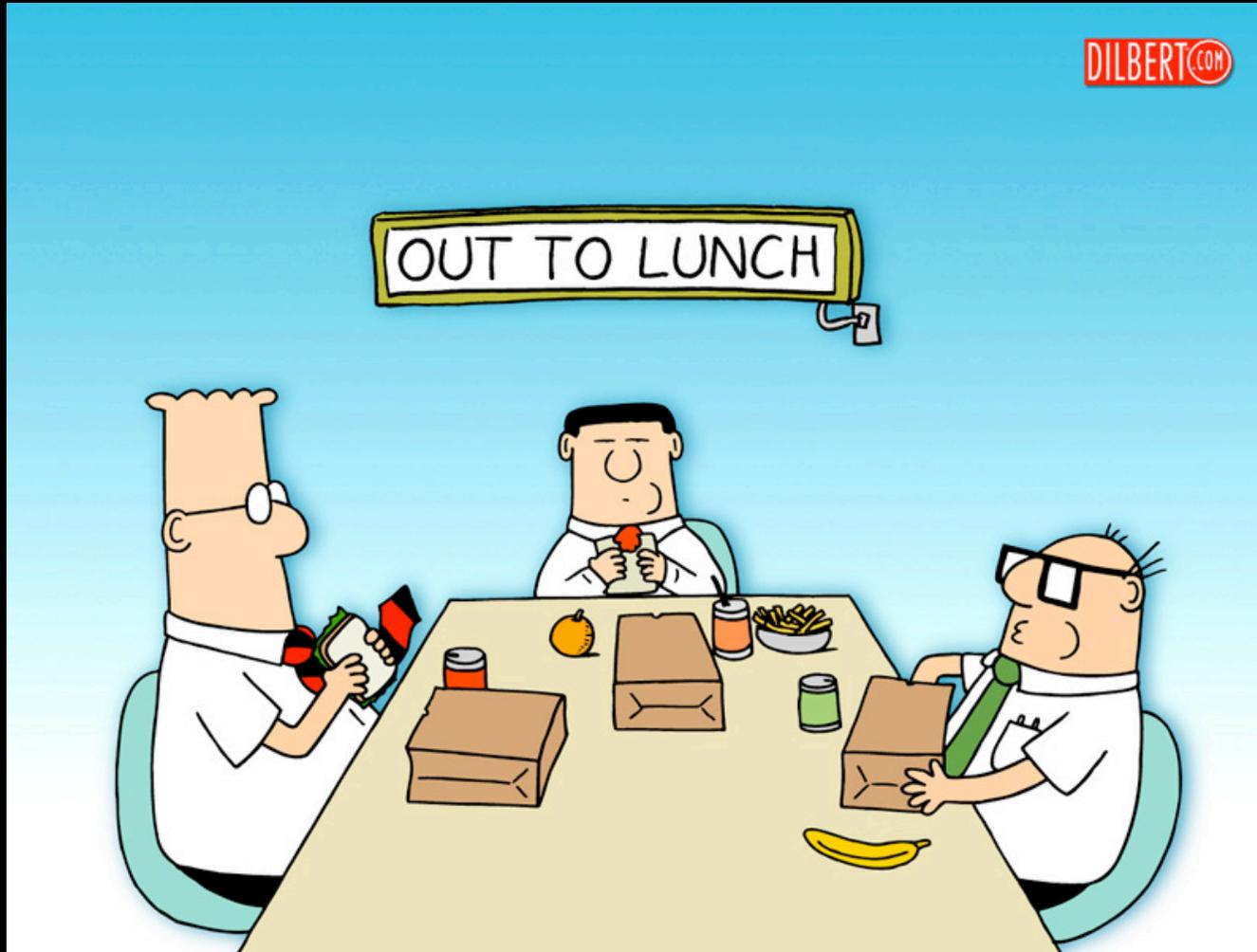
# Be a Role Model



Celebrate success by congratulating each other.



Never eat lunch alone.





# Collaborate



Collaboration lets you share responsibility, and combine the knowledge, creativity, and experience of others.

# Nap

The essence of Innovation is connecting things. Sleep assists the brain in flagging unrelated ideas and memories, forging connections among them that increase the odds that a creative idea or insight will surface



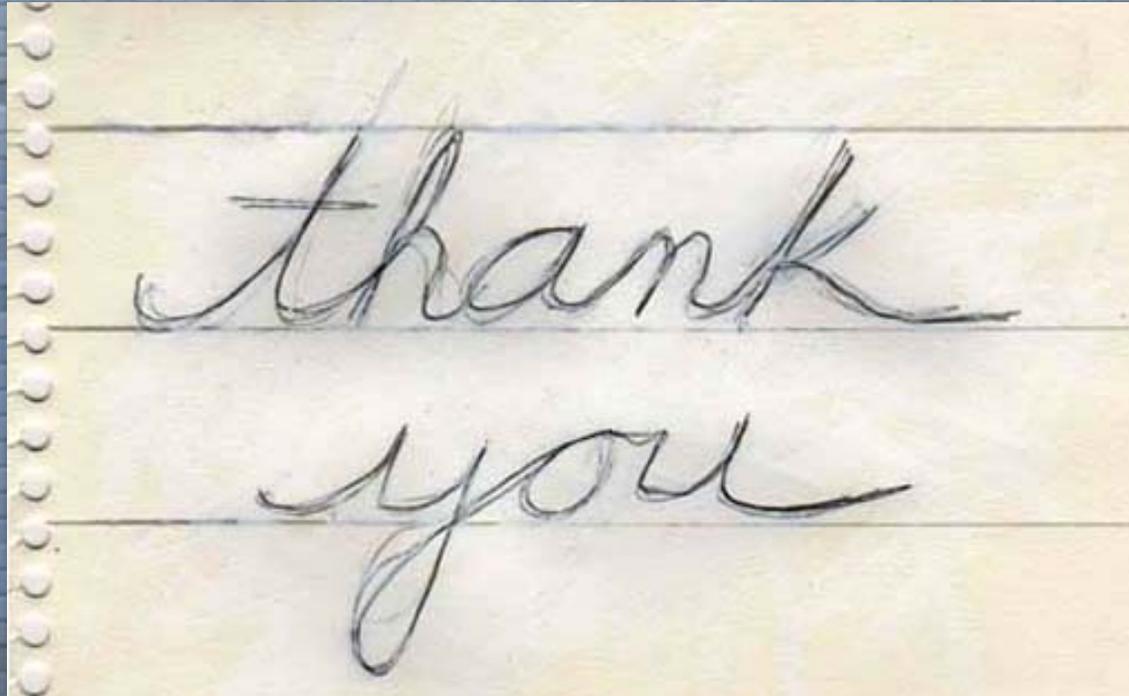
If an incubation period includes sleep, people are 33 percent more likely to infer connections among distantly related ideas

- Dr. Jeffrey Ellenbogen, a neurologist, Harvard Medical School

# Focus



Never lose sight of  
the reason for your  
work.



**Mk Haley**

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