A FOCUS ON ENTREPRENEURIALLY MINDED CURIOSITY

CURIOSITY EXPLORE a contrarian view of accepted solutions **CONNECTIONS ASSESS** and **MANAGE** risk **CREATING VALUE PERSIST** through and learn from failure

DEMONSTRATE constant curiosity about our changing world

INTEGRATE information from many sources to gain insight

IDENTIFY unexpected opportunities to create extraordinary value

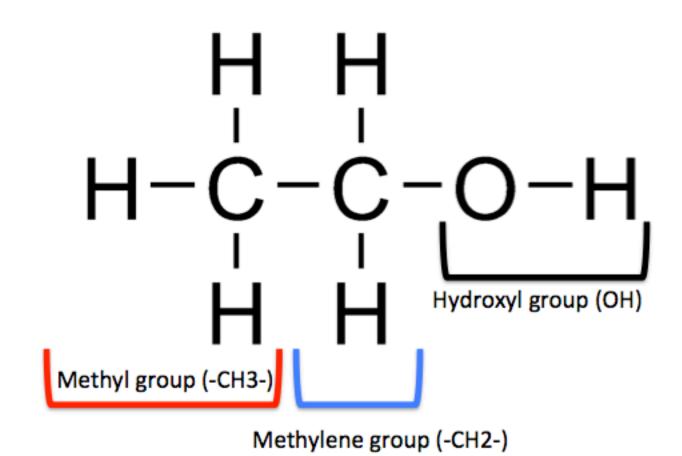


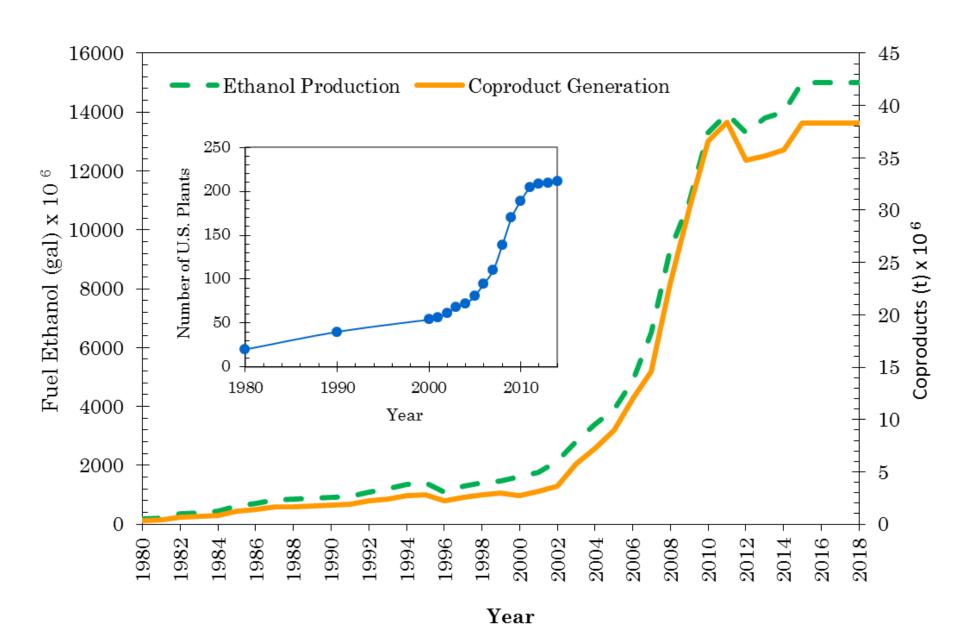




Good Directions for Curiosity: Why? Trends? Contrary? What if? FOR EXAMPLE, STIMULATE CURIOSITY ABOUT... TRENDS IN A **WHY? WHY ETHANOL?** CHANGING WORLD.

C₂H₆O or CH₃CH₂OH





STIMULATE CURIOSITY ABOUT... **NEW POSSIBILITIES CONTRARY VIEWS.** AND "WHAT IF?" Q НННН H-C-C-C-C-O-H



The Truth about Ethanol

Ethanol is a key ingredient in today's gasoline—but the promise of ethanol as an oil and climate solution depends on how it's made and what it's made from.

What is ethanol?



