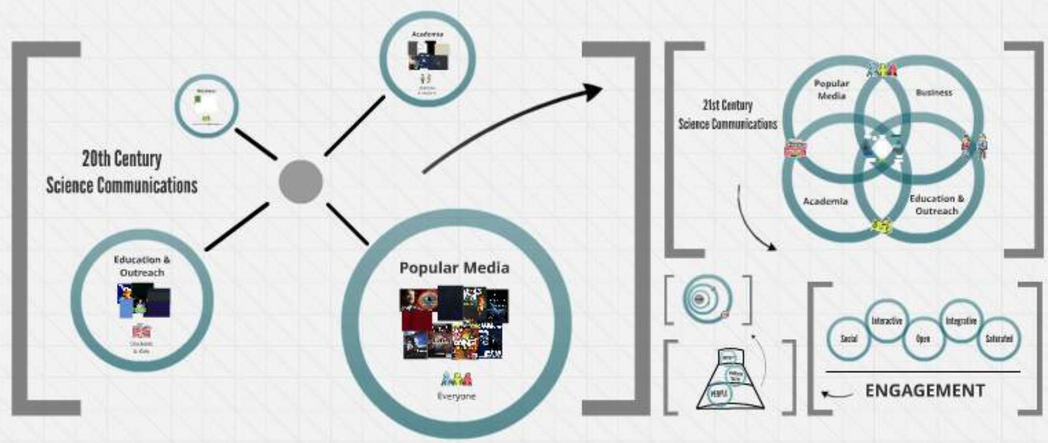
Science Communications

Liz Smith, MFA



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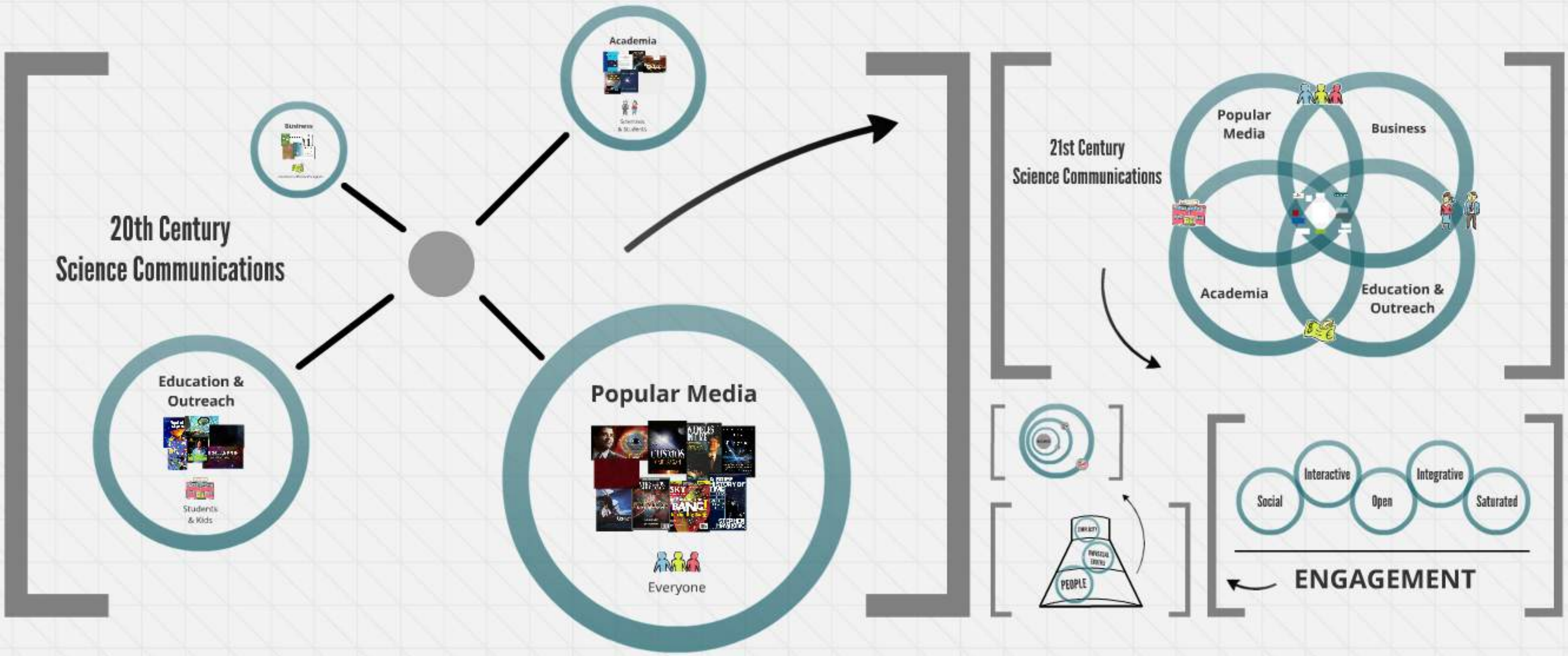

