

A detailed historical engraving of Boston harbor in 1768. The scene is filled with numerous British warships and merchant vessels, many with their sails set. The city of Boston is visible in the background, with its characteristic steeple and buildings. A banner at the top of the image reads "A VIEW OF PART OF THE TOWN OF BOSTON IN NEW-ENGLAND AND BRITISH SHIPS OF WAR LANDING THEIR TROOPS J 1768". The engraving is numbered with small figures (1-8) and includes a decorative cartouche in the bottom right corner with a Latin inscription.

# Unleash the Chaos

Mike Amundsen  
API Academy  
@mamund

To the Earl of Halifax  
This View of the  
Harbour of Boston for  
America this View of  
the only real Plan of  
an Expedition, for med for  
the support of a  
City of Great and  
the challenging of importance  
of America is hereby  
1768



**CHART HOUSE**  
SEAFOOD STEAKS FINE RIBS



A VIEW OF PART OF THE TOWN OF BOSTON IN NEW-ENGLAND AND BRITISH SHIPS OF WAR LANDING THEIR TROOPS J 768



To the Earl of Halifax, His Majesty's Chief Justice for America THIS VIEW of the only real Plan of EXPEDITION, formed for the suppressing & dispersing of the Liberty of Brit. Am. & challenging & insulting of AMERICA is humbly presented





*Atlantic*

*Pacific*

*Pacific*

*Ocean*

Equator

St. Paul Rock

Trindade

*Ocean*

*Indian*

*Ocean*

*Ocean*

*Roaring*

*Forties*

*Furious*

*Fifties*

Cape Horn

Cape of Good Hope

Cape Agulhas

Cape Leeuwin

Perth

Melbourne

Sydney

South East Cape

South West Cape





China

South Korea

Japan

Thailand

Indonesia

Papua New Guinea

Australia

Melbourne VIC

New Zealand

North Pacific Ocean

South Pacific Ocean

United States

Los Angeles International Airport

Mexico

Venezuela  
Colombia

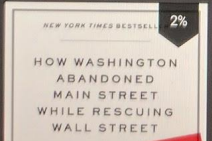
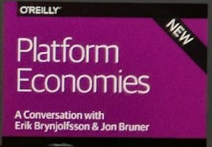
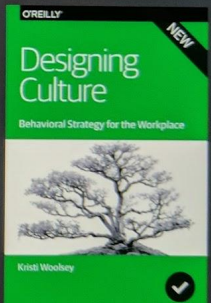
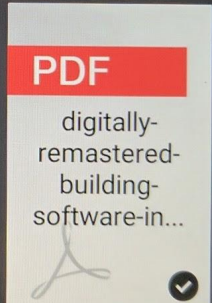
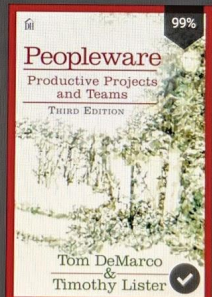
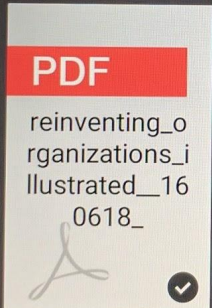
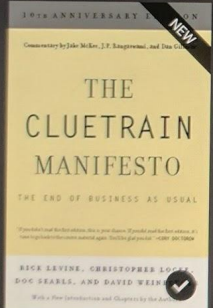
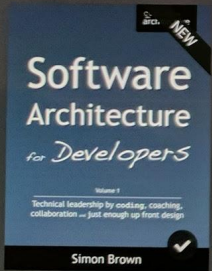
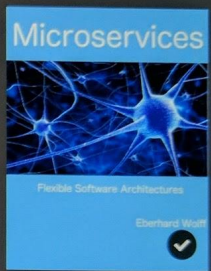
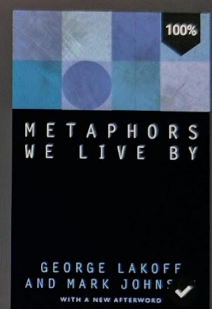
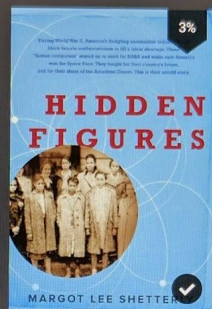
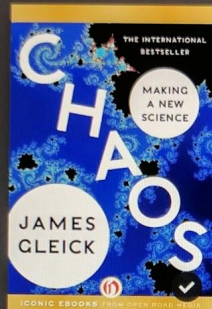
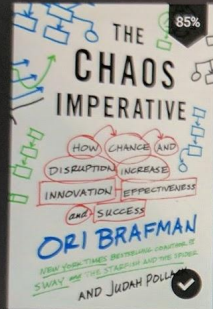
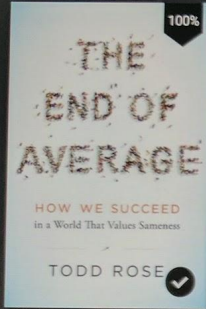
Peru

Bolivia

Chile

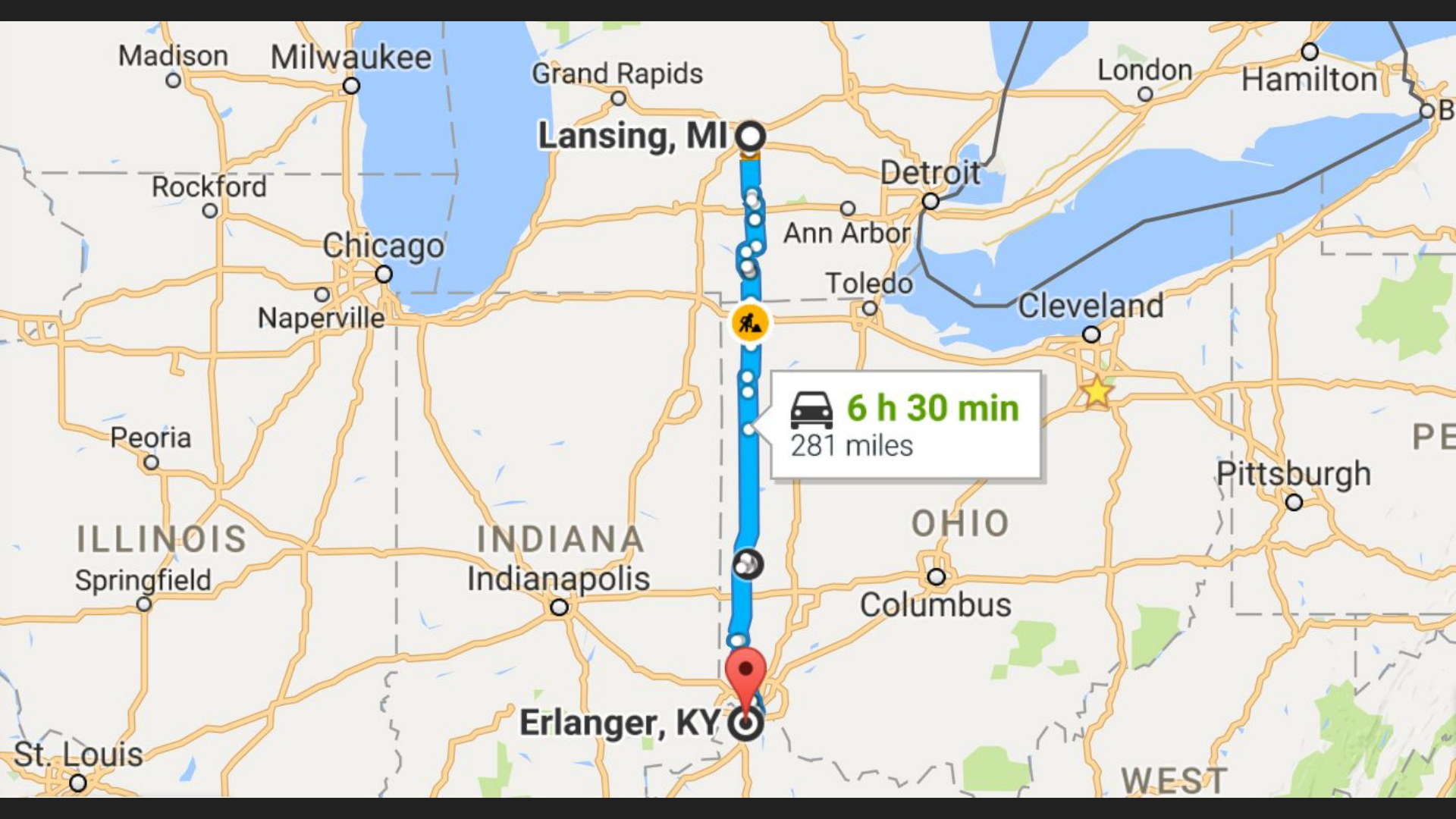
Argentina

✈ 14 h 15 min










Lansing, MI

 **6 h 30 min**  
281 miles

Erlanger, KY





	A	B	C	D
1	ITEM	NO.	UNIT	COST
2	MUCK	43	12.95	556.85
3	BUNZ	15	6.70	100.50
4	TONER	250	4.99	1248.75
5	EYEF	2	4.99	9.98
6	SNUFF	2	4.99	9.98
7				
8			SUBTOTAL	13155.50
9			9.75% TAX	1282.66
10			TOTAL	14438.16
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				







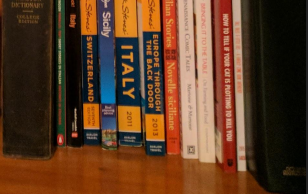
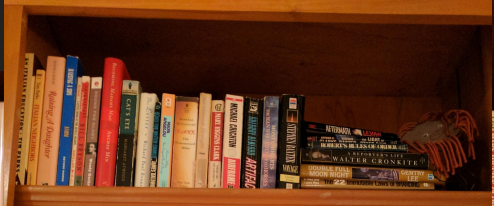
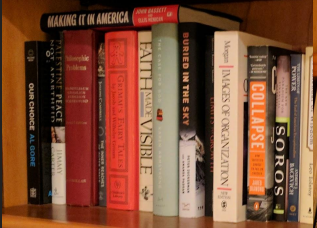
























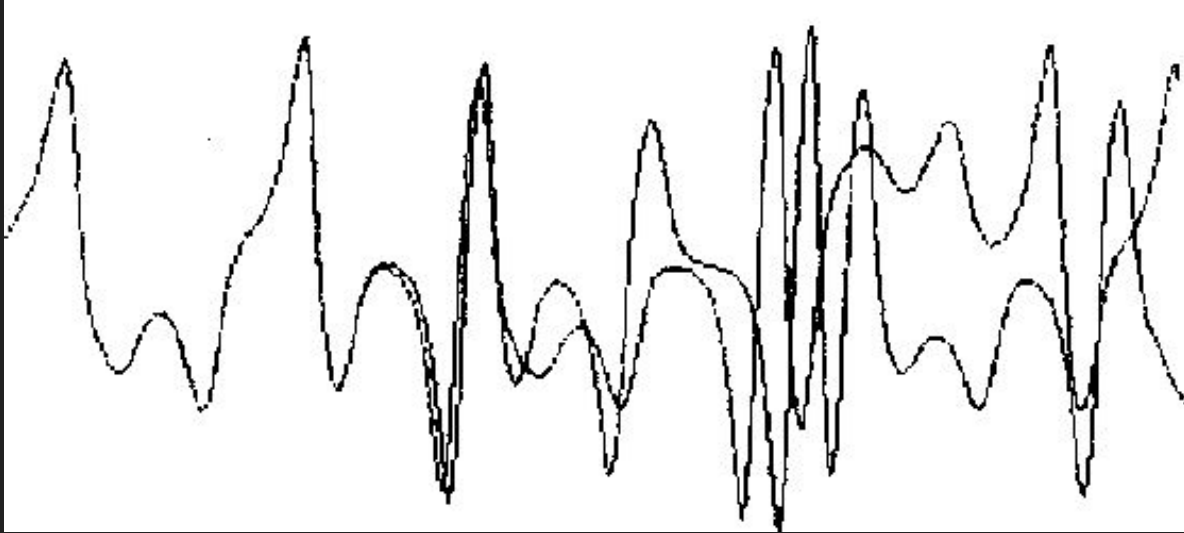


## Edward Lorenz (1917 -- 2008)

- Mathematician
- Meteorologist
- MIT Graduate, Professor
- Pioneer of Chaos Theory



