

# A FOCUS ON *ENTREPRENEURIALLY MINDED* CURIOSITY

## CURIOSITY

**DEMONSTRATE** constant curiosity about our changing world

**EXPLORE** a contrarian view of accepted solutions

## CONNECTIONS

**INTEGRATE** information from many sources to gain insight

**ASSESS** and **MANAGE** risk

## CREATING VALUE

**IDENTIFY** unexpected opportunities to create extraordinary value

**PERSIST** through and learn from failure

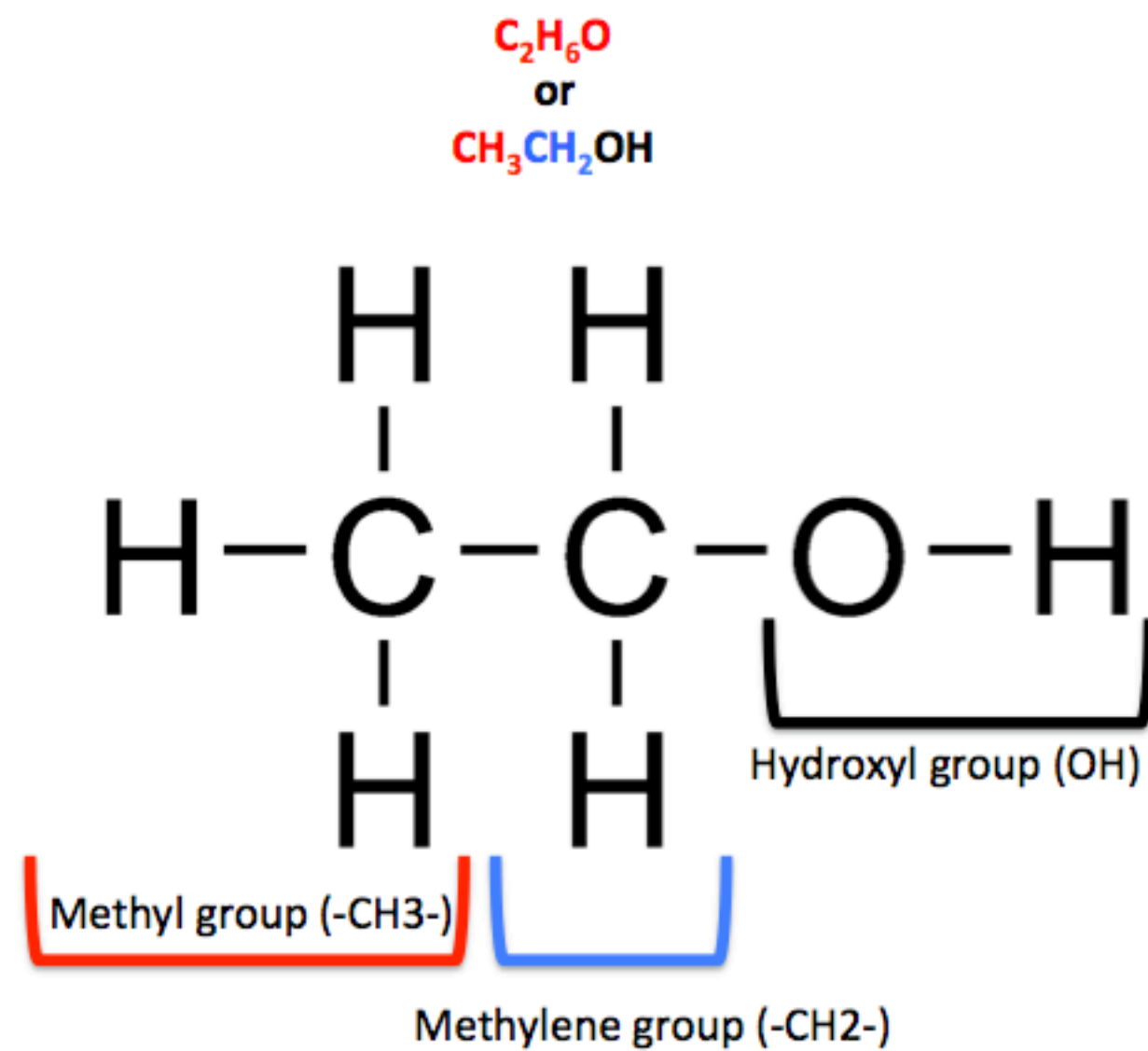
# Good Directions for Curiosity:

Why? Trends? Contrary? What if?