ENERGY & ENVIRONMENT

Corn Ethanol Makers Weigh Switch to Butanol

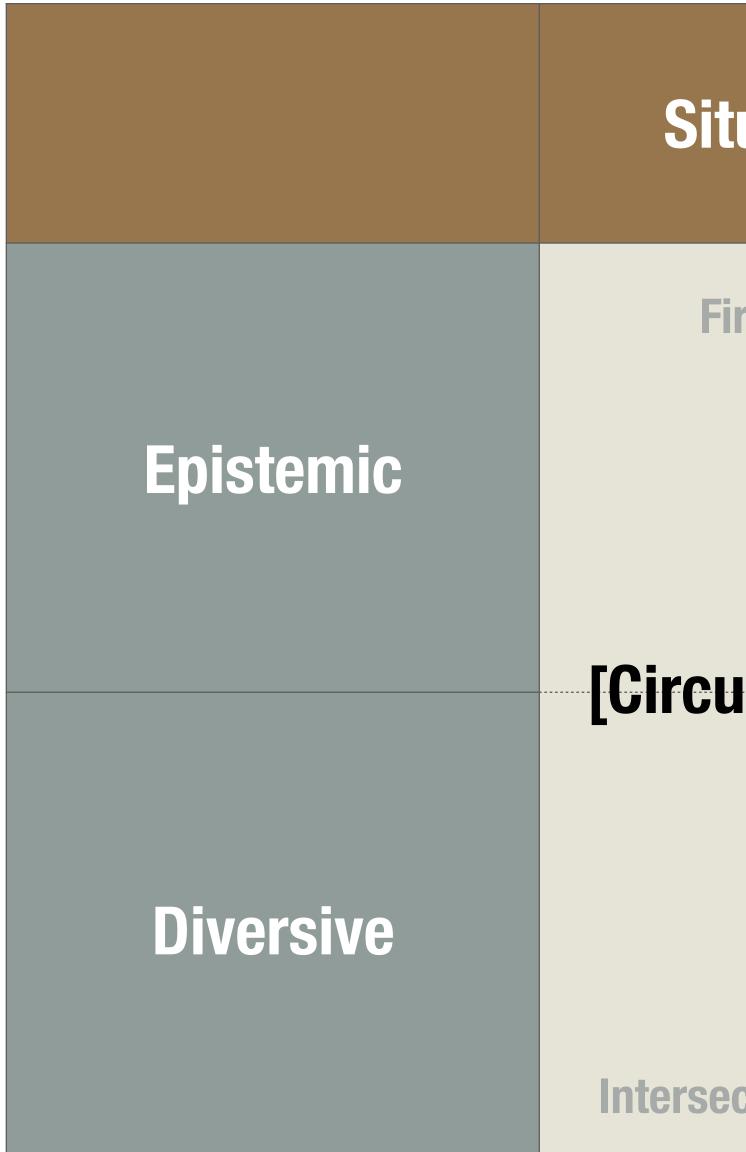
The New York Times

By HENRY FOUNTAIN OCT. 23, 2012

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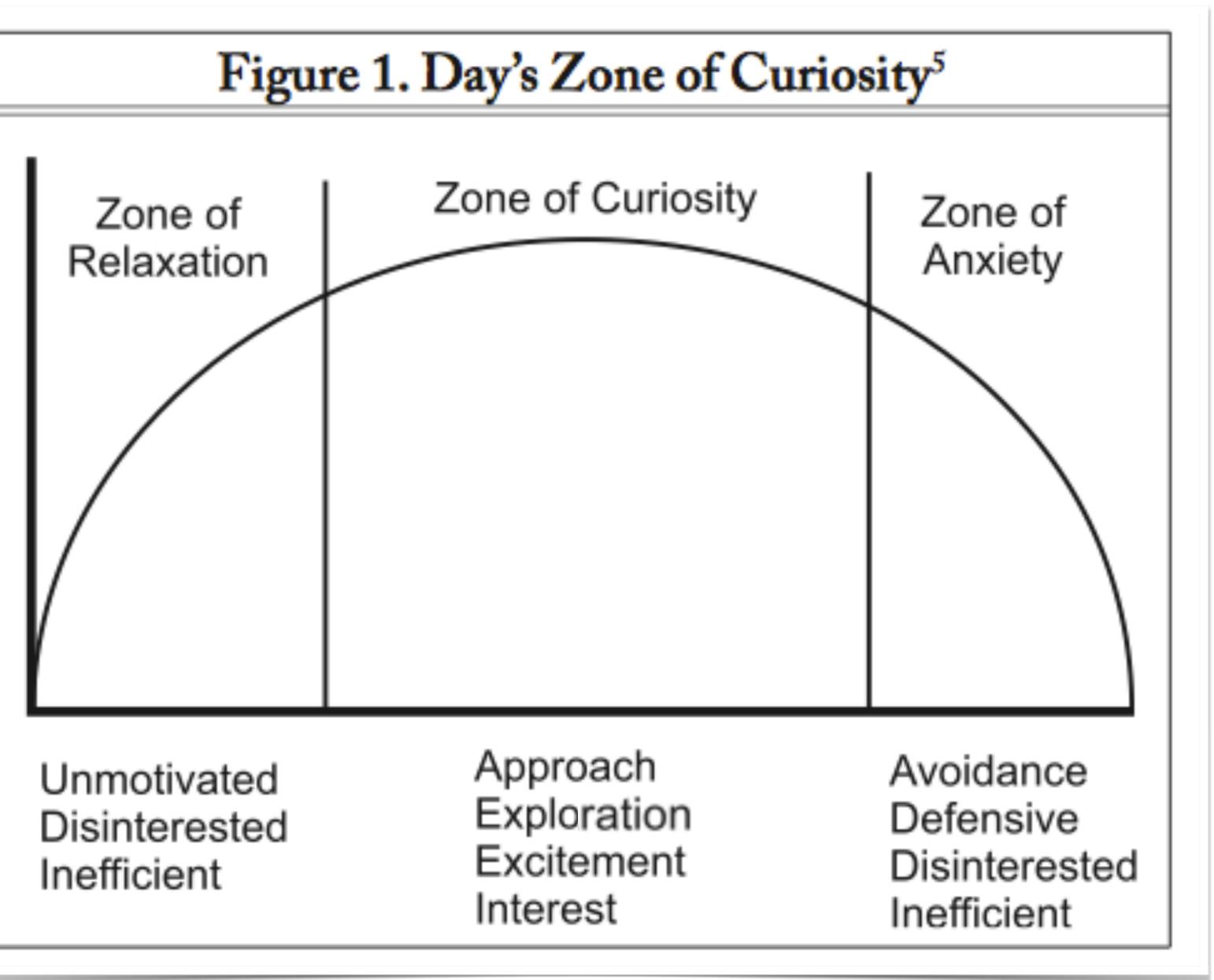


Two Dimensions of Curiosity



Situa	ational	Dispositional	
First Principles, Underlying Reasons, etc.			
Why? Why? Why?			
[Circun	nstances]	[Habit of Mind]	
What if? What would happen?			
Intersecti	ion, Contrarian,	Opportunity, Wild Idea, etc.	

Curiosity: Find the Sweet Spot between APATHY 8 ANXIETY





Curiosity Journals

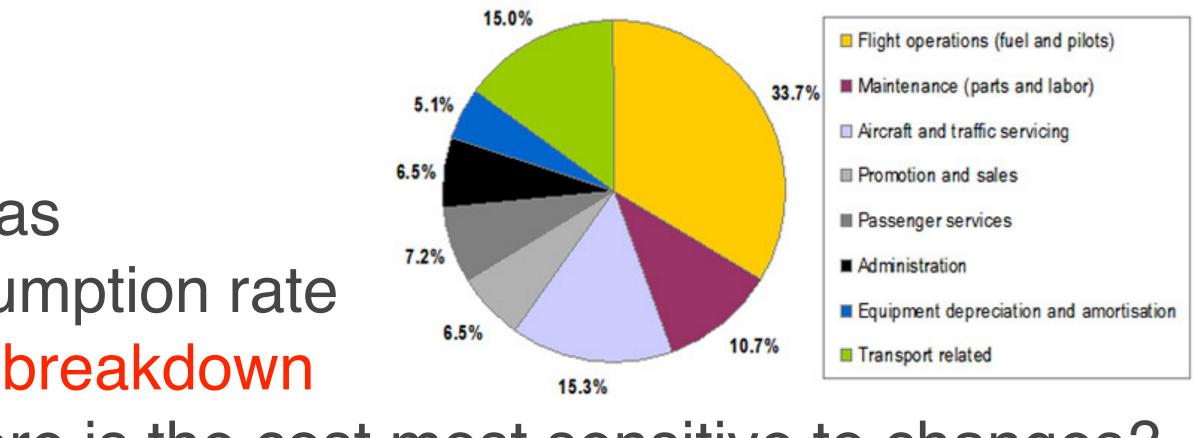
Developing habits to record fleeting thoughts of "why?" (epistemic) and "what if?" (diversive)

My Personal Curiosity Log - Jan 7, 2018

Q: My flight from was only abut 70% occupied. What's the average occupancy of an airline's flights? How does occupancy contribute to the airline's business model? 15.0% Flight operations (fuel and pilots)

Q: What's the capacity of a 737-700 as Passenger services 7.2% Administration configured? What's the typical consumption rate 6.5% 10.7% and jet fuel cost? What would a cost breakdown Transport related 15.3% look like for the average ticket? Where is the cost most sensitive to changes?