# Edward Lorenz (1917 -- 2008)



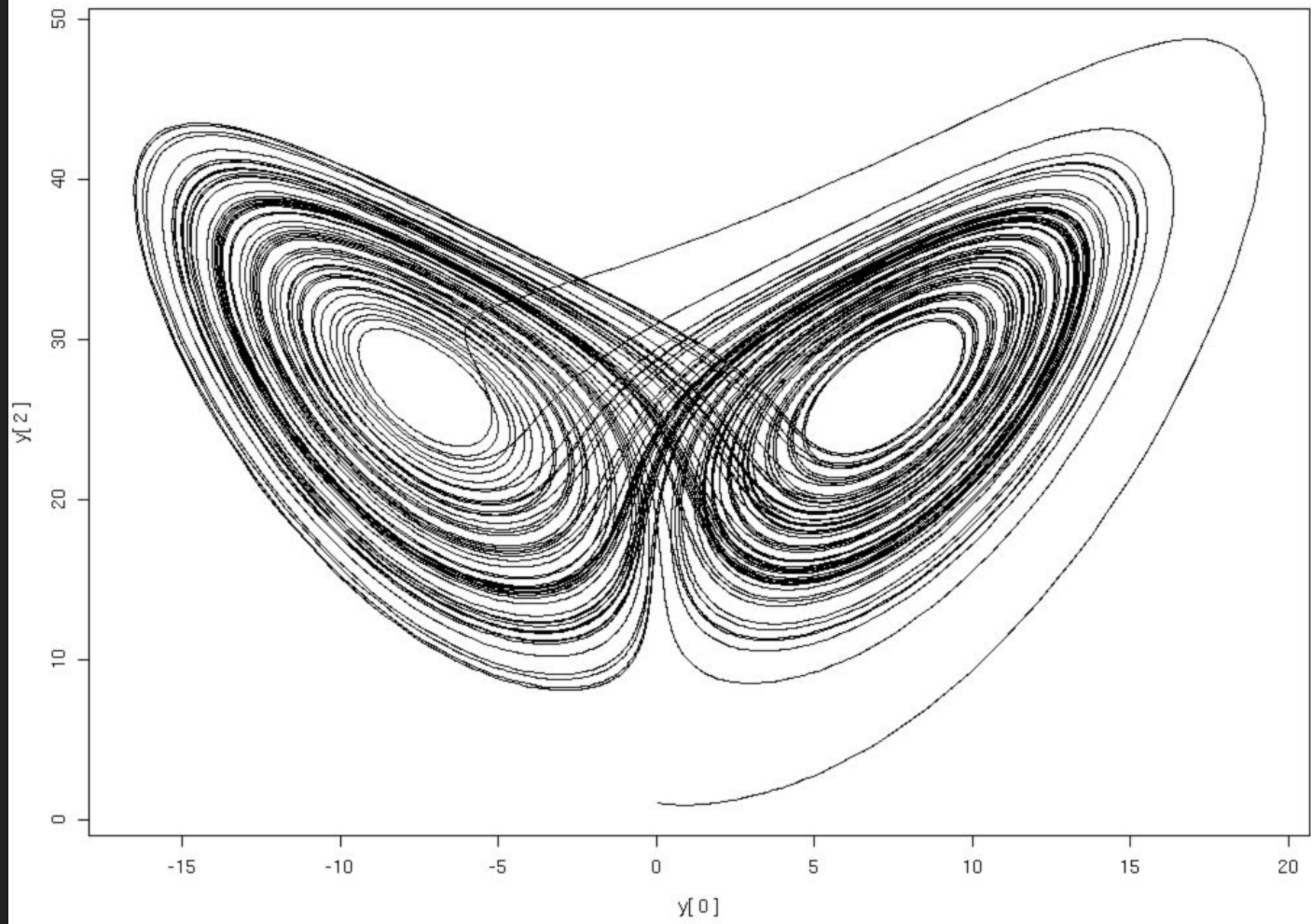


Edward Lorenz (1917 -- 2008)

*"Two states differing by imperceptible amounts may eventually evolve into two considerably different states..."*

*-- Lorenz, 1963*



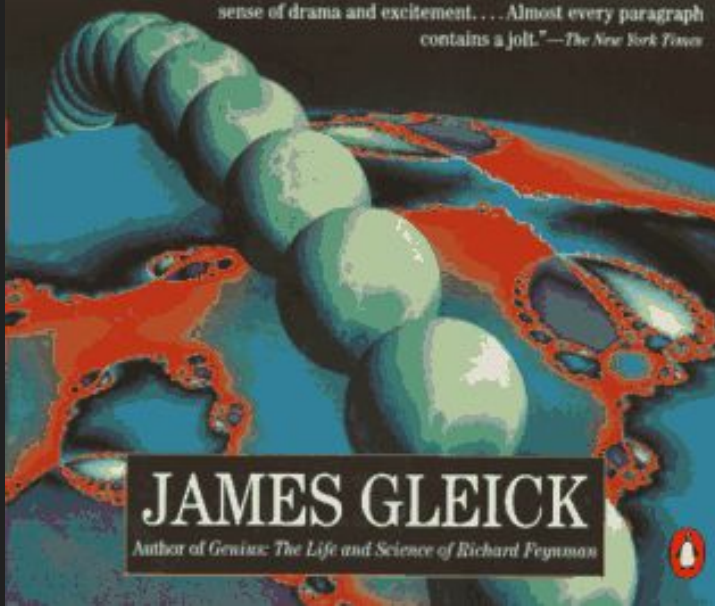


THE NATIONAL BESTSELLER

# CHAOS

MAKING A NEW SCIENCE

"These are fascinating stories of insight and discovery, told with a keen sense of drama and excitement. . . . Almost every paragraph contains a jolt."—*The New York Times*



**JAMES GLEICK**

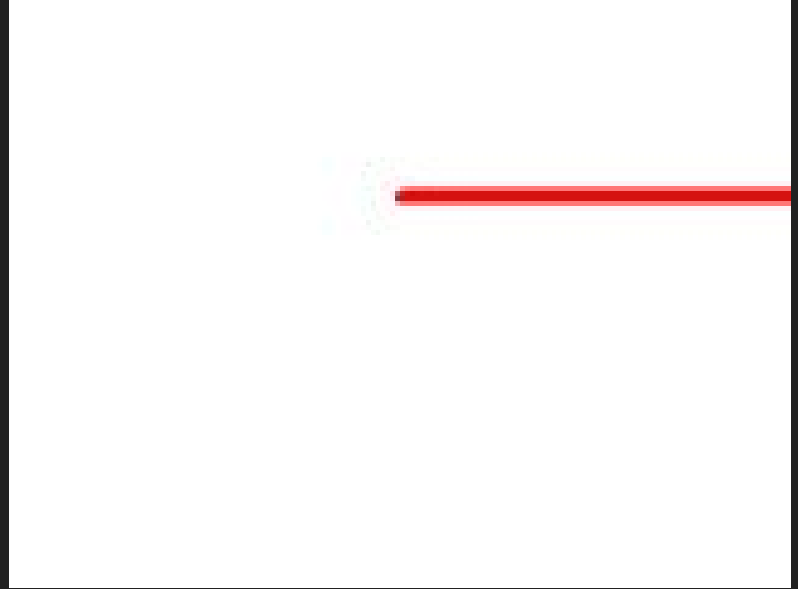
*Author of Genius: The Life and Science of Richard Feynman*





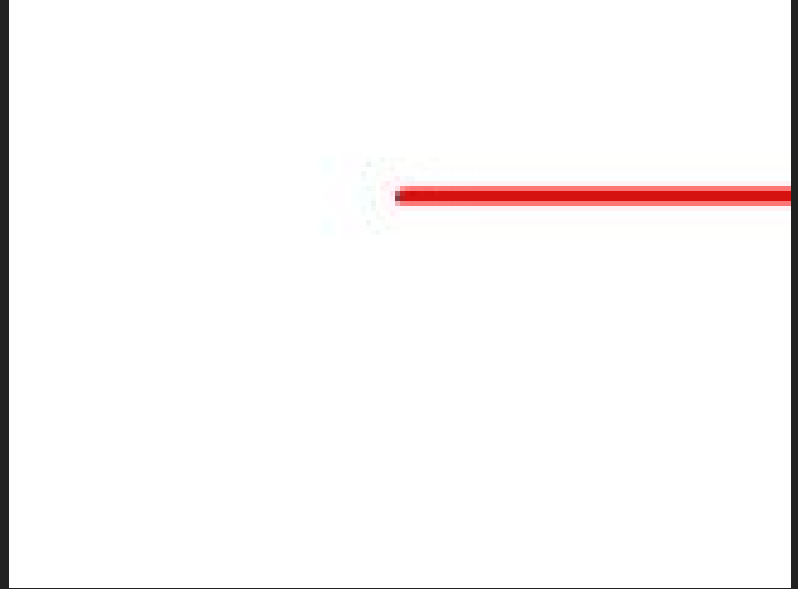
# Chaos Theory

*"Small differences in initial conditions yield widely diverging outcomes for dynamical systems."*



# Chaos Theory

*"Small differences in initial conditions yield widely diverging outcomes for dynamical systems."*



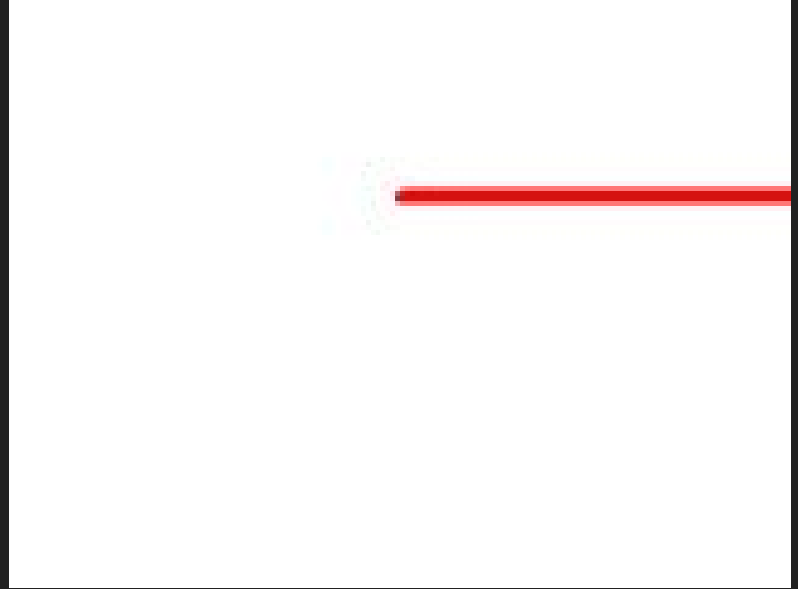
	A	B	C	D
1	ITEM	NO.	UNIT	COST
2	MUCK	43	12.95	556.85
3	BUNZ	15	6.70	100.50
4	TONER	25	49.95	1248.75
5	EYEF	2	4.95	9.90
6	SNUFF	2	4.95	9.90
7				
8			SUBTOTAL	13155.50
9			9.75% TAX	1282.66
10			<b>TOTAL</b>	<b>14438.16</b>



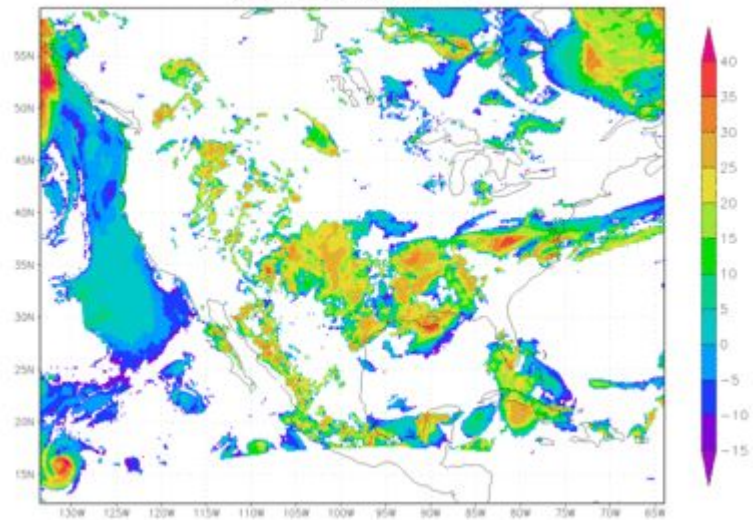
# Chaos Theory

*"When the present determines the future, but the approximate present does not approximately determine the future."*