## FOR EXAMPLE, STIMULATE CURIOSITY ABOUT...

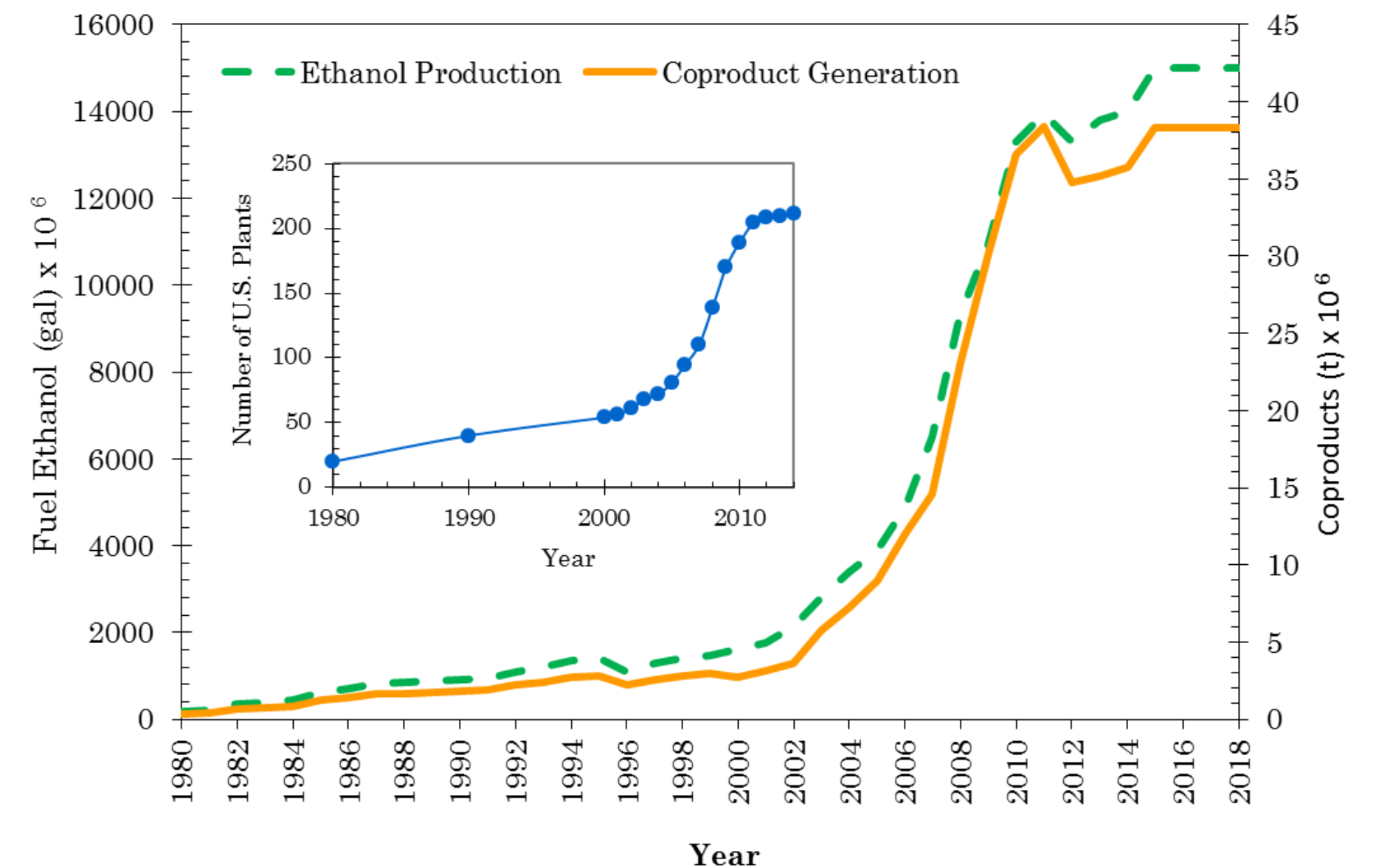
01

### ... WHY? WHY ETHANOL?



02

### ... TRENDS IN A CHANGING WORLD.



# STIMULATE CURIOSITY ABOUT...

## ... CONTRARY VIEWS.

**Union of Concerned Scientists**  
Science for a healthy planet and safer world



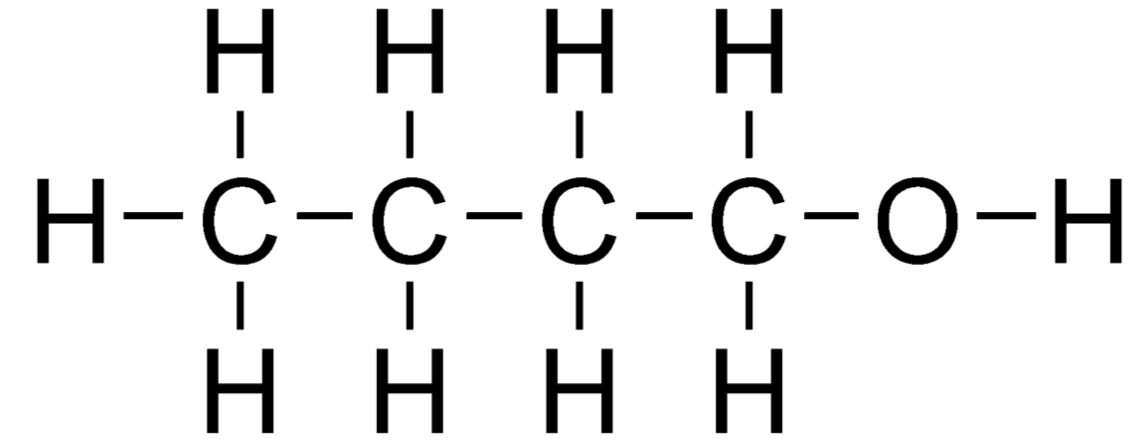
### The Truth about Ethanol

*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?



## ... NEW POSSIBILITIES AND "WHAT IF?"



SECTIONS



The New York Times

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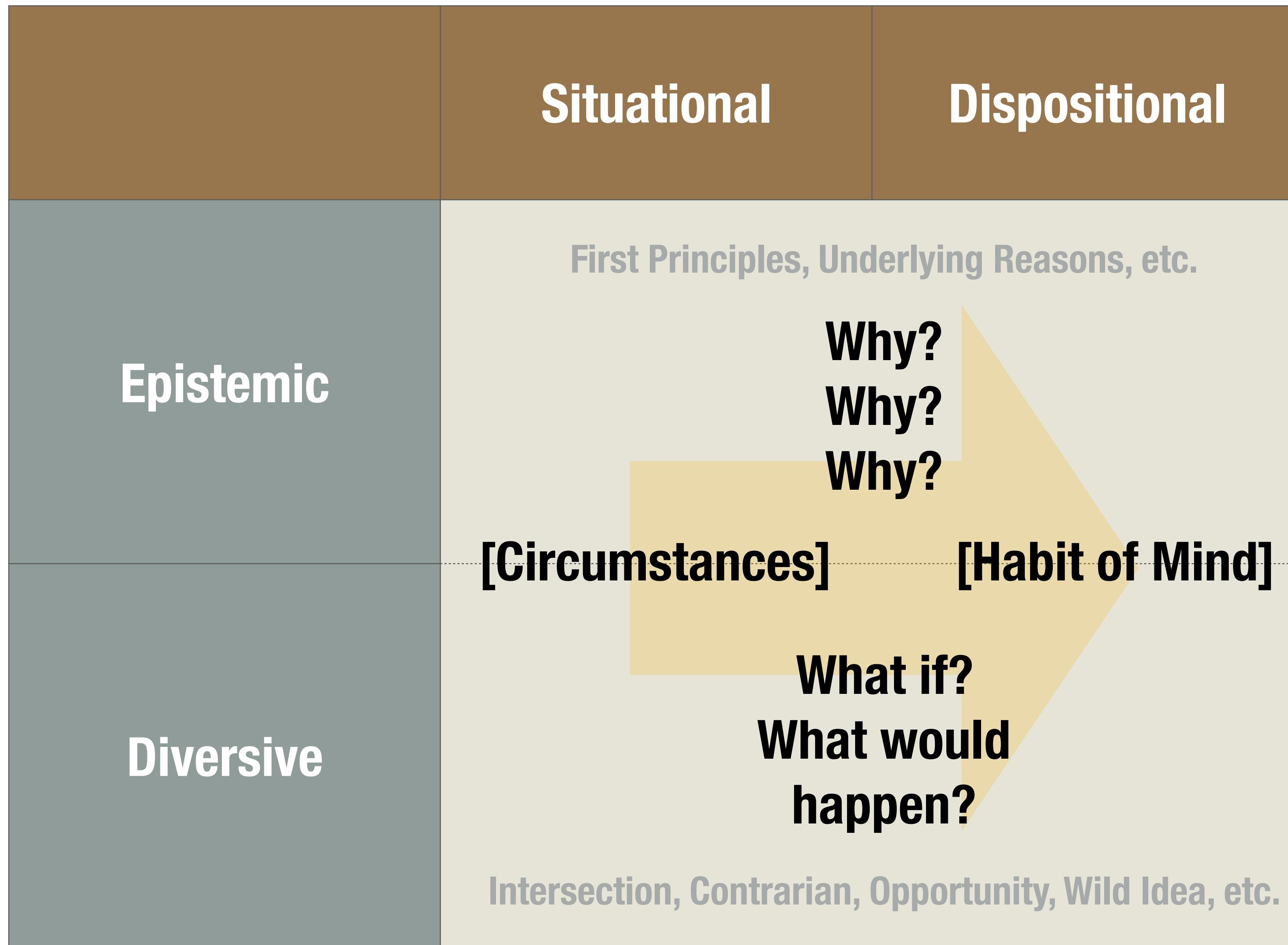
ENERGY & ENVIRONMENT