Q: Similar to AirBnB, Turo, Uber — is there a way to use the latent, unused resources that are otherwise empty seats?



An example method - the Curiosity Journal

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USE WELL-TOLD STORIES THAT HIGHLIGHT (https://www.youtube.com/watch?v=KJM7Nj1DCwk)

"INFORMATION GAPS" BEYOND ONLY

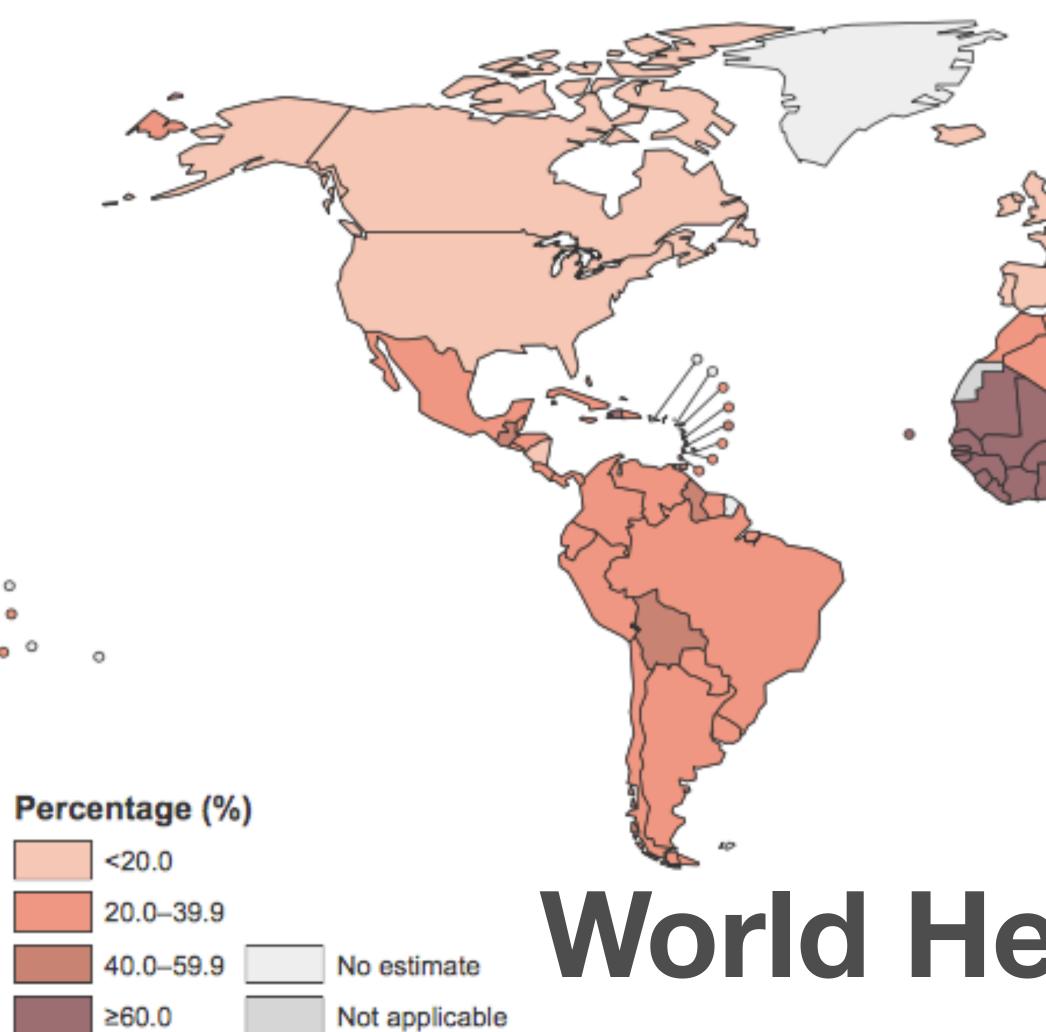
TECHNICAL...

The state of the s



... IN AN EVIDENCE-DRIVEN CLASSROOM CULTURE.

Fig.1. Global estimates of the prevalence of anaemia in infants and children aged 6–59 months, 2011



EB World Health Organization Data





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Google Finance - Yahoo Finance - MSN Money