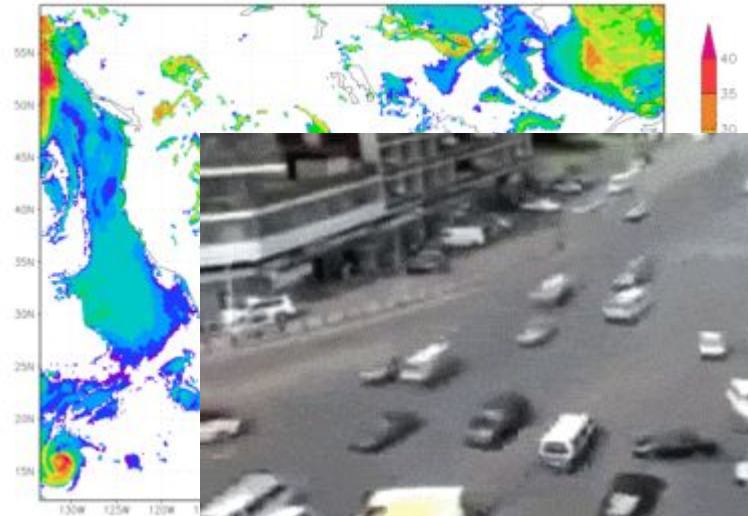
*-- Edward Lorenz*



NAM Atmospheric Column Maximum Composite Radar Reflectivity [dbZ]  
00Z10JUL2012+000Hrs

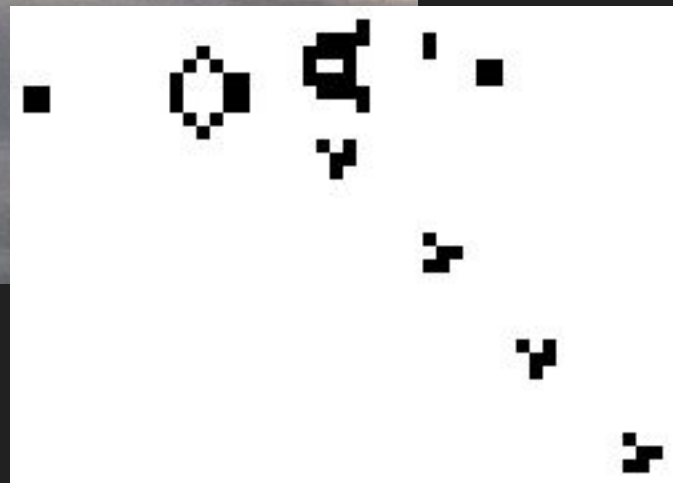
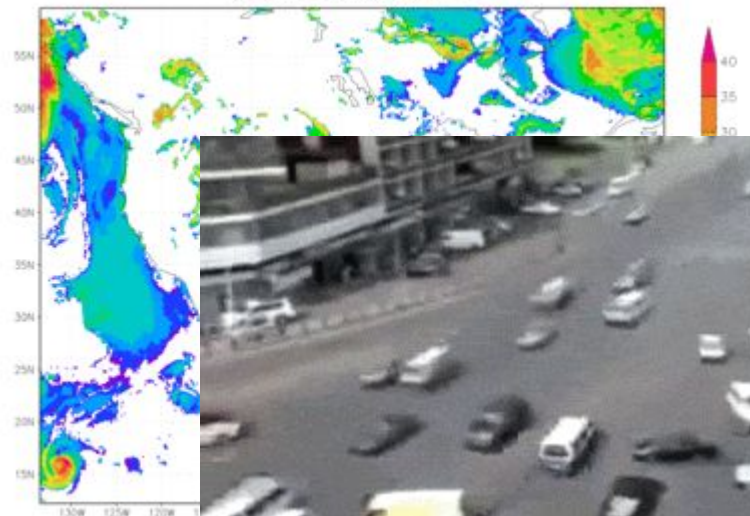


NAM Atmospheric Column Maximum Composite Radar Reflectivity [dbZ]  
00Z10JUL2012+000Hrs





NAM Atmospheric Column Maximum Composite Radar Reflectivity [dbZ]  
00Z10JUL2012+000Hrs





$$x^2 + y^2 = 4a - 4a\sqrt{(x-c)^2 + y^2} + (x-c)^2 + y^2$$

$$\lim_{x \rightarrow 0} \left( \frac{1}{x} - \frac{1}{e^x - 1} \right) = \lim_{x \rightarrow 0} \frac{e^x - 1 - x}{x(e^x - 1)} = \frac{1}{2}$$

$$y' = (\ln u)' \quad (\sin x)' = \frac{1}{u} \cos x = \frac{\cos x}{\sin x} = \operatorname{ctg} x$$

$$\int_a^b f(x) dx = \lim_{\lambda \rightarrow 0} \sum_{i=1}^n f(x_i) \Delta x = \lim_{\lambda \rightarrow 0} \sum_{i=1}^n f(x_i) \frac{b-a}{n}$$

$$\lim_{x \rightarrow 0} \frac{4x}{\operatorname{tg}(\pi(2+x))} = \left\{ \frac{0}{0} \right\} = \lim_{x \rightarrow 0} \frac{4x}{\operatorname{tg} 2\pi x} = \frac{2}{\pi}$$

$$a \sum_{k=1}^n x_k^2 + b \sum_{k=1}^n x_k = \sum_{k=1}^n x_k^2 y_k \quad a \sum_{k=1}^n x_k^2 + bn = \sum_{k=1}^n x_k^2 y_k$$



$x = m_2 + a, y = m_2$

$$-y^2 (x+c)^2 + y^2 = 4a -$$

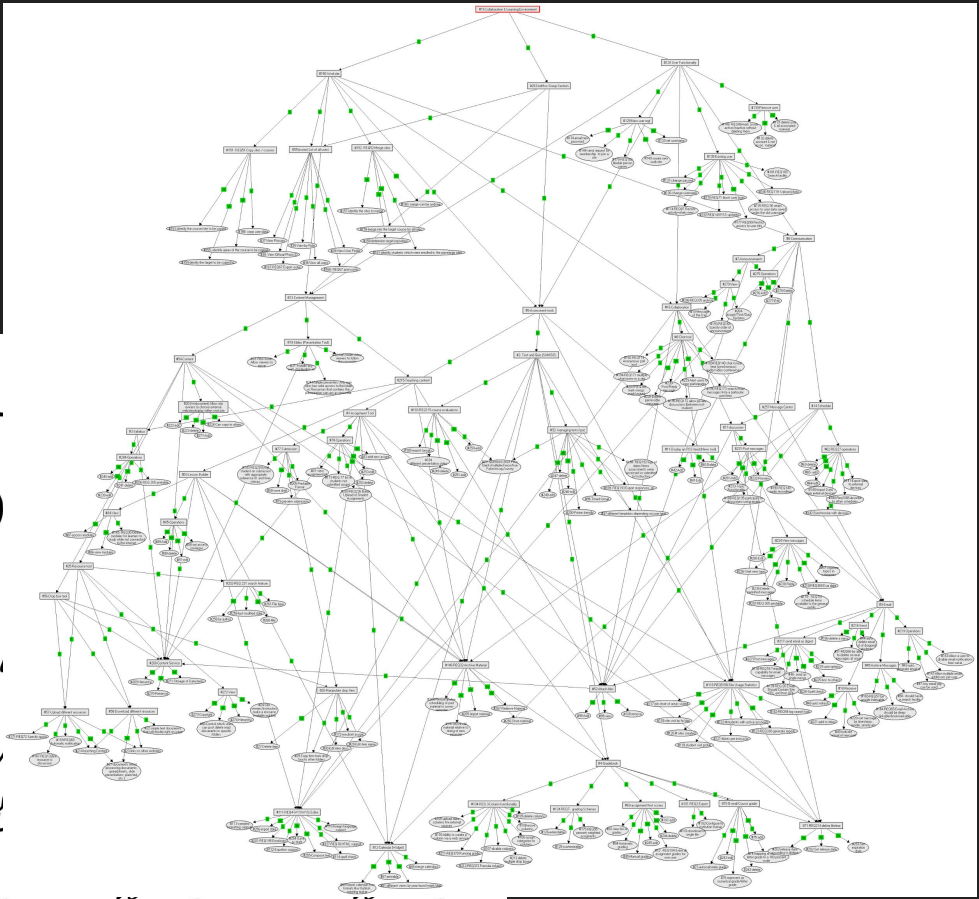
$$\lim_{x \rightarrow 0} \left( \frac{1}{x} - \frac{1}{e^x - 1} \right)$$

$$y' = (\ln u)' (\sin x)' =$$

$$x) dx = \lim_{\lambda \rightarrow 0} \int_a^{c+\lambda} f(x) dx +$$

$$\lim_{x \rightarrow 0} \frac{4x}{\operatorname{tg}(\pi(2+x))} = t$$

$$a \sum_{k=1}^n x_k^2 + b \sum_{k=1}^n x_k = \sum_{k=1}^n x_k^2 y_k \quad a \sum_{k=1}^n x_k^2 + bn = \sum_{k=1}^n x_k^2 y_k$$



$x = \cos 10^\circ, y = \cos 20^\circ$

$$-y^2 (x+c)^2 + y^2 = 4a$$

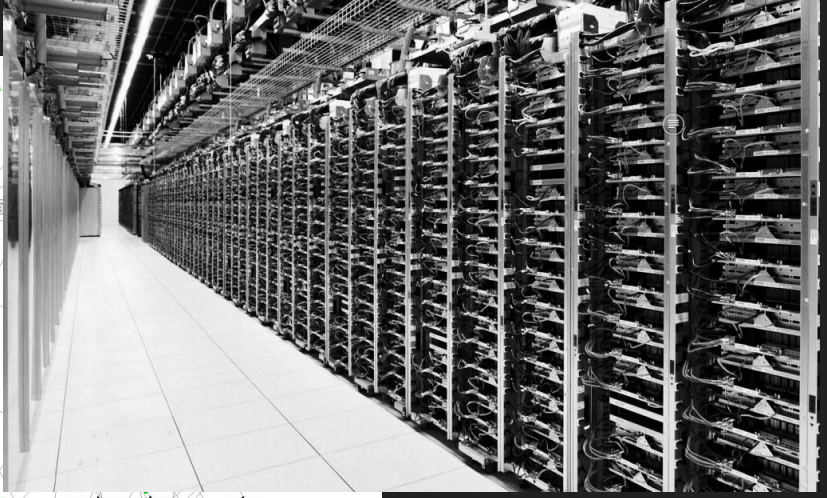
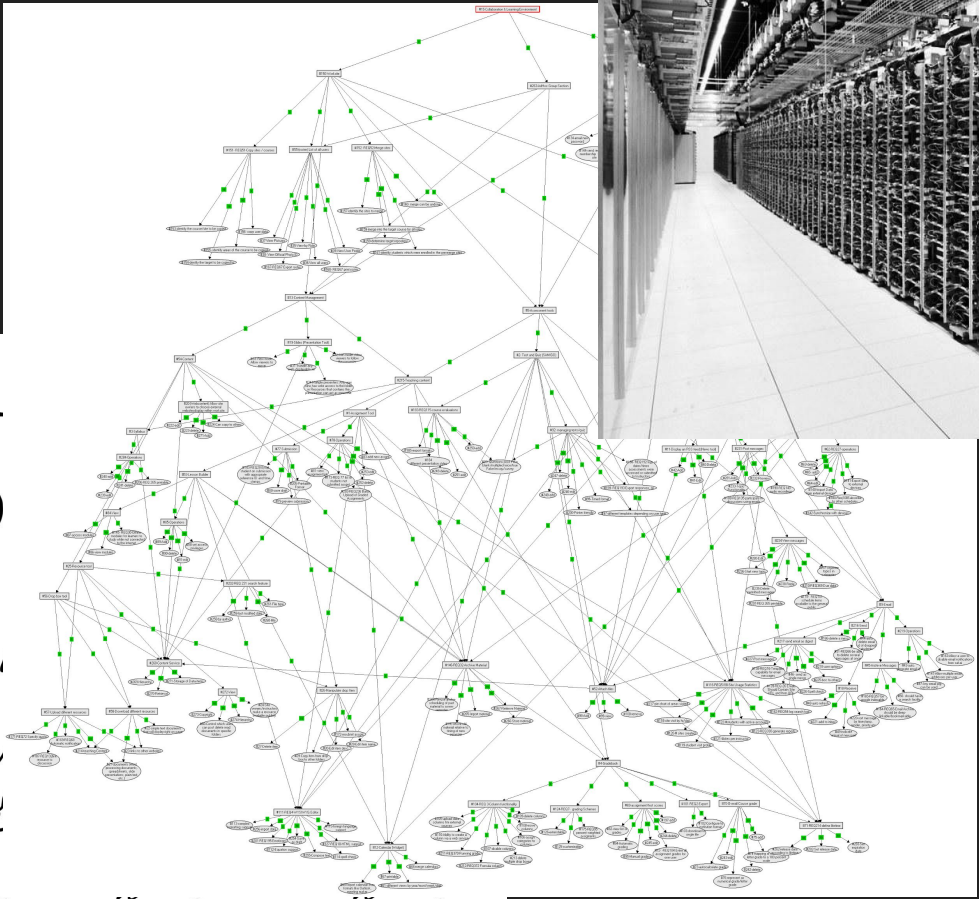
$$\lim_{x \rightarrow 0} \left( \frac{1}{x} - \frac{1}{e^x - 1} \right)$$