### Corn Ethanol Makers Weigh Switch to Butanol

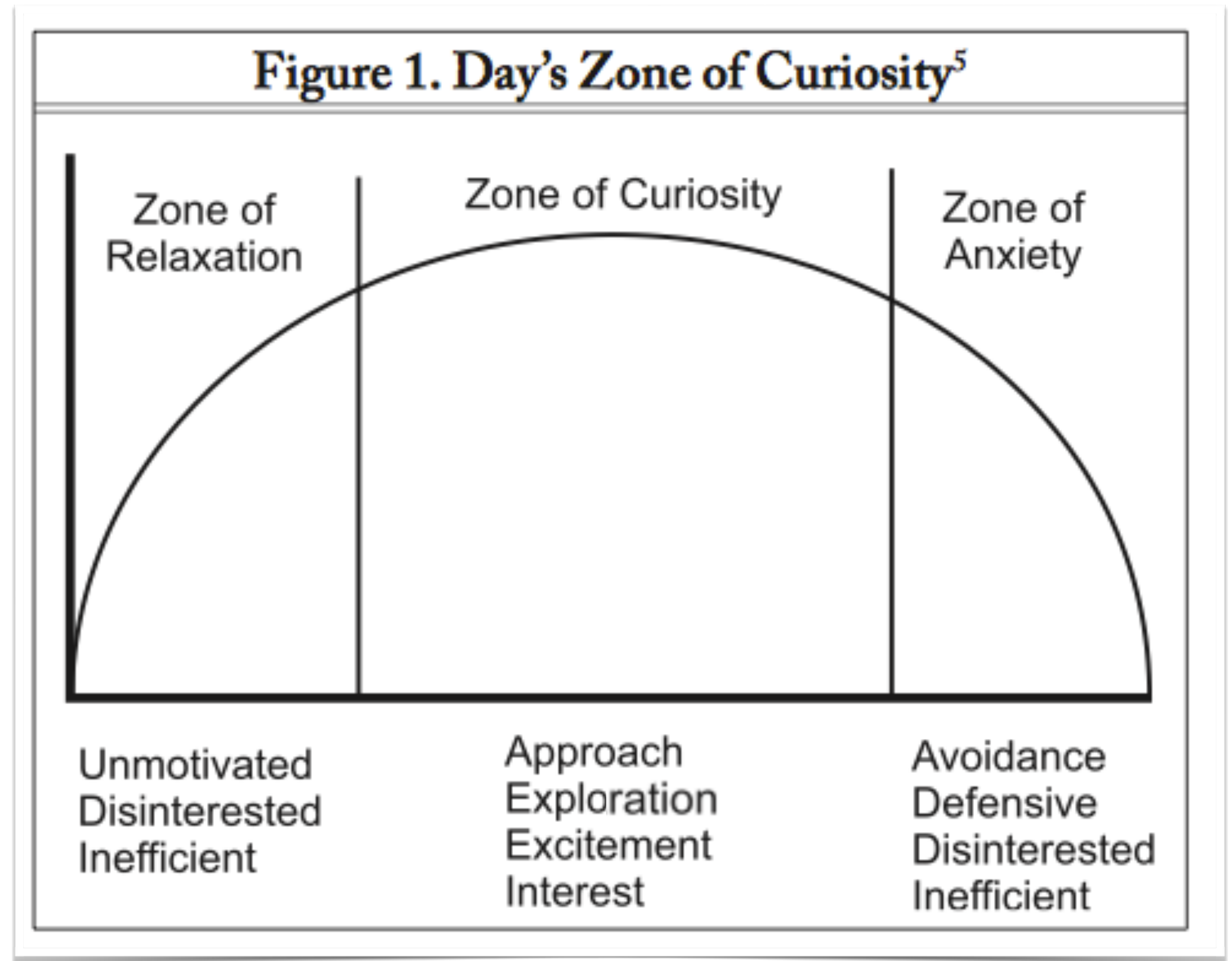
By HENRY FOUNTAIN OCT. 23, 2012



# Two Dimensions of Curiosity



**Curiosity:**  
**Find the**  
**Sweet Spot**  
**between**  
**APATHY**  
**&**  
**ANXIETY**





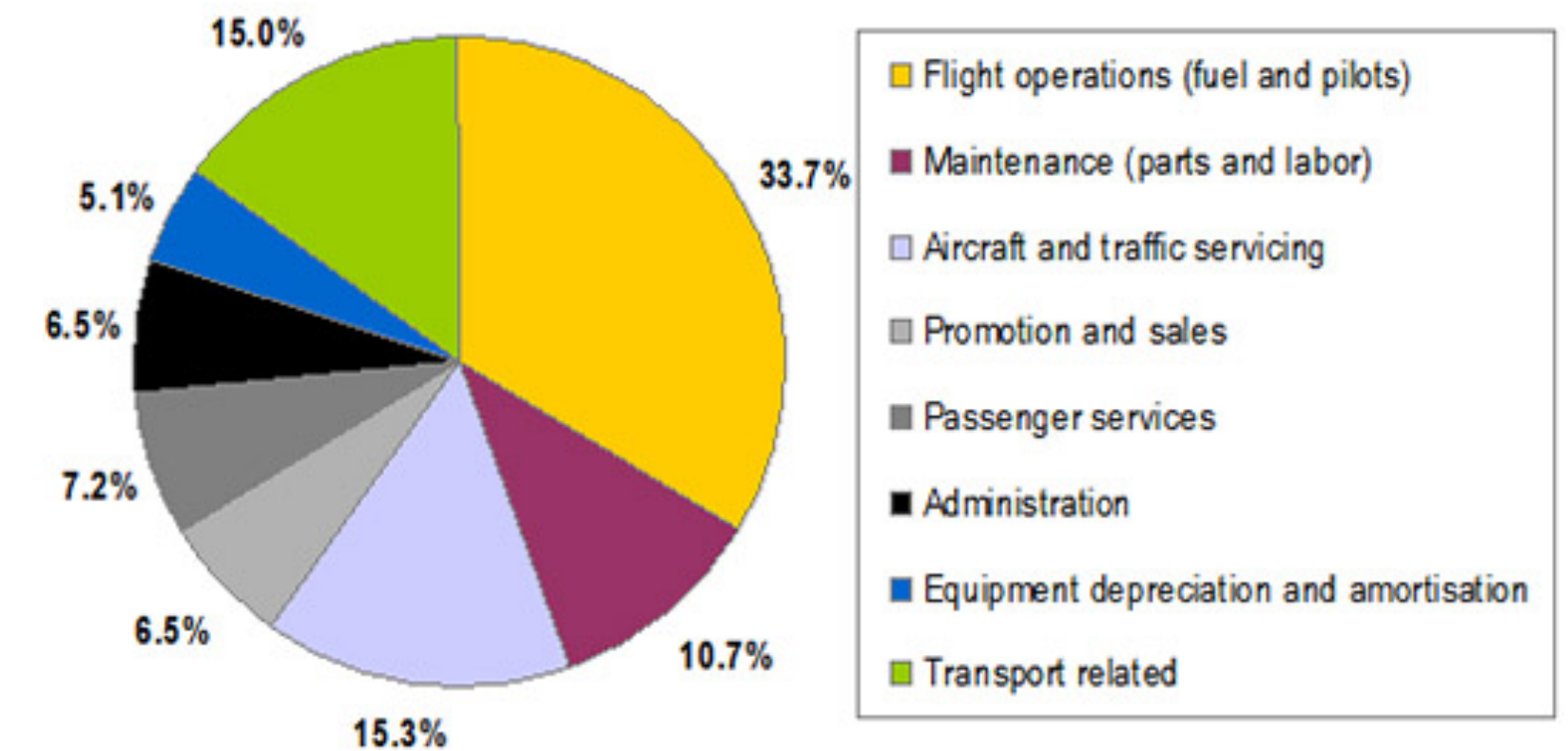
# Curiosity Journals

*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 about 70% occupied. What’s the average occupancy of an airline’s flights? How does occupancy contribute to the **airline’s business model**?

Q: What’s the **capacity of a 737-700** as configured? What’s the typical consumption rate and jet fuel cost? What would a **cost breakdown** look like for the average ticket? Where is the cost most sensitive to changes?