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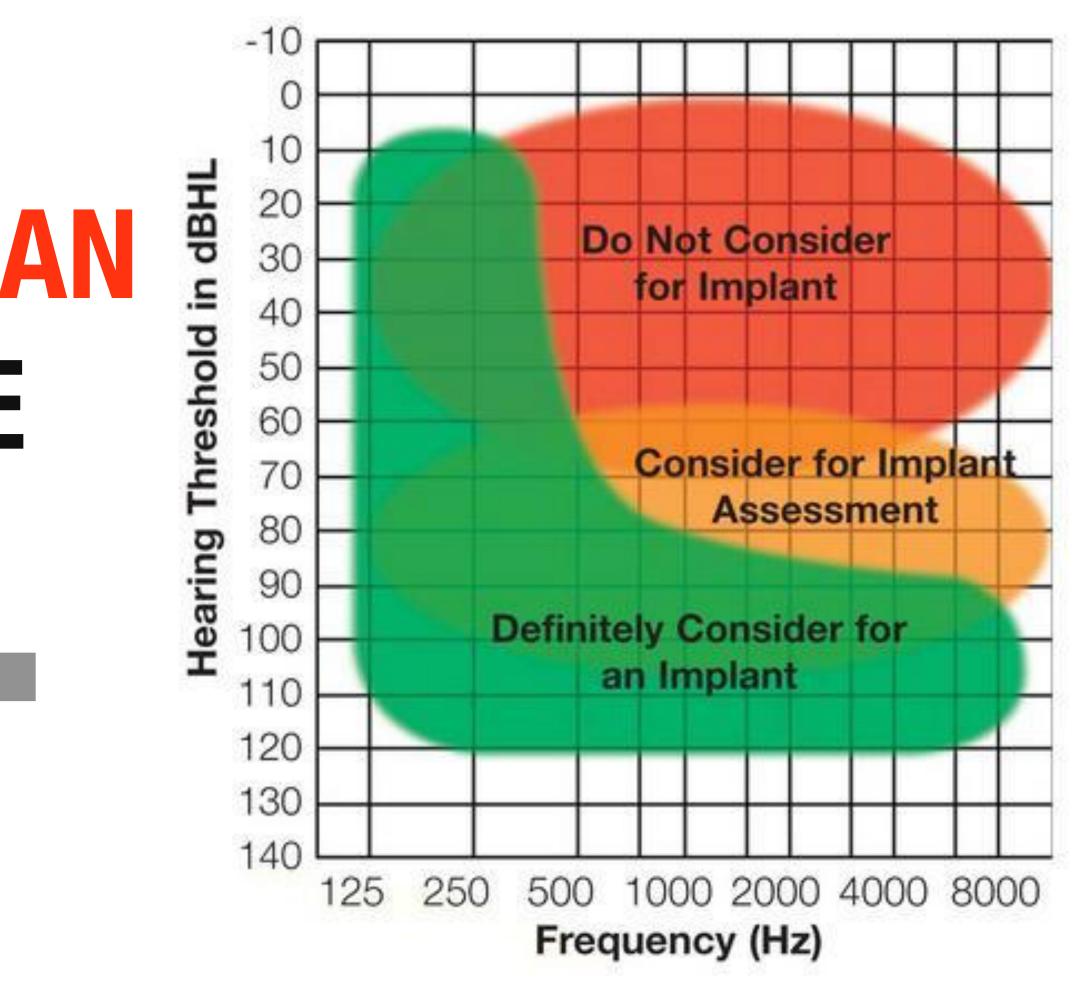
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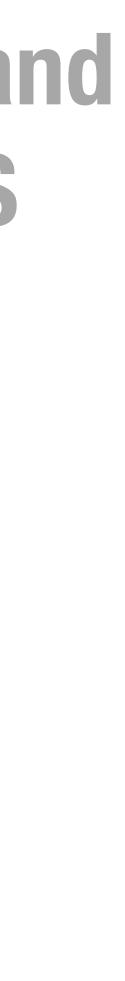


Technical content <u>combined</u> with one well-chosen picture and question can promote both CURIOSITY and CONNECTIONS

E.G. "WHAT WOULD BETTER-THAN-HUMAN HEARING BE AND BE LIKE?"



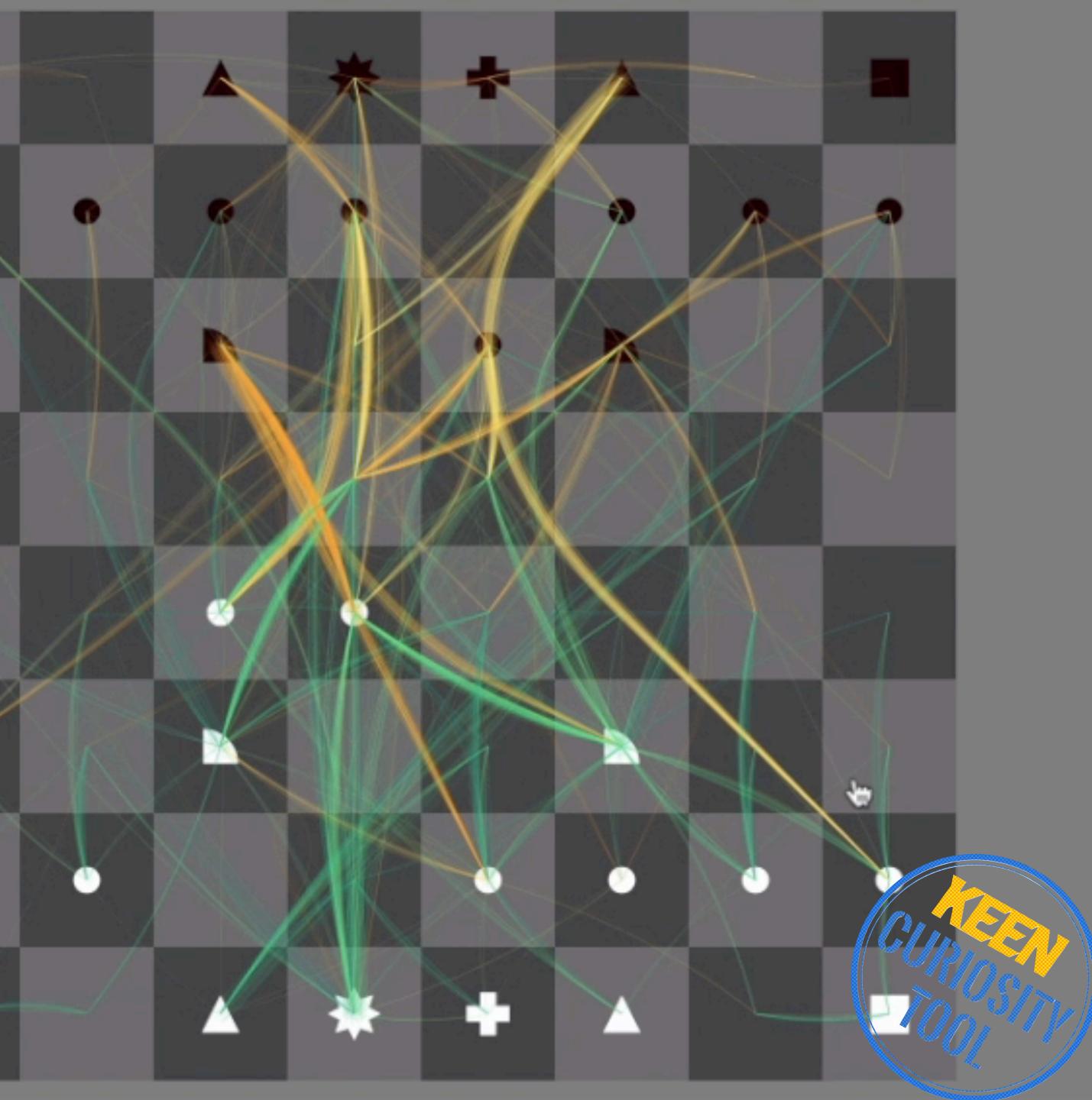




Thinking Machine 6 Play chess against a transparent intelligence.