$$y' = (\ln u)' \quad (\sin x)' =$$

$$\int_a^b f(x) dx = \lim_{\lambda \rightarrow 0} \sum_{k=0}^{n-1} f(x_k) \Delta x$$

$$\lim_{x \rightarrow 0} \frac{\operatorname{tg}(\pi(2+x))}{4x} =$$

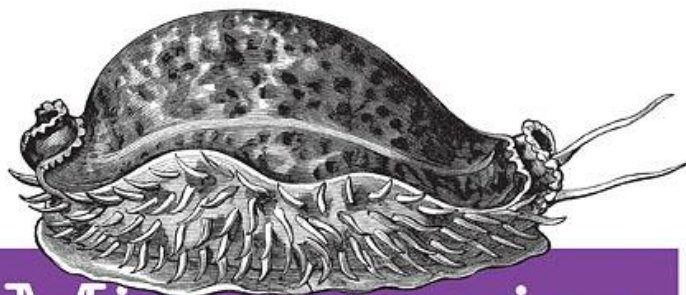
$$a \sum_{k=1}^n x_k^2 + b \sum_{k=1}^n x_k = \sum_{k=1}^n x_k^2 y_k \quad a \sum_{k=1}^n x_k^2 + bn = \sum_{k=1}^n x_k^2 y_k$$







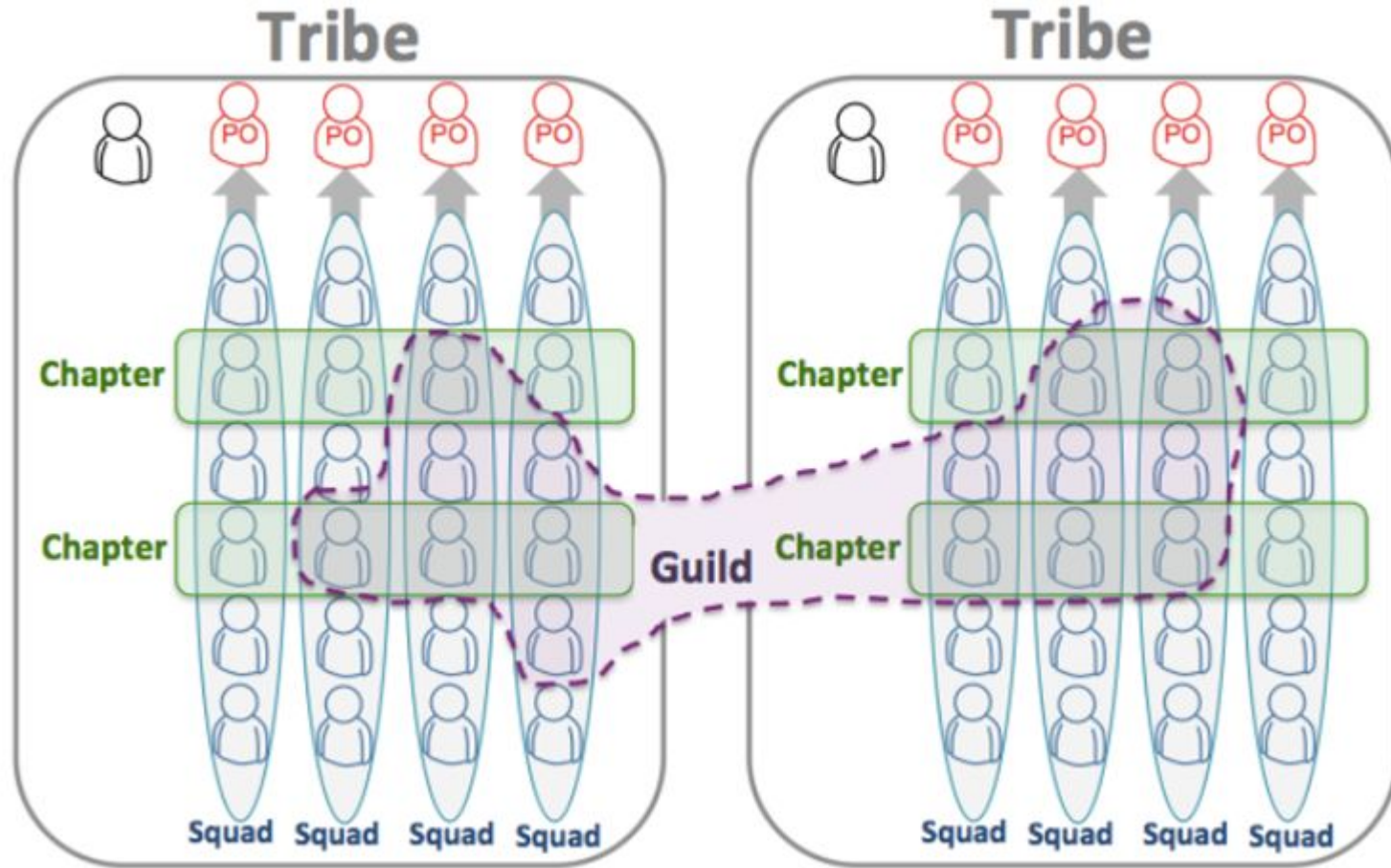
O'REILLY®



# Microservice Architecture

ALIGNING PRINCIPLES, PRACTICES, AND CULTURE

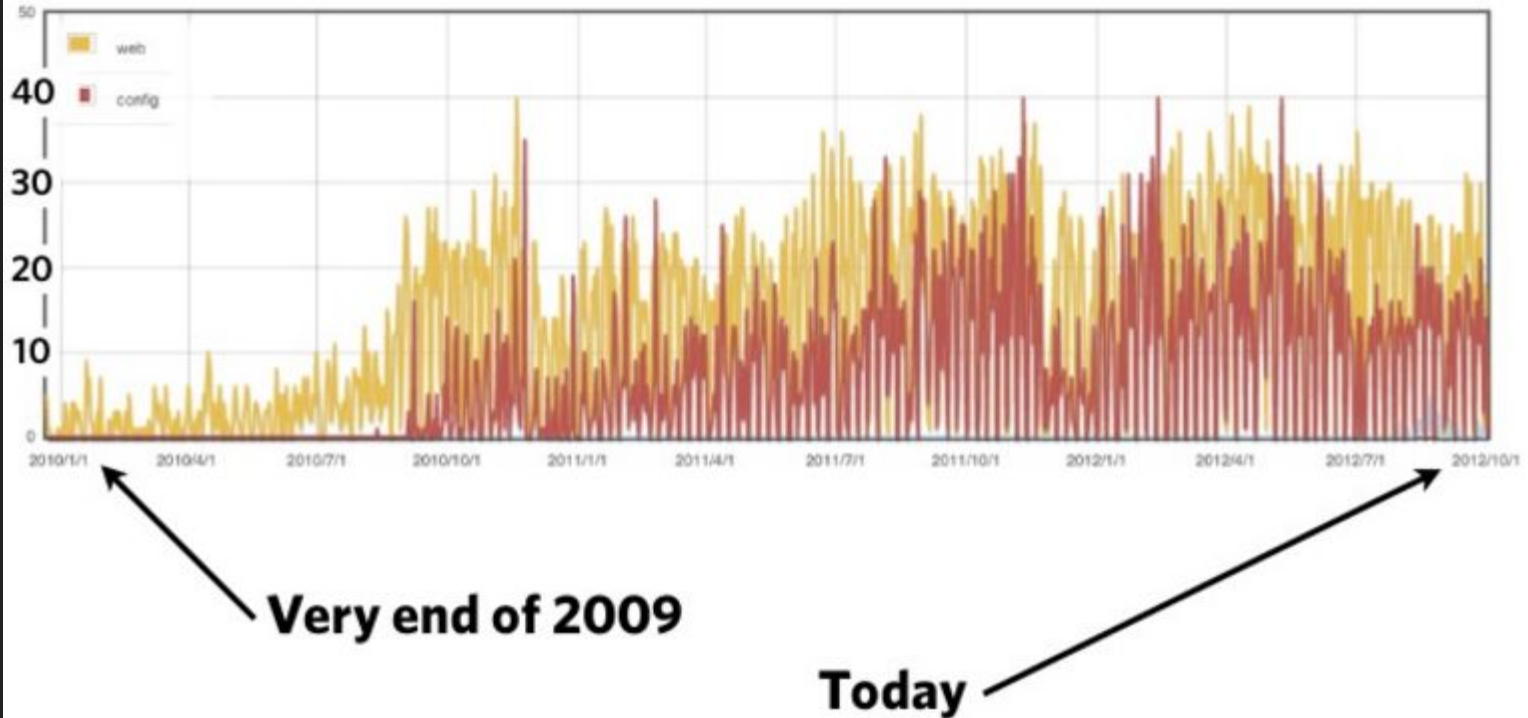
Irakli Nadareishvili, Ronnie Mitra,  
Matt McLarty & Mike Amundsen



**“Scaling Spotify”, Kniberg & Ivarsson (2012)**

<https://dl.dropboxusercontent.com/u/1018963/Articles/SpotifyScaling.pdf>

## Deployments Per Day (US/Eastern)



**Continuous Delivery – The Dirty Details, Mike Britain, Etsy (2015)**

<http://www.slideshare.net/mikebrittain/continuous-delivery-the-dirty-details/8>





This repository Search

Pull requests Issues Gist



## Netflix / Hystrix

Watch 759

Star 5,974

Fork 1,097

Code

Issues 46

Pull requests 6

Wiki

Pulse

Graphs

Hystrix is a latency and fault tolerance library designed to isolate points of access to remote systems, services and 3rd party libraries, stop cascading failure and enable resilience in complex distributed systems where failure is inevitable.