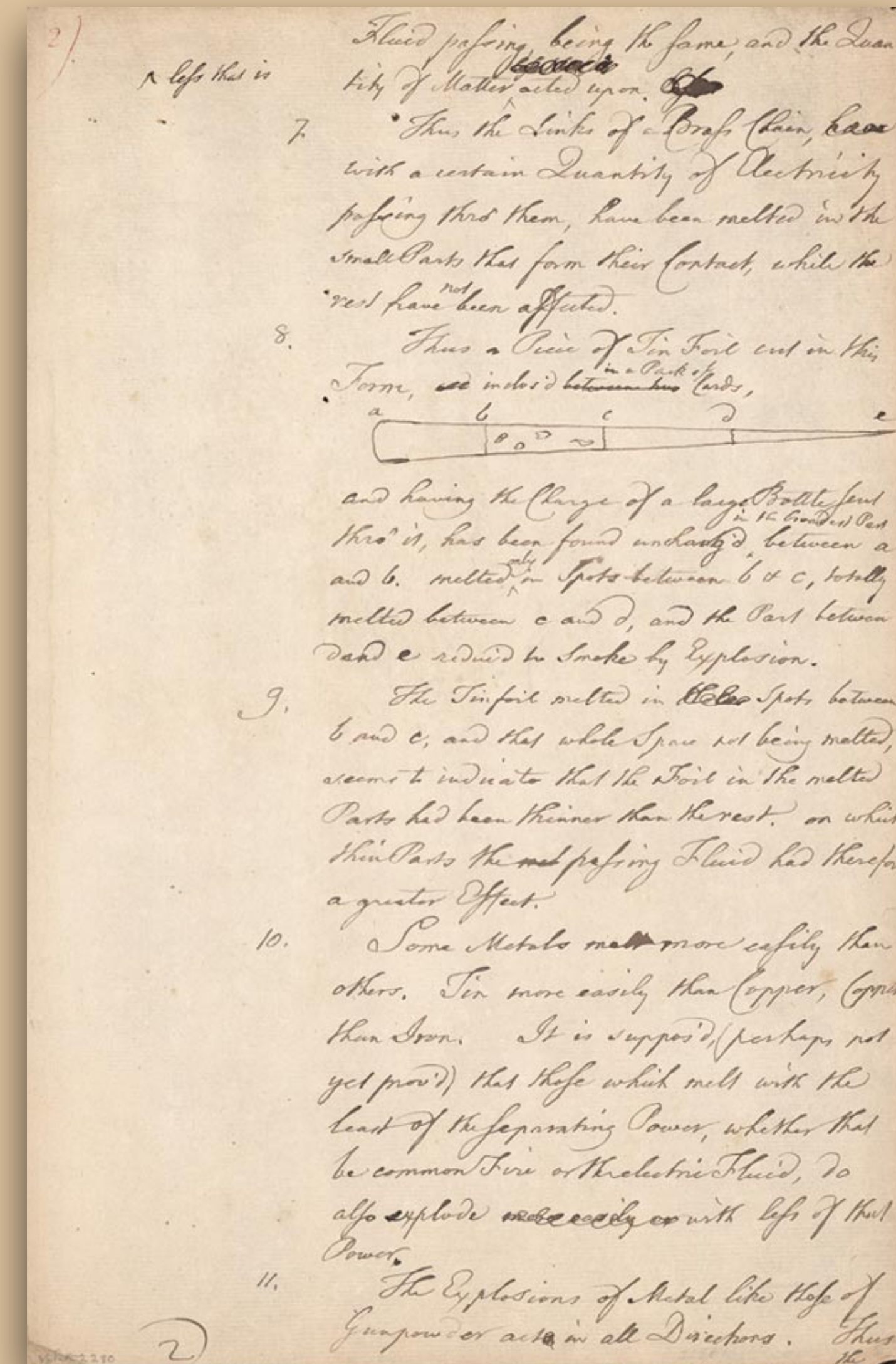


Q: Similar to AirBnB, Turo, Uber — is there a way to **use the latent, unused resources that are otherwise empty seats**?

# An example method - the Curiosity Journal



DaVinci



Franklin

USE **WELL-TOLD STORIES** THAT HIGHLIGHT

<https://www.youtube.com/watch?v=KJM7Nj1DCwk>

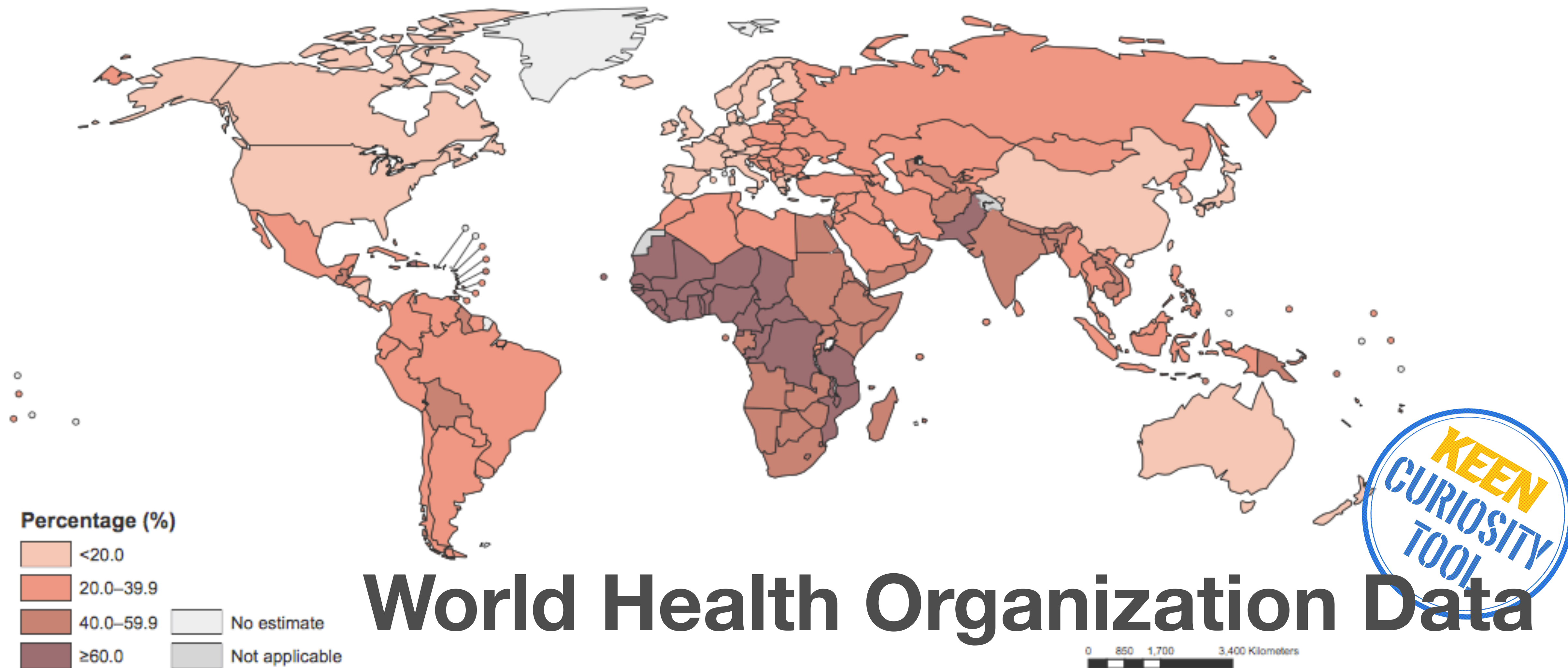
**“INFORMATION GAPS” BEYOND ONLY  
TECHNICAL...**