A visualization that hints at the future implications of technologies (e.g. artificial intelligence) combined with a question, e.g. How might Al impact the design of structures?

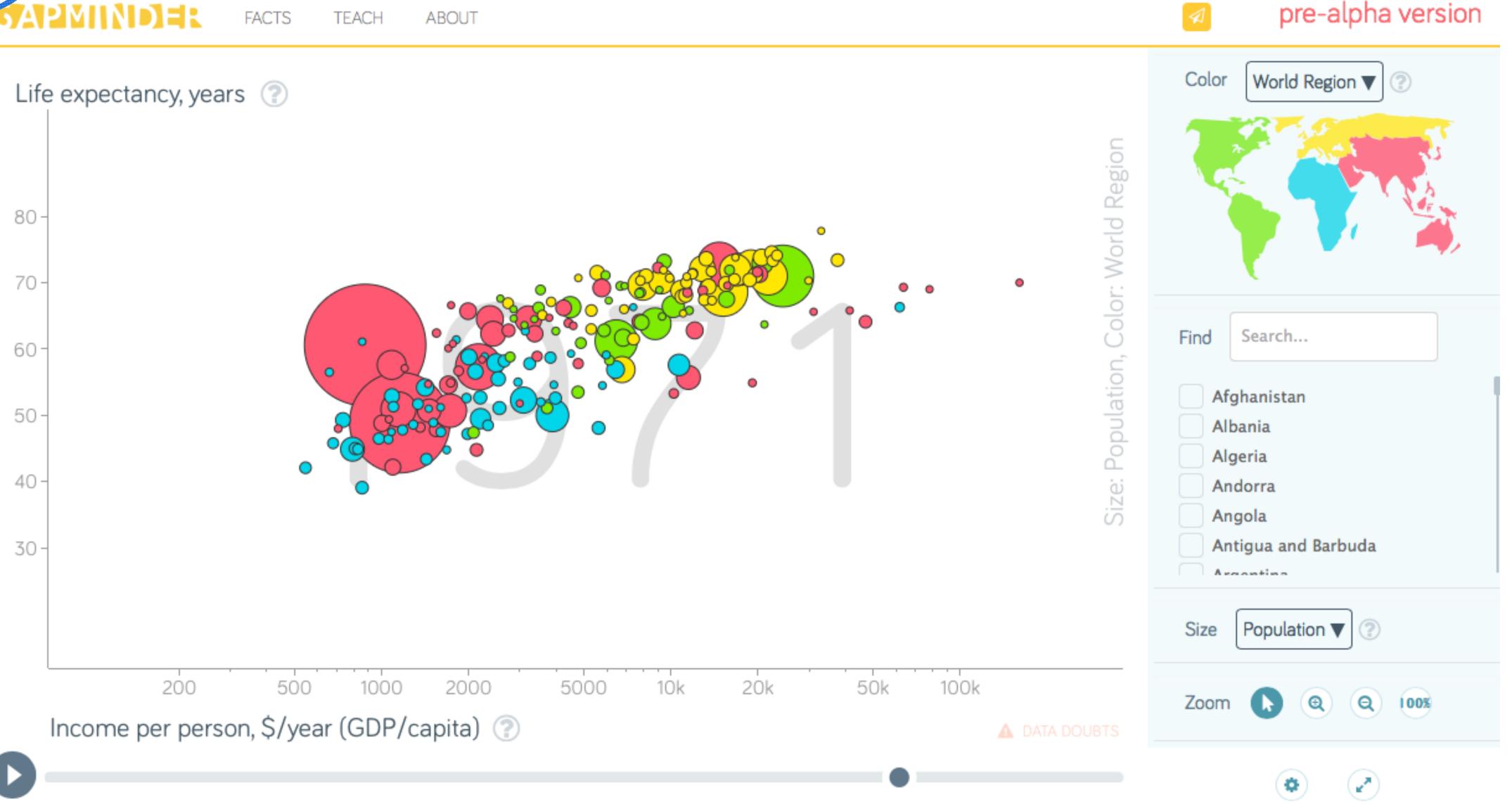
Your move.