1,694 commits

5 branches

74 contributors

Branch: master

New pull request

Upload files

Find file

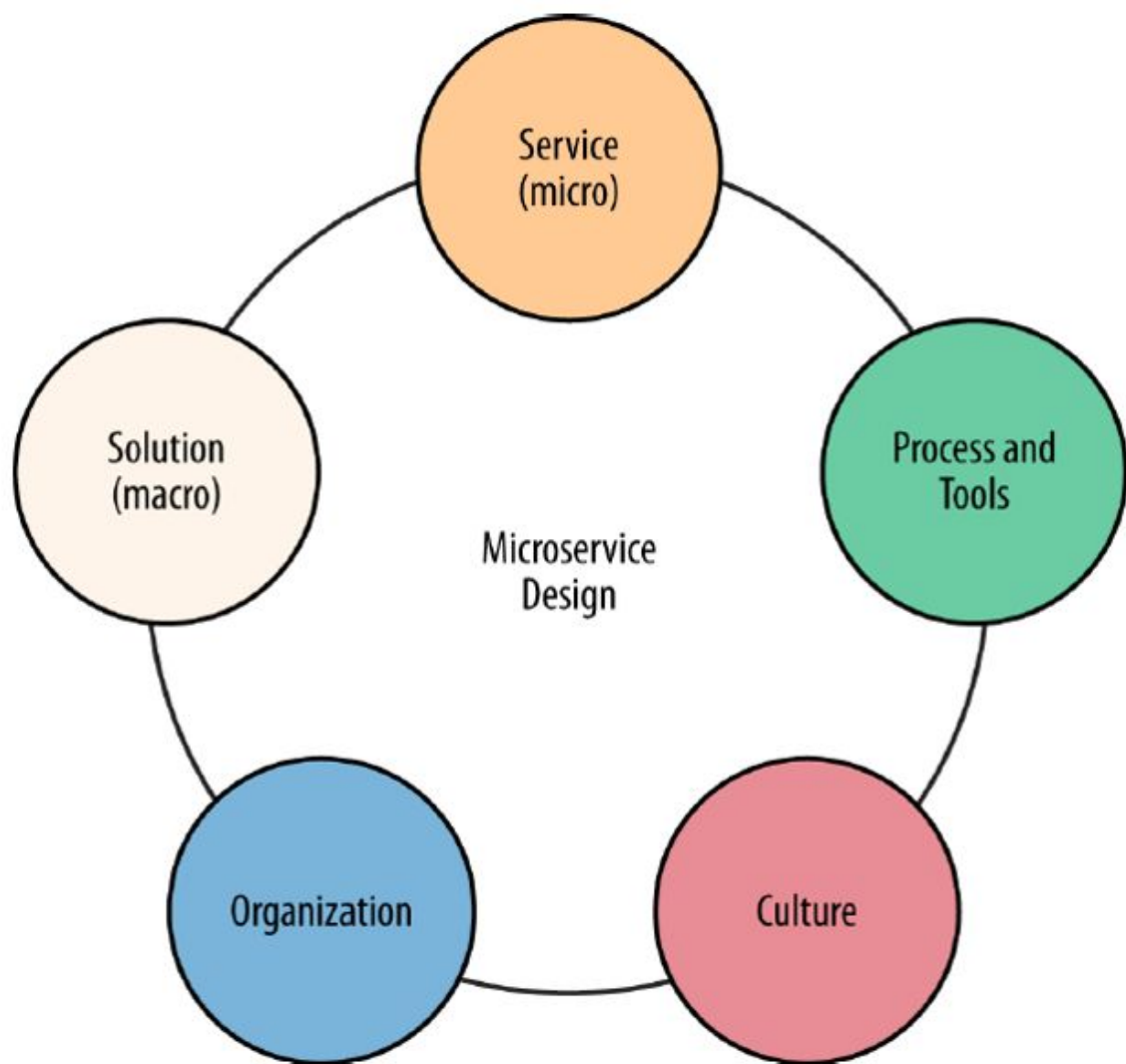
Clone or download



mattjacobs Merge pull request #1212 from mebigfatguy

Latest commit bca8d89 6 hours ago

codequality	Build changes for nebula.netflixoss	a year ago
gradle	Updated Nebula plugin to 3.2.0 and Gradle to 2.10	4 months ago
hystrix-contrib	fix logging contexts	6 hours ago
hystrix-core	fix logging contexts	6 hours ago
hystrix-dashboard	Update README.md	2 months ago
hystrix-examples-webapp	Added buffered SSE request stream that emits a collection of requests...	4 months ago



AUTO

SCOUT 24

UBER

Capital One

NETFLIX



Hootsuite™



SOUNDCLOUD

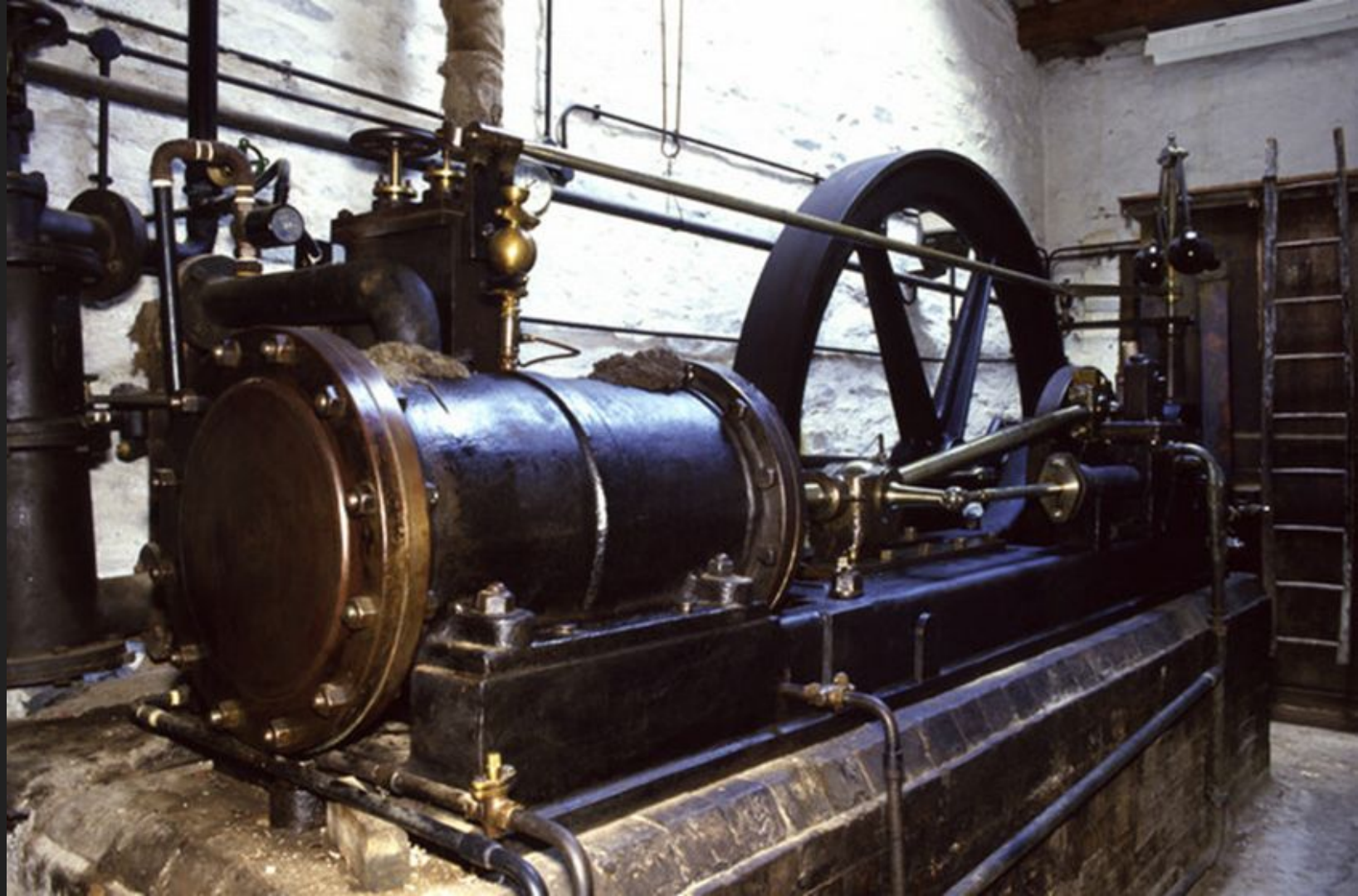
amazon®

ThoughtWorks®



Spotify®













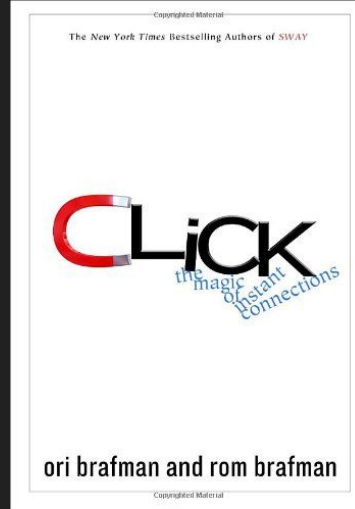
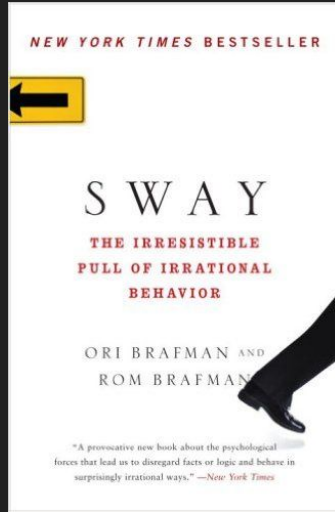
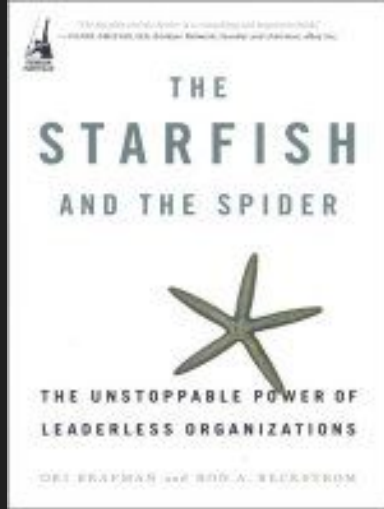
*What are these companies doing?*

# Ori Brafman

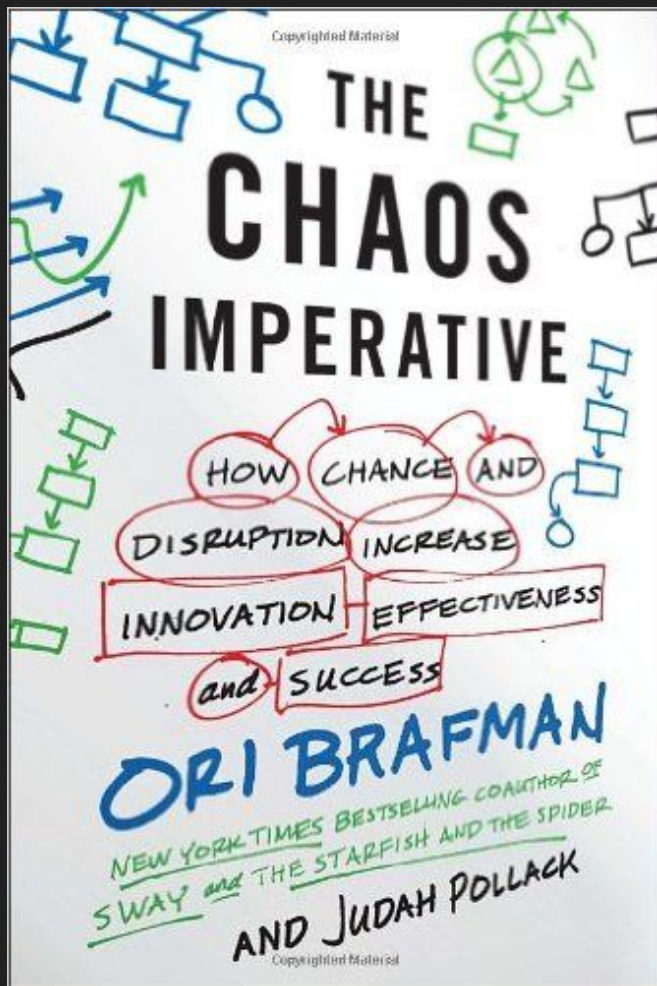
- Author
- Entrepreneur
- Stanford MBA
- UC Berkeley Fellow



# Ori Brafman







*"We all need what I call  
'contained chaos' in our  
lives and careers."*

*-- Ori Brafman*



# Brafman's Five Rules of Chaos



# Rule #1

Remember, It's Called Organized Chaos



www.gamesbase.com

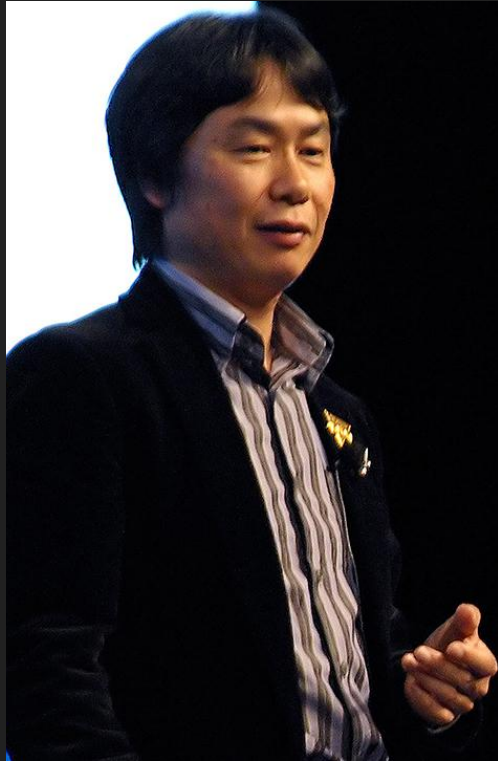
I-000000

TOP-000000

(M)(BONUS)(L)  
(2)(4600)(1)