# ... IN AN EVIDENCE-DRIVEN CLASSROOM CULTURE.

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



VISUALIZATION PROMOTOS BOTH CURIOSITY AND CONNECTIONS

# Market summary > Cochlear Limited

ASX: COH - Jan 9, 4:10 PM GMT+11

**173.50** AUD **↓0.75 (0.43%)**



# Data That Hints at Technical Impacts



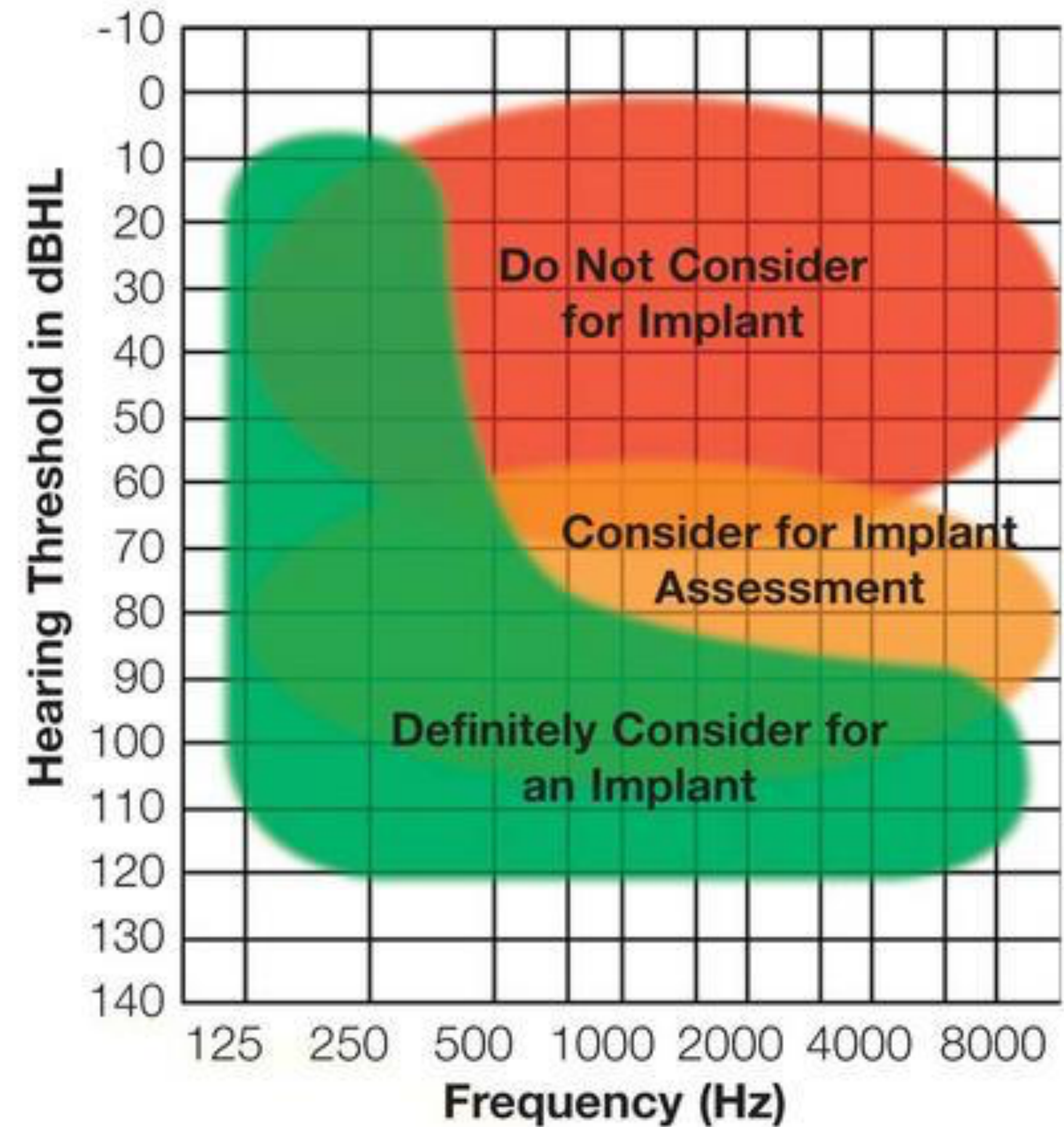
Open 175.55  
 High 176.05  
 Low 173.30

Mkt cap 9.98B  
 P/E ratio 44.5  
 Div yield 1.1%

→ [Financial news, comparisons and more](#)

Technical content combined 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?”**

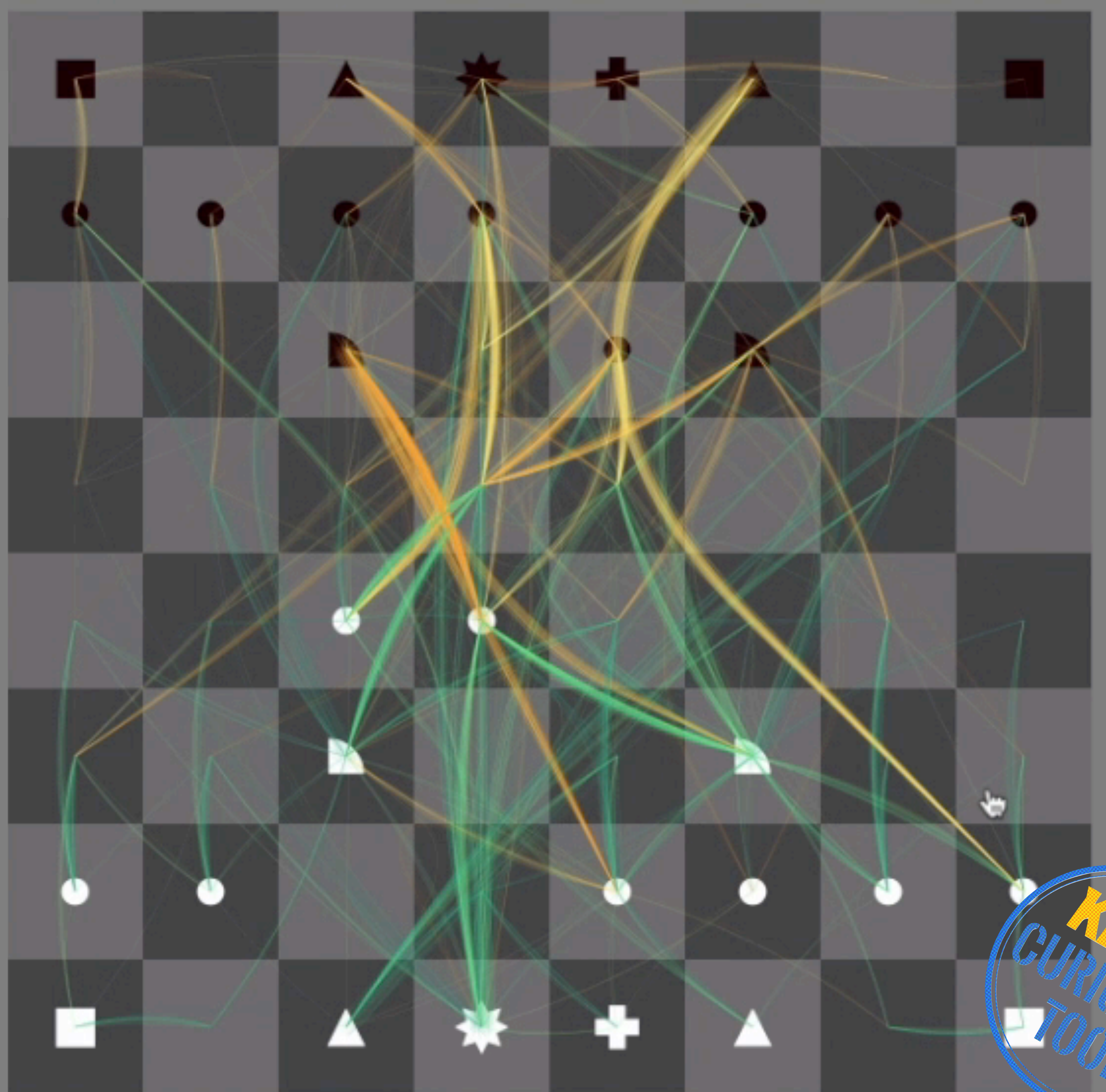


# Thinking Machine 6

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 AI impact the design of structures?**

Your move.