TOOLS THAT STIMULATE CURIOSITY Hans Rosling's GapMinder

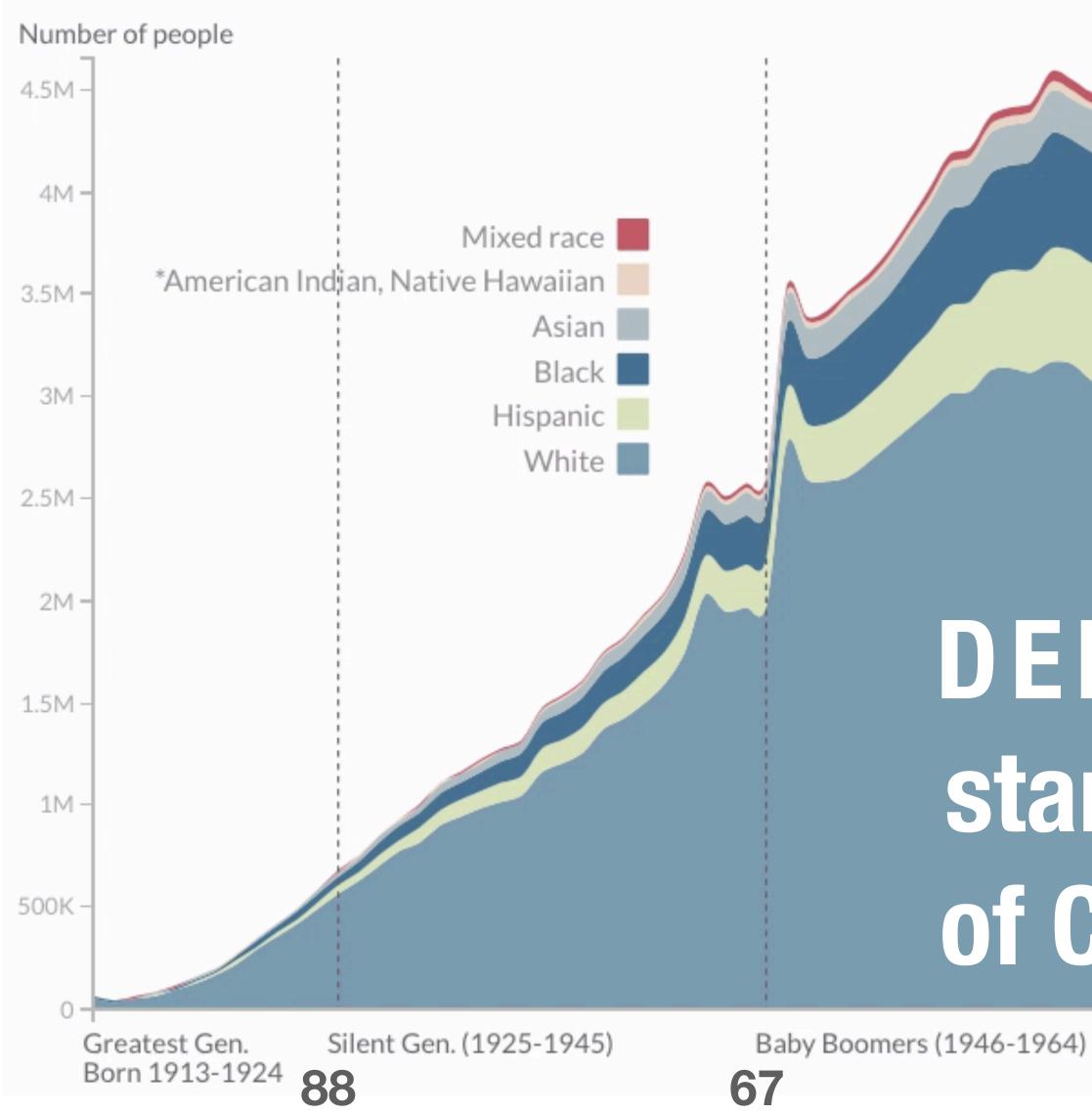
FACTS

ABOUT



Distribution vs. Age (U.S.)

(descending from 100 to 0)



There were 4.1 million 11 year olds last year

53% White	5% Asian
24% Hispanic	1% AI, NH
14% Black	4% Mixed race

.

DEMOGRAPHICS start valuable lines of C U R I O S I T Y

33

-1964) Gen. X (1965-1979) **48** Millennials (1980-1999)

22