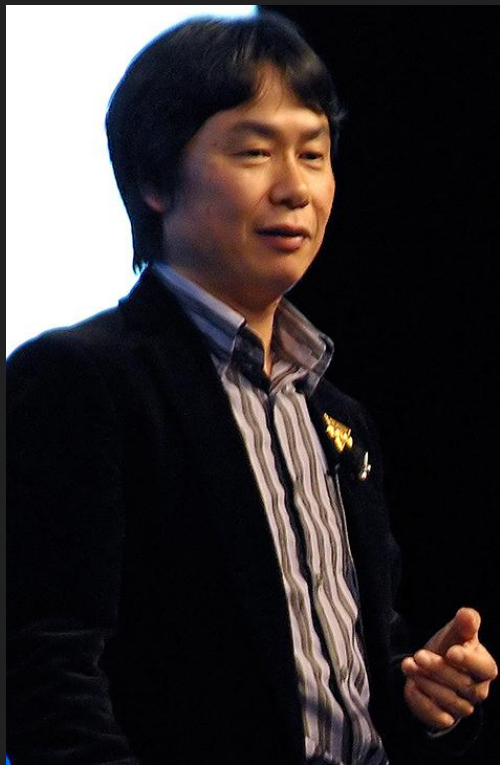


# Shigeru Miyamoto





Shigeru Miyamoto



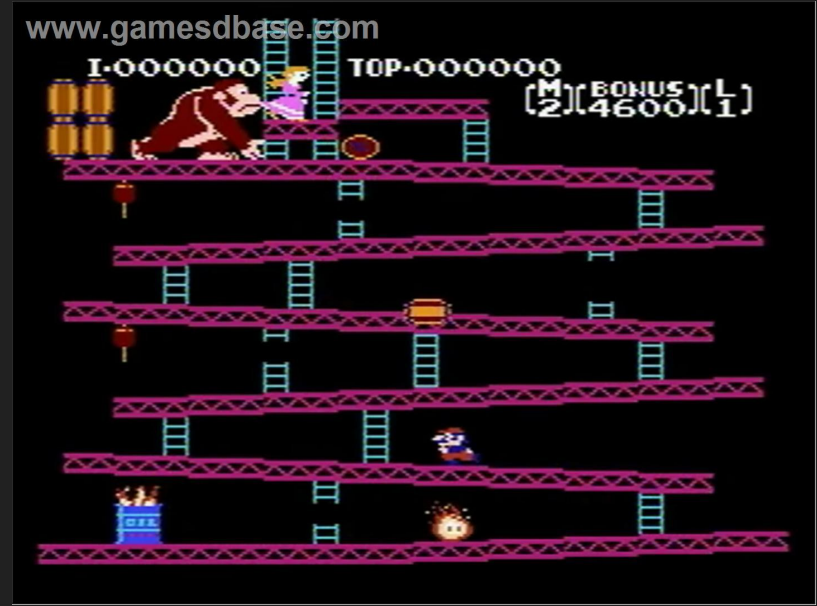
Hiroshi Yamauchi



"You need leaders  
who can maintain  
stability around the  
chaos."



"You need leaders  
who can maintain  
stability *around* the  
chaos."



## Rule #2

Avoid the Seductive Lure of  
Data and Measurements

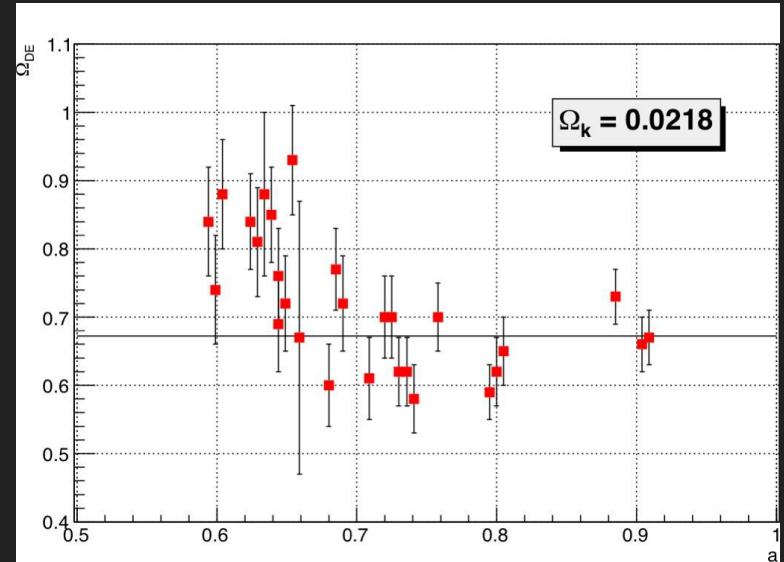








"By it's nature,  
organized chaos  
is imprecise."



## Rule #3

Create Productive White Space





**STREET  
CLOSED**

**DO NOT  
ENTER**

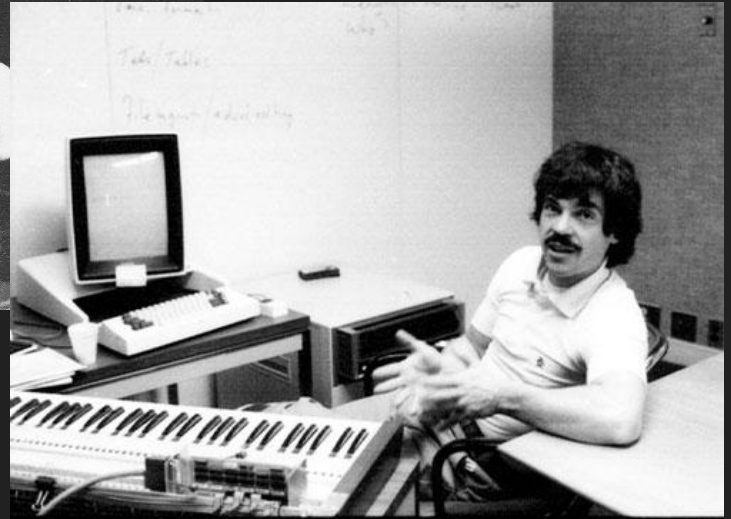
**DETOUR**













"Take time to reflect  
or daydream when  
working on a  
deadline."



## Rule #4

Embrace Unusual Suspects

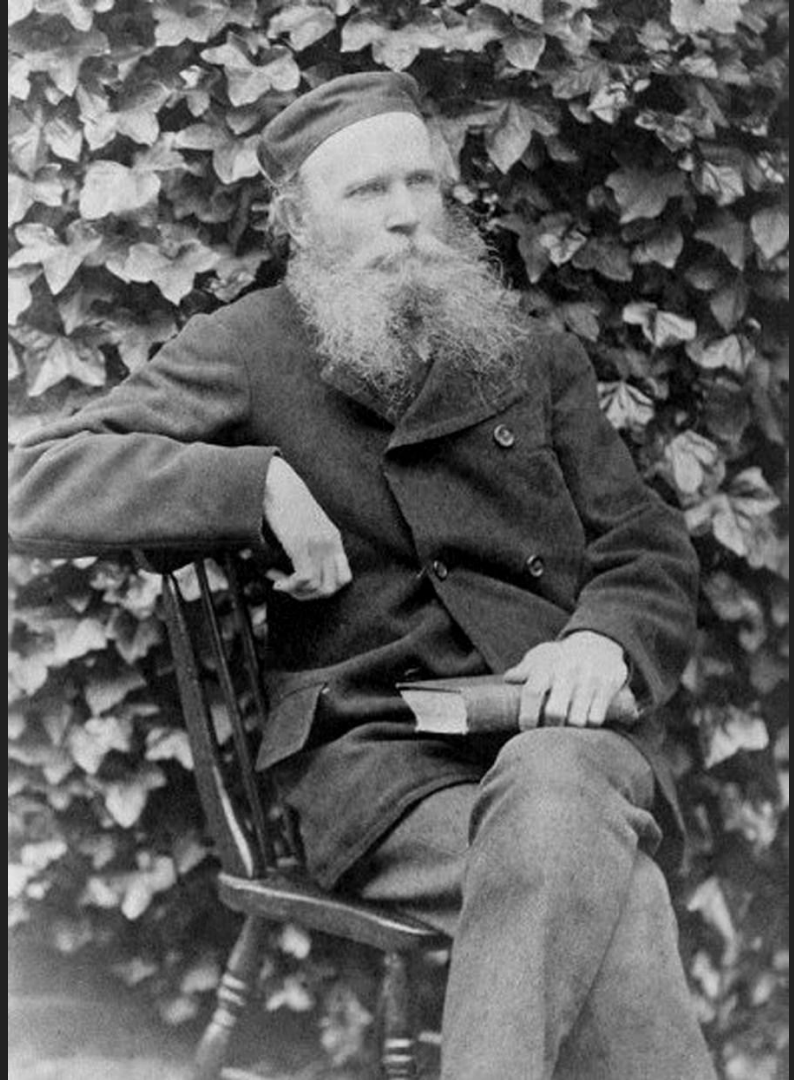


**One of these things is  
not like the other....**



# Dr. William Minor

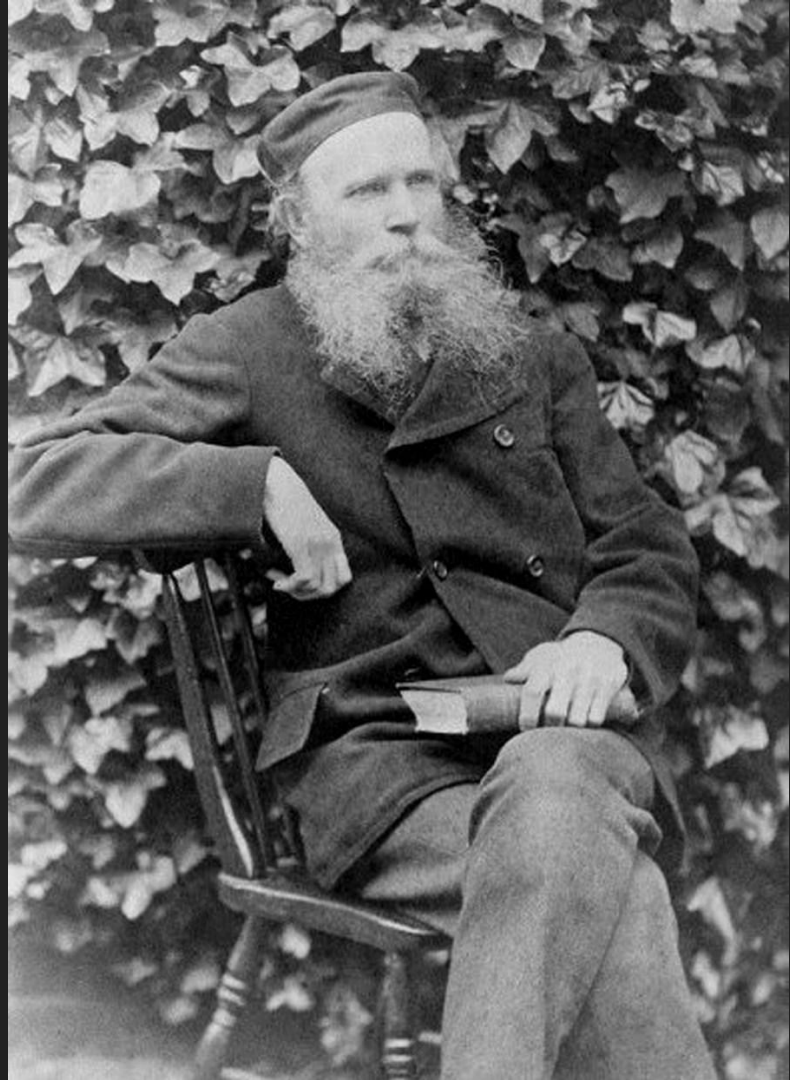
Prolific contributor to the  
Oxford English Dictionary



# Dr. William Minor

Prolific contributor to the  
Oxford English Dictionary

*from his room in England's  
Broadmoor asylum.*



"Actively seek out  
the unusual  
suspect."