# TOOLS THAT STIMULATE CURIOSITY

## Hans Rosling's GapMinder

GAPMINDER FACTS TEACH ABOUT

pre-alpha version

Life expectancy, years ?



Size: Population, Color: World Region

Color World Region ?



Find Search...

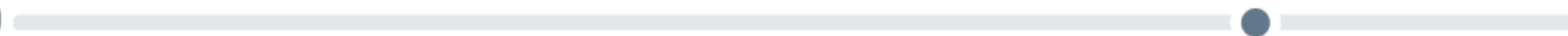
- Afghanistan
- Albania
- Algeria
- Andorra
- Angola
- Antigua and Barbuda
- Argentina

Size Population ?

Zoom 100%

Income per person, \$/year (GDP/capita) ?

DATA DOUBTS

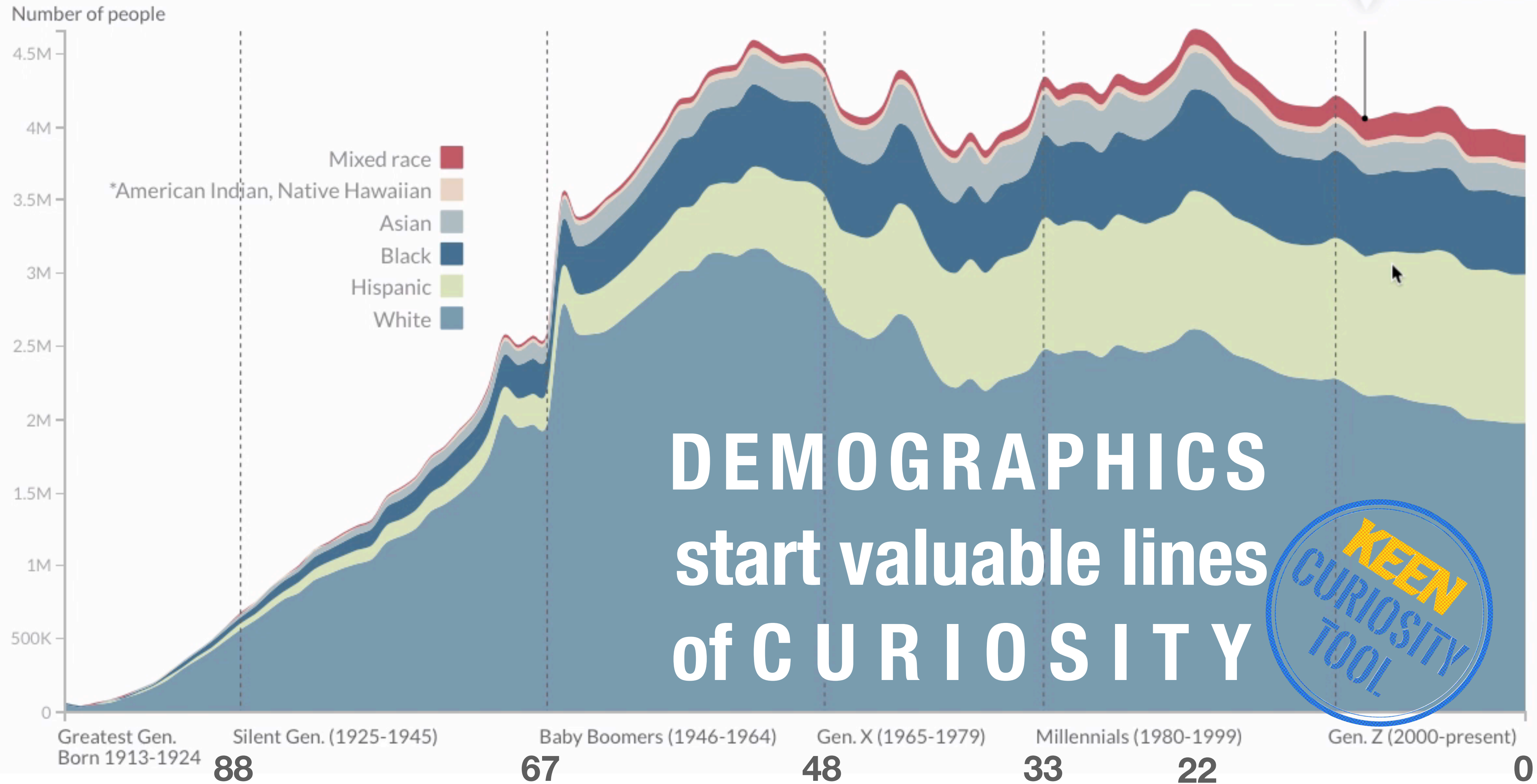


# Distribution vs. Age (U.S.)

(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



# Google Trends: Trends Stimulate Curiosity

Google Trends Explore

● **Genome editing**  
Topic

+ Compare

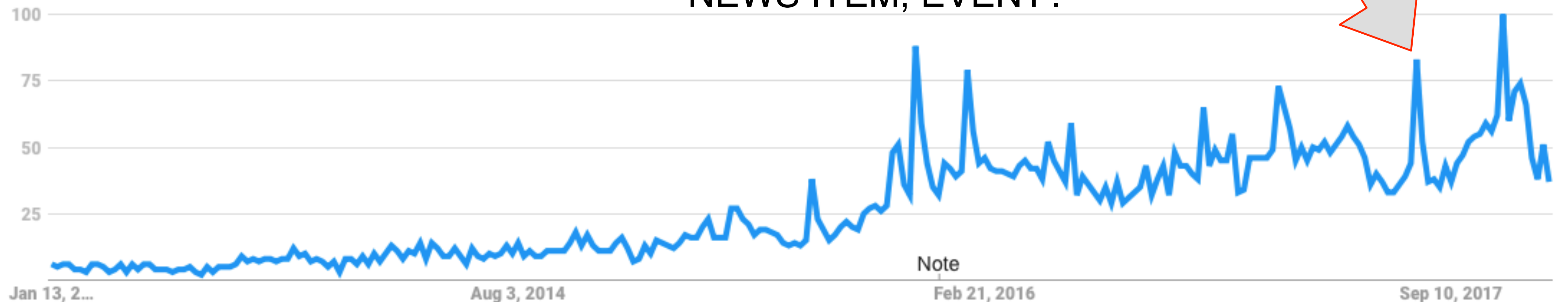
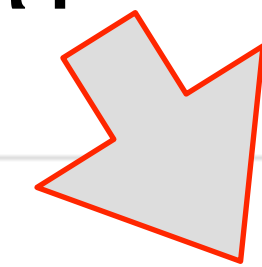
**KEEN  
CURIOSITY  
TOOL**

Worldwide ▼ Past 5 years ▼ All categories ▼ Web Search ▼

Interest over time ?



WHAT HAPPENED HERE, I WONDER?  
NEWS ITEM, EVENT?