Gen. Z (2000-present)

0

Google Trends: Trends Stimulate Curiosity

Google Trends Genome e Topic			
Worldwide 🔻	Past 5 years 🔻	All categories 🔻	We
Interest over time	• ?		
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75			
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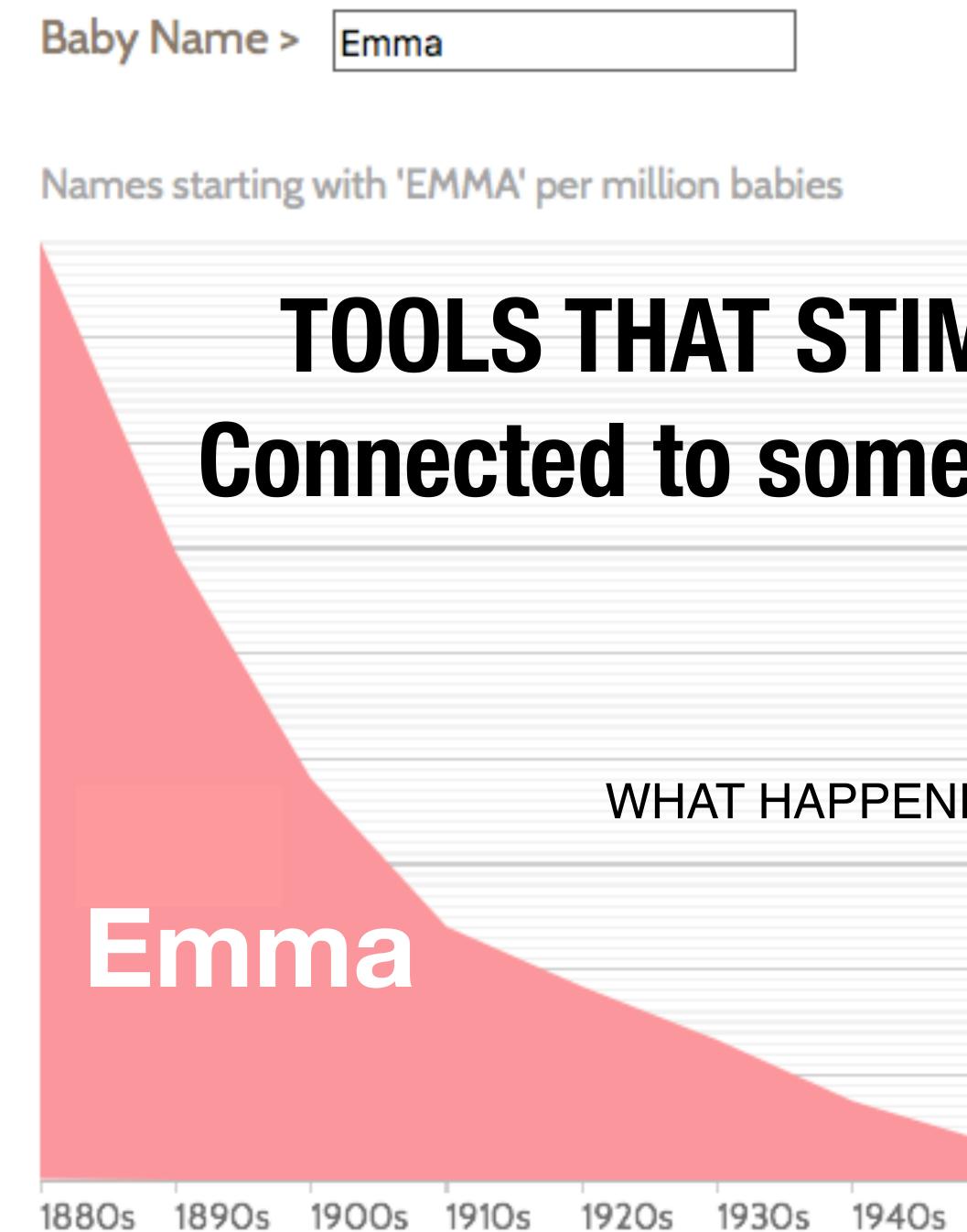
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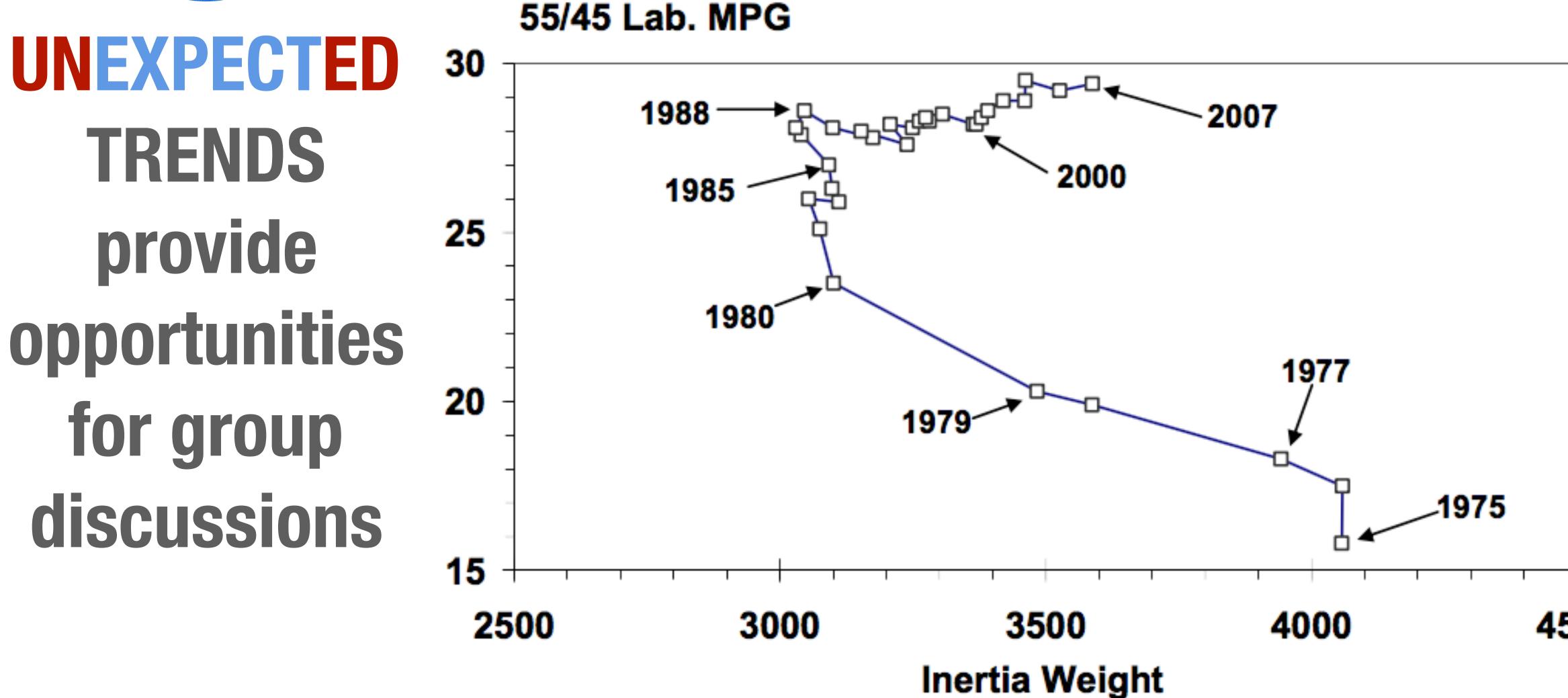
NameVoyager