Rule #5

Organize Serendipity

ser·en·dip·i·ty

/,serən'dipədē/

*noun*

the occurrence and development of events by chance in a happy or beneficial way.  
"a fortunate stroke of serendipity"

wovox.com

0.33



**Dutch government's "chair sharing" program**  
<http://www.deelstoel.nl/>

"Create openness,  
encourage the flow  
of ideas, allow  
people to bump into  
each other."





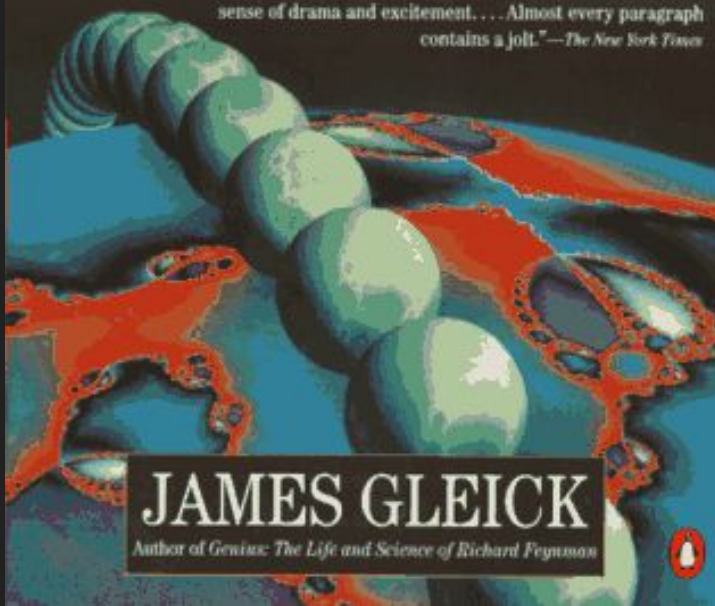
***And so...***

THE NATIONAL BESTSELLER

# CHAOS

MAKING A NEW SCIENCE

"These are fascinating stories of insight and discovery, told with a keen sense of drama and excitement. . . . Almost every paragraph contains a jolt."—*The New York Times*



**JAMES GLEICK**

*Author of Genius: The Life and Science of Richard Feynman*

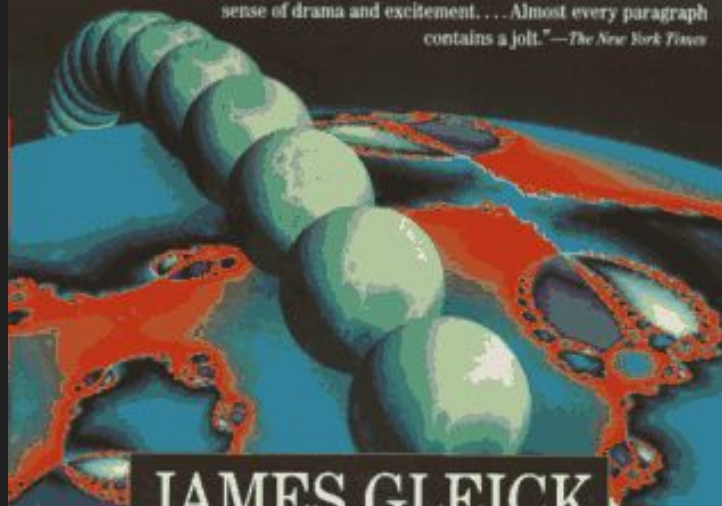


THE NATIONAL BESTSELLER

# CHAOS

MAKING A NEW SCIENCE

"These are fascinating stories of insight and discovery, told with a keen sense of drama and excitement. . . . Almost every paragraph contains a jolt."—*The New York Times*



**JAMES GLEICK**

Author of *Genius: The Life and Science of Richard Feynman*



Copyrighted Material

el

James Gleick

*Time Travel*

Ja

Copyrighted Material

*A History*



China

South Korea

Japan

Thailand

Indonesia

Papua New Guinea

Australia

New Zealand

North Pacific Ocean

South Pacific Ocean

United States

Los Angeles International Airport

Mexico

Venezuela  
Colombia

Peru

Bolivia

Chile

Argentina

✈ 14 h 15 min

Melbourne VIC

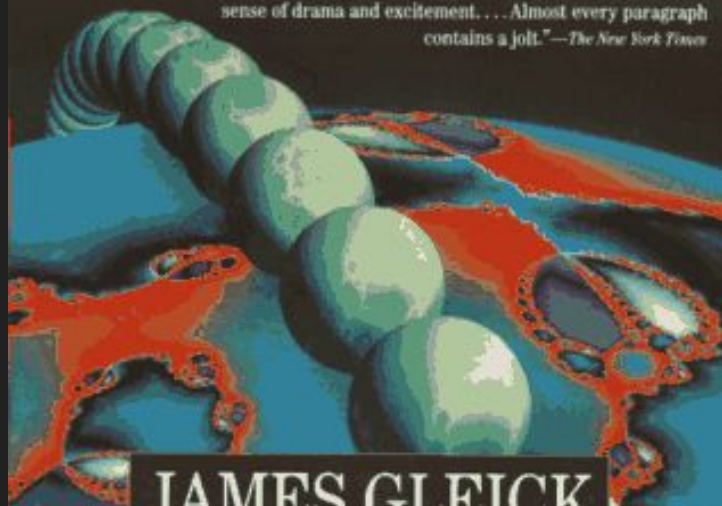


THE NATIONAL BESTSELLER

# CHAOS

MAKING A NEW SCIENCE

"These are fascinating stories of insight and discovery, told with a keen sense of drama and excitement. . . . Almost every paragraph contains a jolt."—*The New York Times*



**JAMES GLEICK**

Author of *Genius: The Life and Science of Richard Feynman*



Copyrighted Material

el

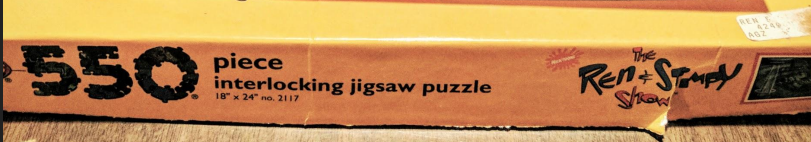
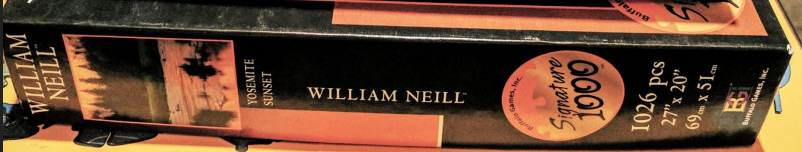
James Gleick

*Time Travel*

Ja

Copyrighted Material

*A History*





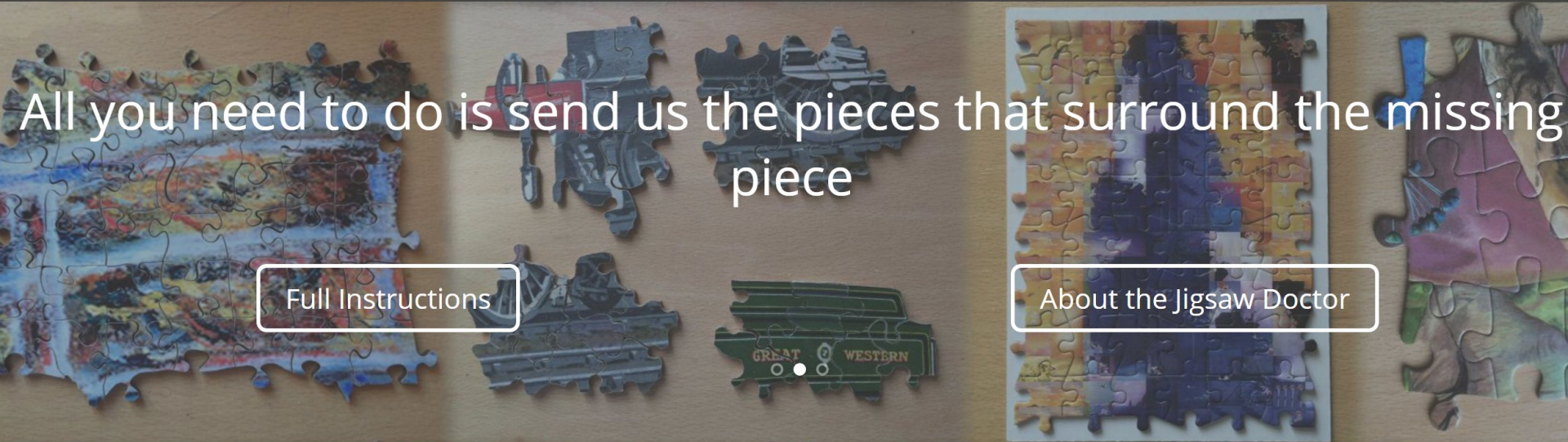








13/10/2008



All you need to do is send us the pieces that surround the missing piece

[Full Instructions](#)

[About the Jigsaw Doctor](#)