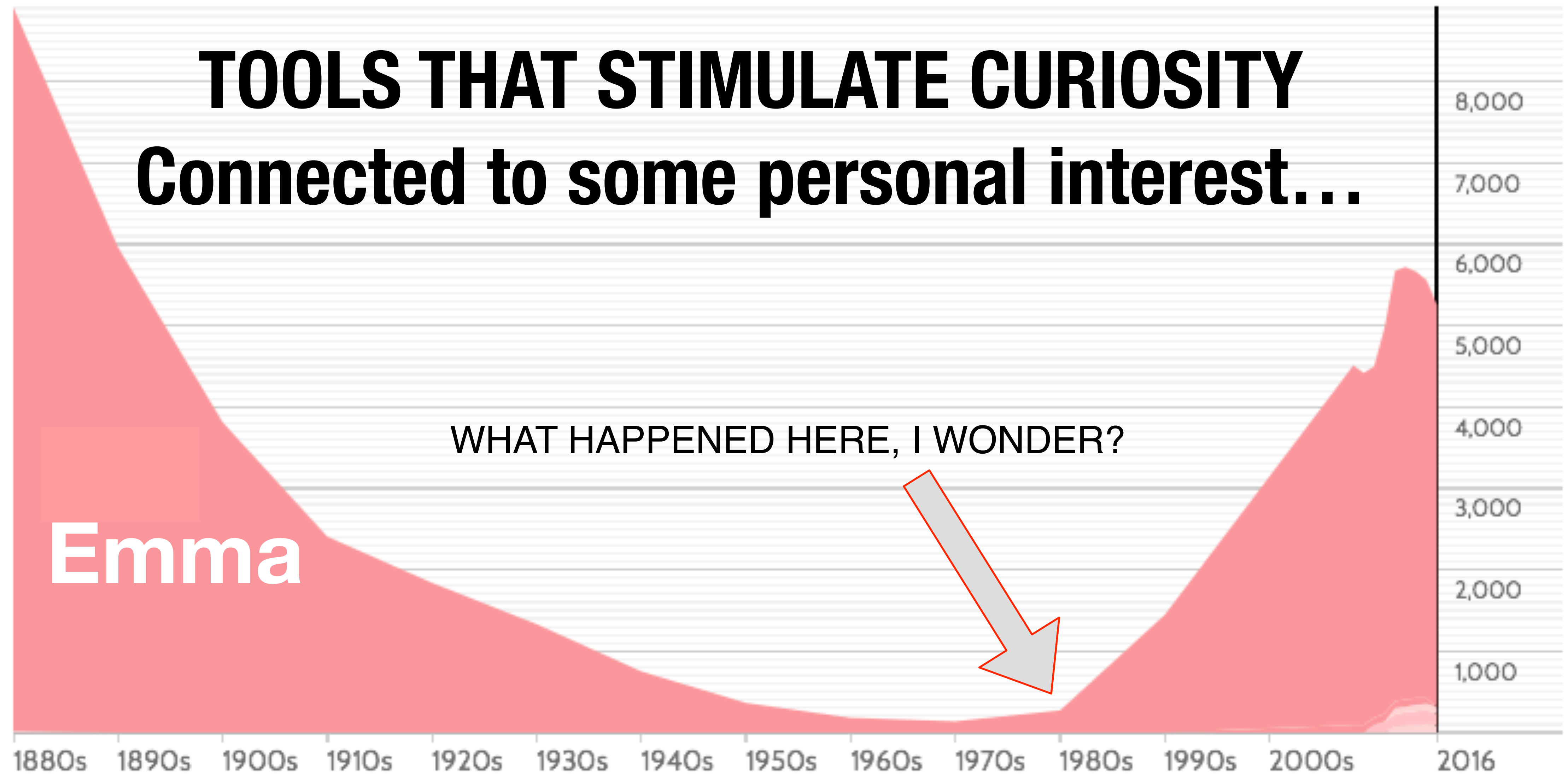


Baby Name >

Names starting with 'EMMA' per million babies

per million births

## TOOLS THAT STIMULATE CURIOSITY Connected to some personal interest...



Emma

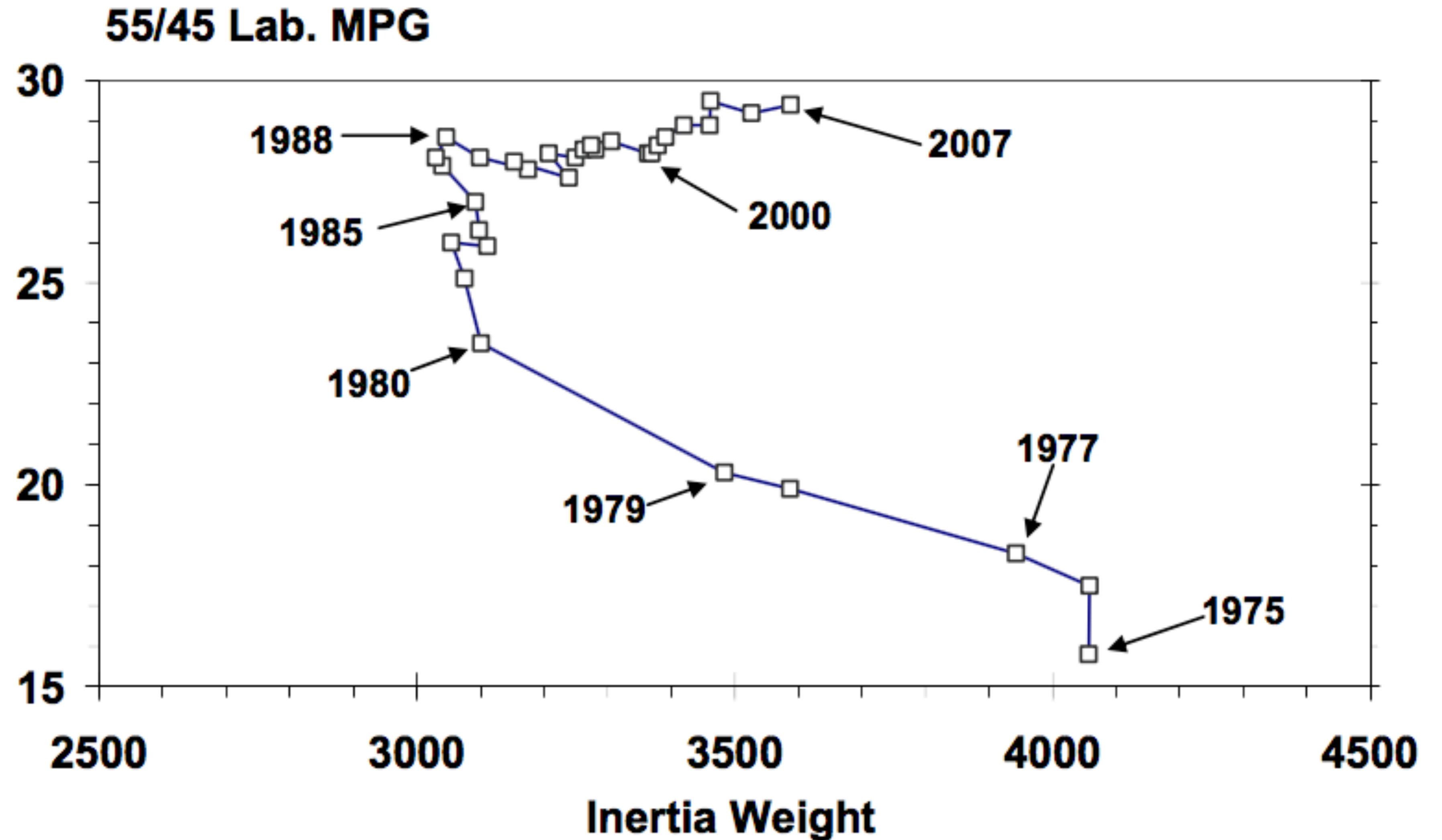
WHAT HAPPENED HERE, I WONDER?