http://www.babynamewizard.com/name-voyager

per million births

NULATE CURIOSITY	8,000
e personal interest	7,000
	6,000
	5,000
IED HERE, I WONDER?	4,000
	3,000
	2,000
	1,000
1950s 1960s 1970s 1980s 1990s 2000s	2016





Car 55/45 Laboratory MPG vs Inertia Weight by Model Year





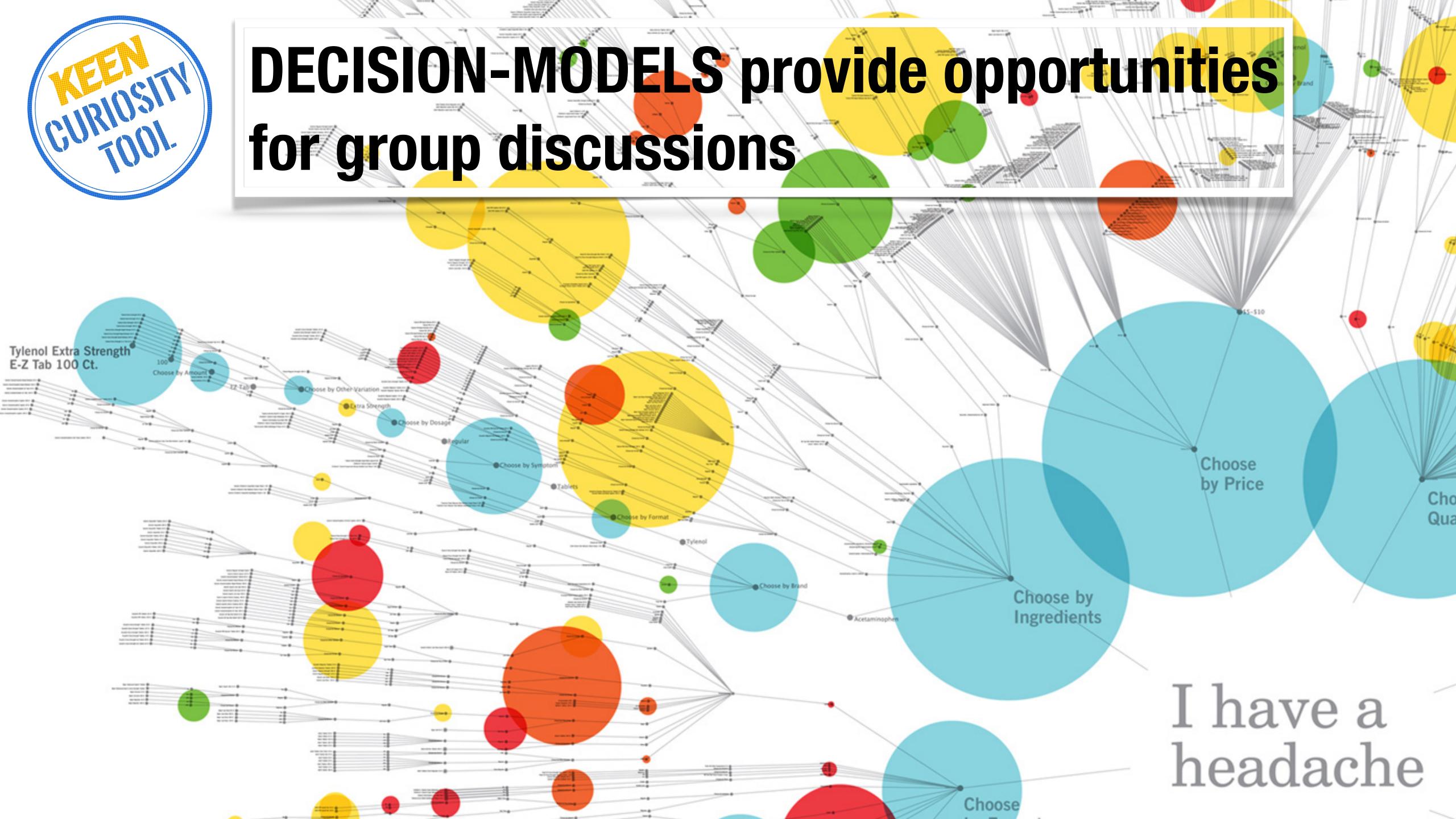


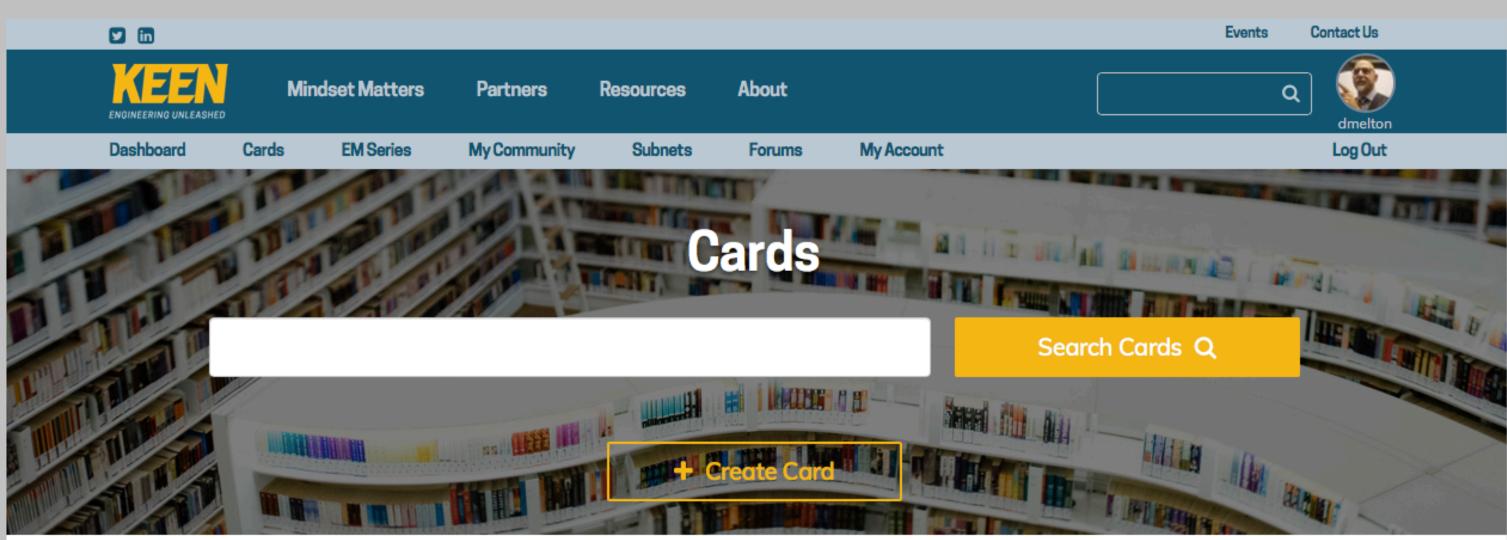


Juxtaposejs

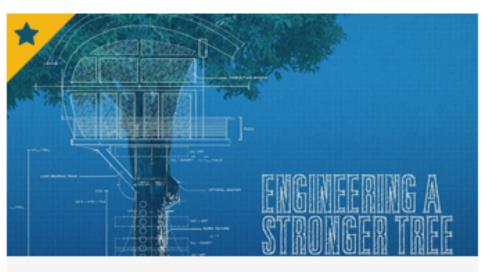
CONTRARIAN VIEWS are not limited to language







Exemplar Cards



PBL in Materials - Aunt Ada's Tree House

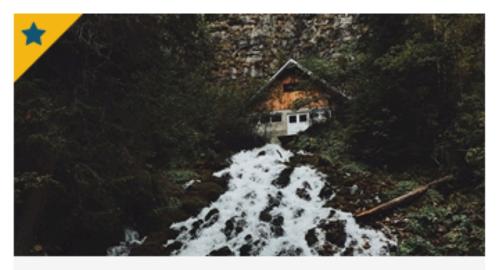
January 2nd, 2018 by Edmund Webb

PBL module to design an "epic" tree house using finite element analysis.

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Recent Cards





PBL, Fluid Mechanics, & Uncle Mort

January 2nd, 2018 by Andrew Gerhart

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Teams design most cost-effective water delivery system based on customer needs.



BME382 Game Lab - Surrogates in Design

January 2nd, 2018 by Jeff La Belle

Designing games to learn entire product development cycle

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Cards • QFT in Circuits Analysis Course

QFT in Circuits Analysis Course ★ Exemplar Content

Created: 11/29/2017 3:04PM CST by Alexis Schilf

Updated: 12/21/2017 11:40AM CST by Michael Johnson

Mindset

in

Curiosity

- Demonstrate constant curiosity about our changing world
- Explore a contrarian view of accepted solution

Connections

 Integrate information from many sources to gain insight

Skillsets

METHODS & ASSESSMENTS

Description

This course uses the Question Formulation Technique in an introductory Circuits analysis course. At St Thomas this technique was implemented in a course of 30 first and second year students. A fundamental assumption of the QFT is that students learn and retain knowledge better when, fueled by curiosity, they ask their own questions, and use them to drive their learning.

... total of four OFT research projects were assigned to students working in groups of four to six.

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Engineering Disciplines

- Electrical & Computer Engineering
- General Engineering

Authors