13/10/2008





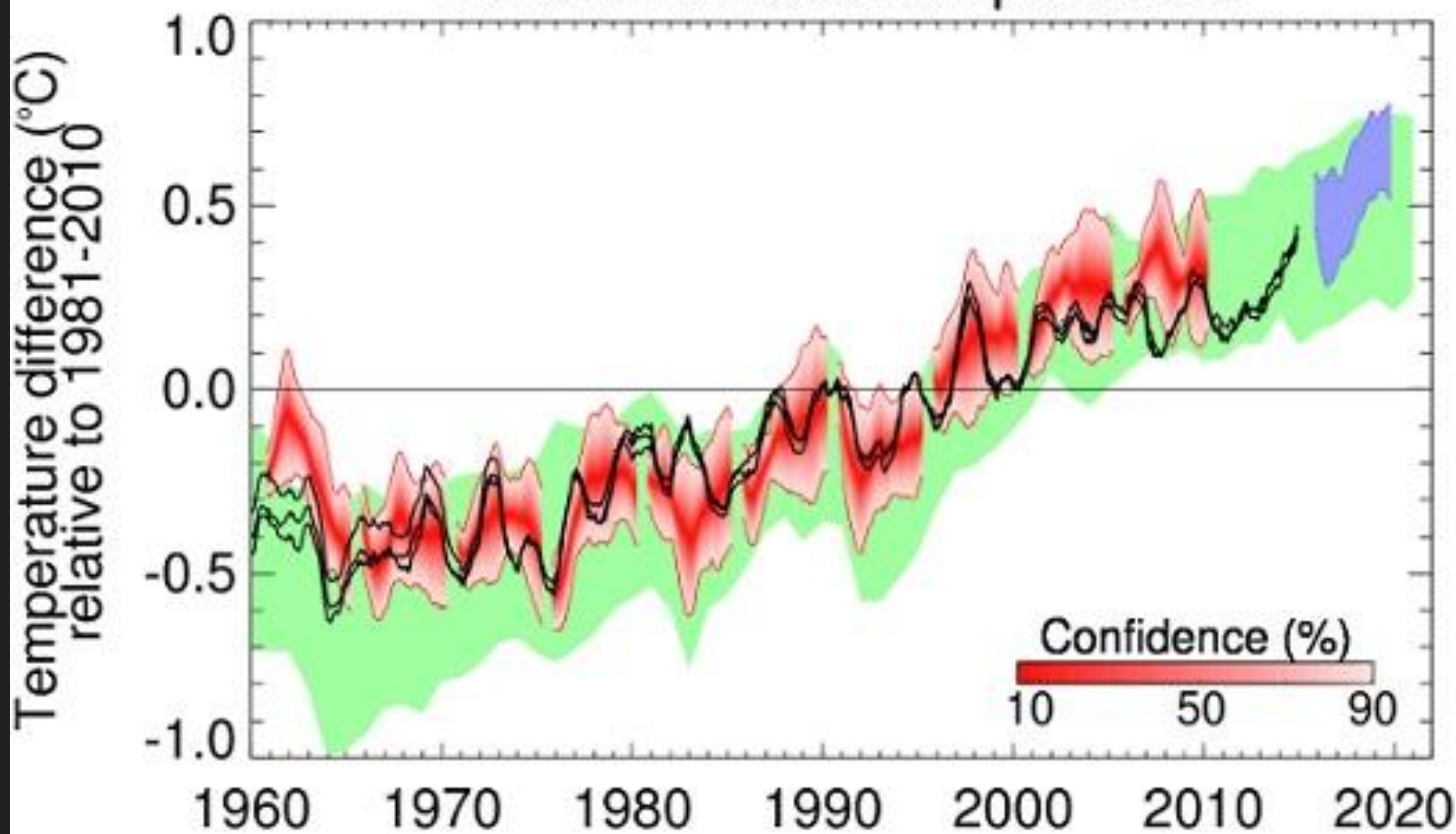
13/10/2008





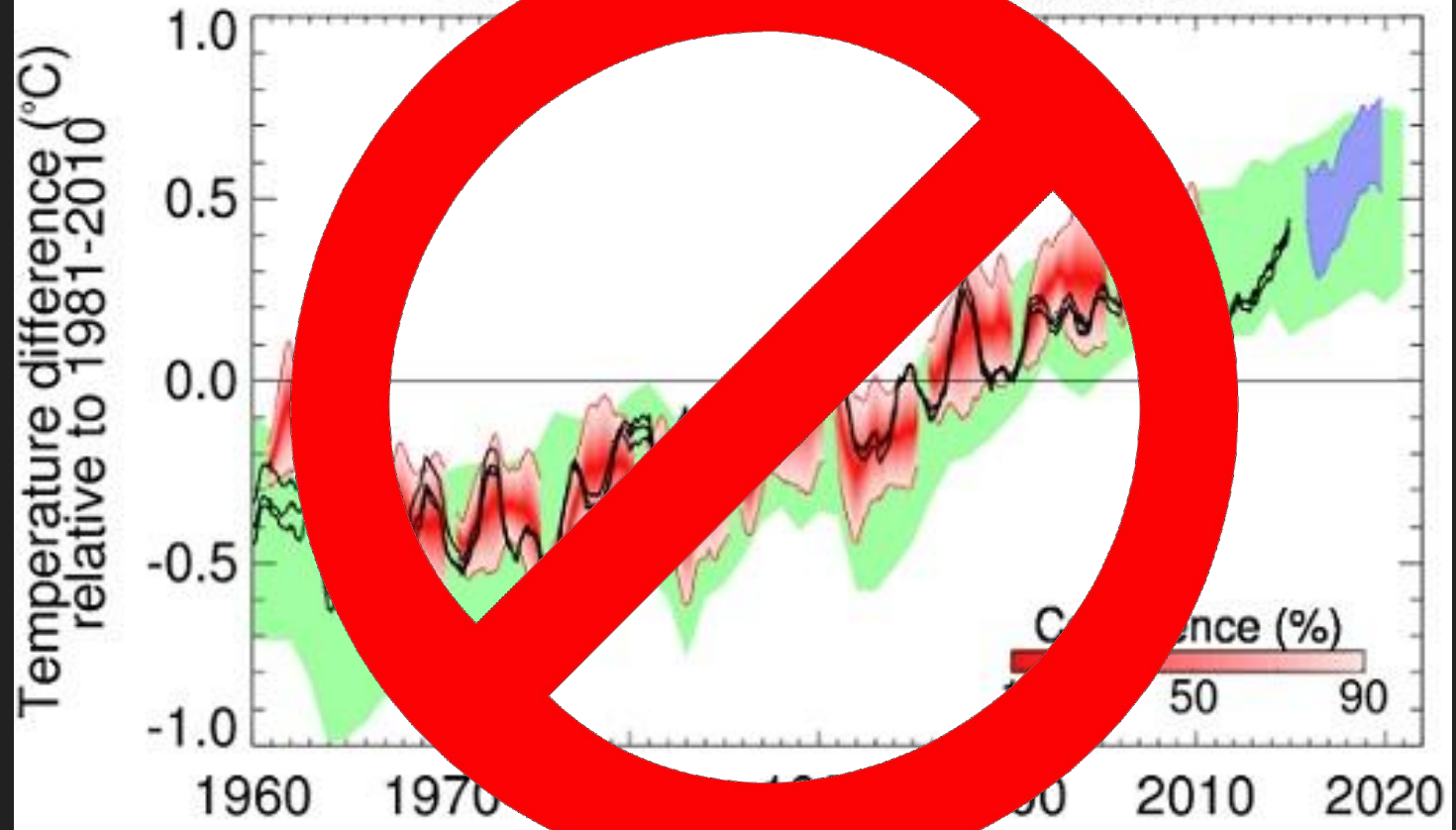


# Global annual temperature





# Global temperature



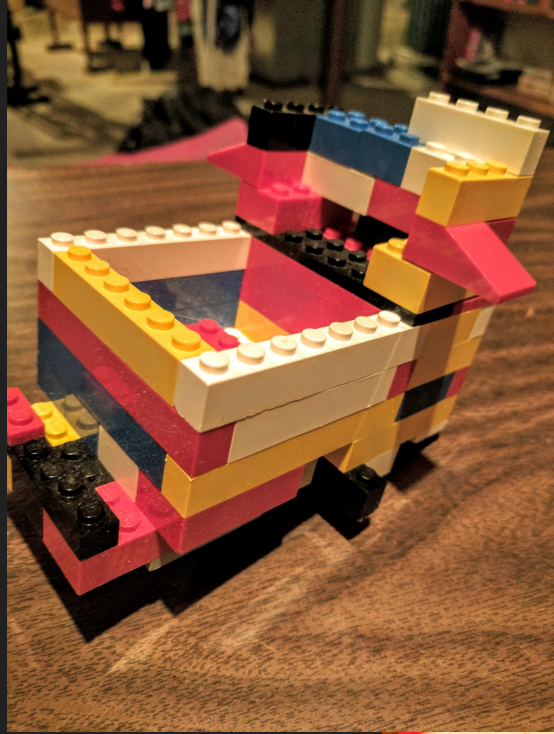




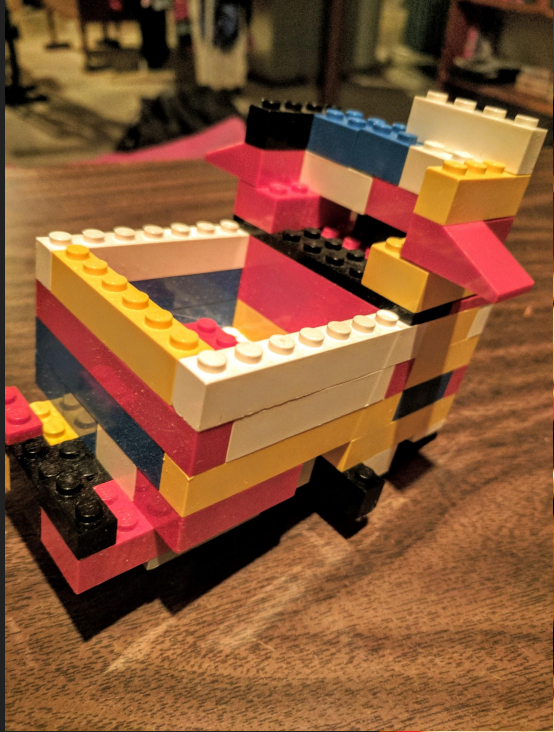




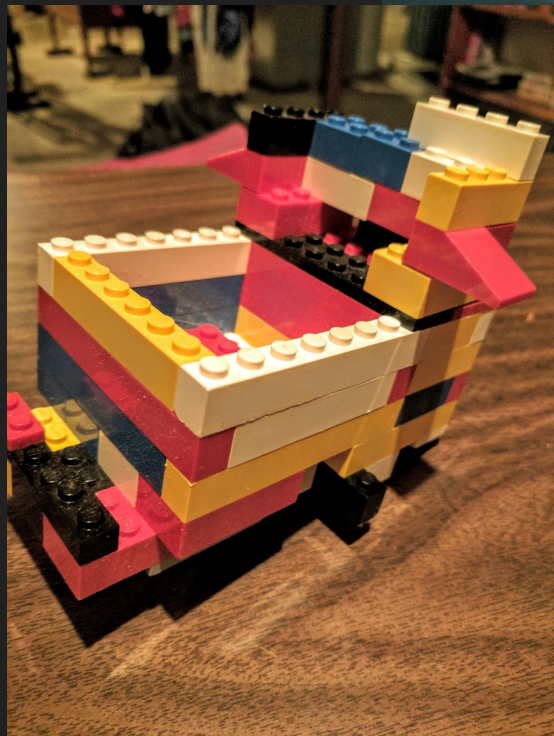
















# Brafman's Five Rules



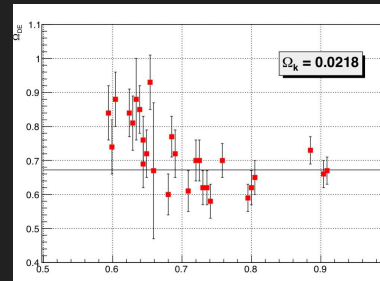
# Brafman's Five Rules

## 1. It's Called Organized Chaos



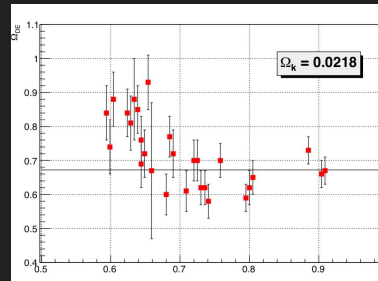
# Brafman's Five Rules

1. It's Called Organized Chaos
2. Avoid the Lure of Data



# Brafman's Five Rules

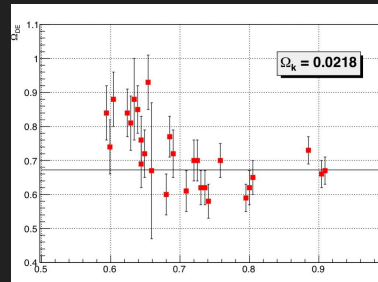
1. It's Called Organized Chaos
2. Avoid the Lure of Data
3. Create Productive White Space





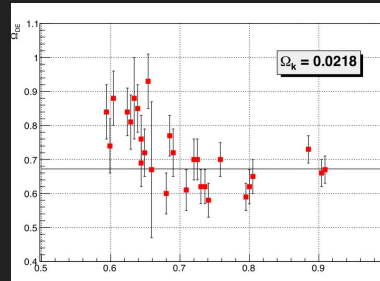
# Brafman's Five Rules

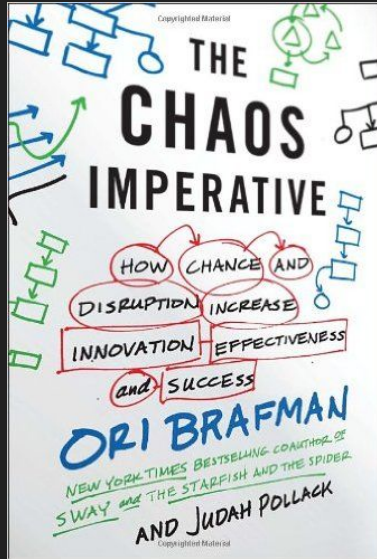
1. It's Called Organized Chaos
2. Avoid the Lure of Data
3. Create Productive White Space
4. Embrace Unusual Suspects



# Brafman's Five Rules

1. It's Called Organized Chaos
2. Avoid the Lure of Data
3. Create Productive White Space
4. Embrace Unusual Suspects
5. Organize Serendipity





*"We all need what I call 'contained chaos' in our lives and careers."*



*-- Ori Brafman*



An aerial photograph of a harbor area, likely in Boston, showing numerous sailboats in the water, a large brick building with a distinctive roof, and other urban structures. The text "Unleash the Chaos" is overlaid in white at the top.

# Unleash the Chaos

Mike Amundsen  
API Academy  
@mamund