**UNEXPECTED**  
**TRENDS**  
provide  
opportunities  
for group  
discussions

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



Apr. 2005

Nov. 2013

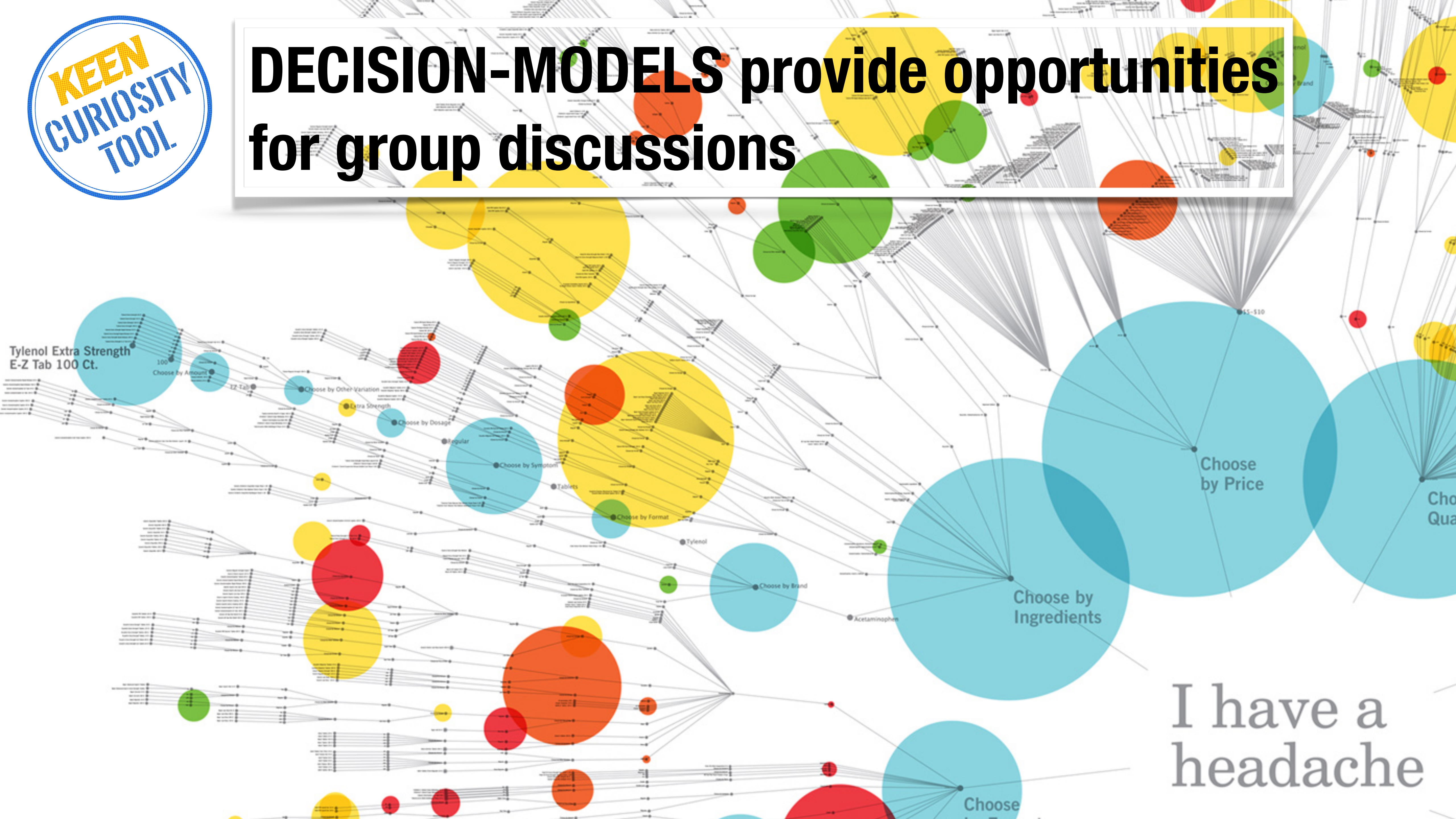
# JuxtaposeJS



**CONTRARIAN VIEWS**  
are not limited to language



# DECISION-MODELS provide opportunities for group discussions



Tylenol Extra Strength  
E-Z Tab 100 Ct.

Choose by Amount

Choose by Other Variation

Extra Strength

Choose by Dosage

Regular

Choose by Symptom

Tablets

Choose by Format

Tylenol

Choose by Brand

Acetaminophen

Choose by Ingredients

Choose by Price

Choose by Quality

I have a headache

Choose



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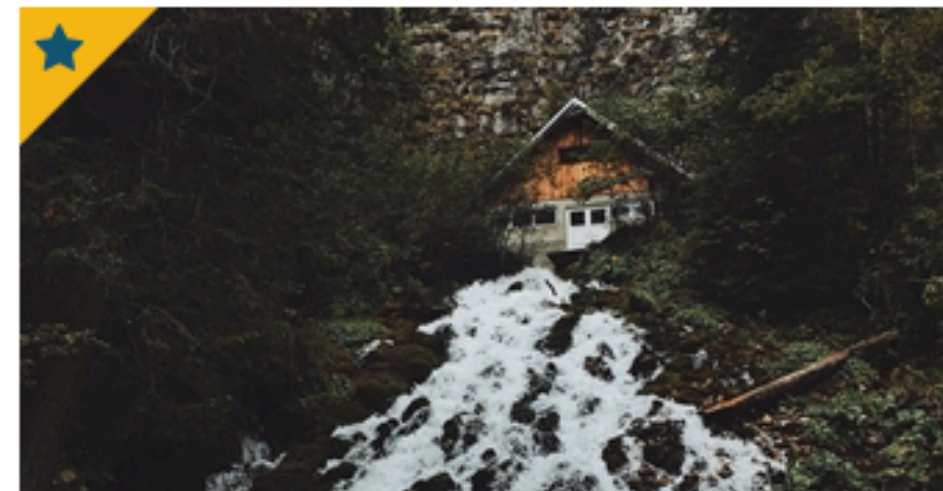


### PBL in Materials - Aunt Ada's Tree House

January 2nd, 2018  
by [Edmund Webb](#)

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

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### PBL, Fluid Mechanics, & Uncle Mort

January 2nd, 2018  
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Teams design most cost-effective water delivery system based on customer needs.

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### BME382 Game Lab - Surrogates in Design

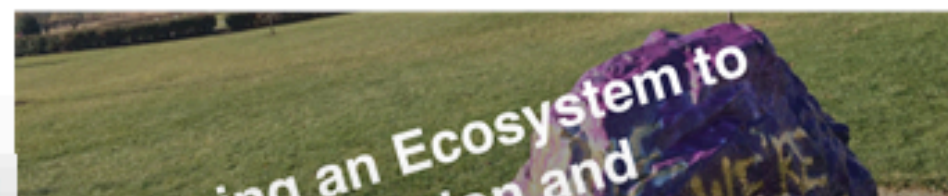
January 2nd, 2018  
by [Jeff La Belle](#)

Designing games to learn entire product development cycle

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# QFT in Circuits Analysis Course

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Created: 11/29/2017 3:04PM CST by Alexis Schilf Updated: 12/21/2017 11:40AM CST by Michael Johnson

## Mindset

### 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



## Engineering Disciplines

- Electrical & Computer Engineering
- General Engineering

## Authors

## 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 QFT research projects were assigned to students working in groups of four to six.