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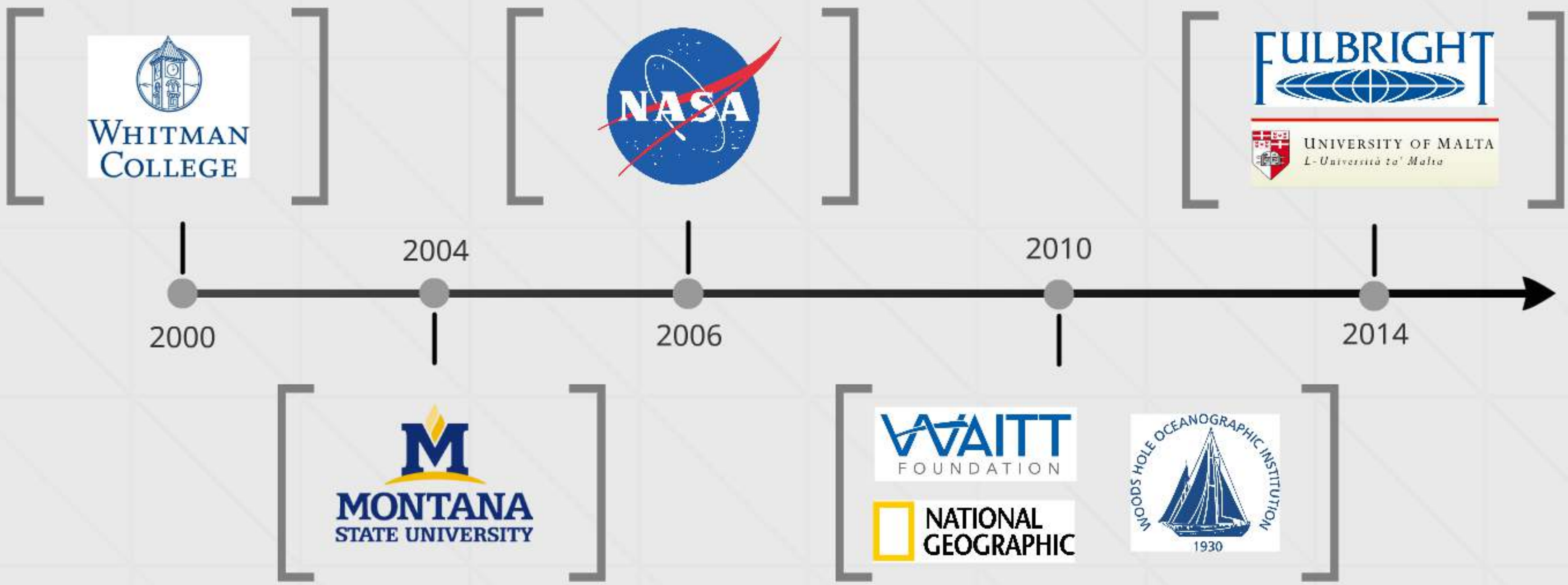

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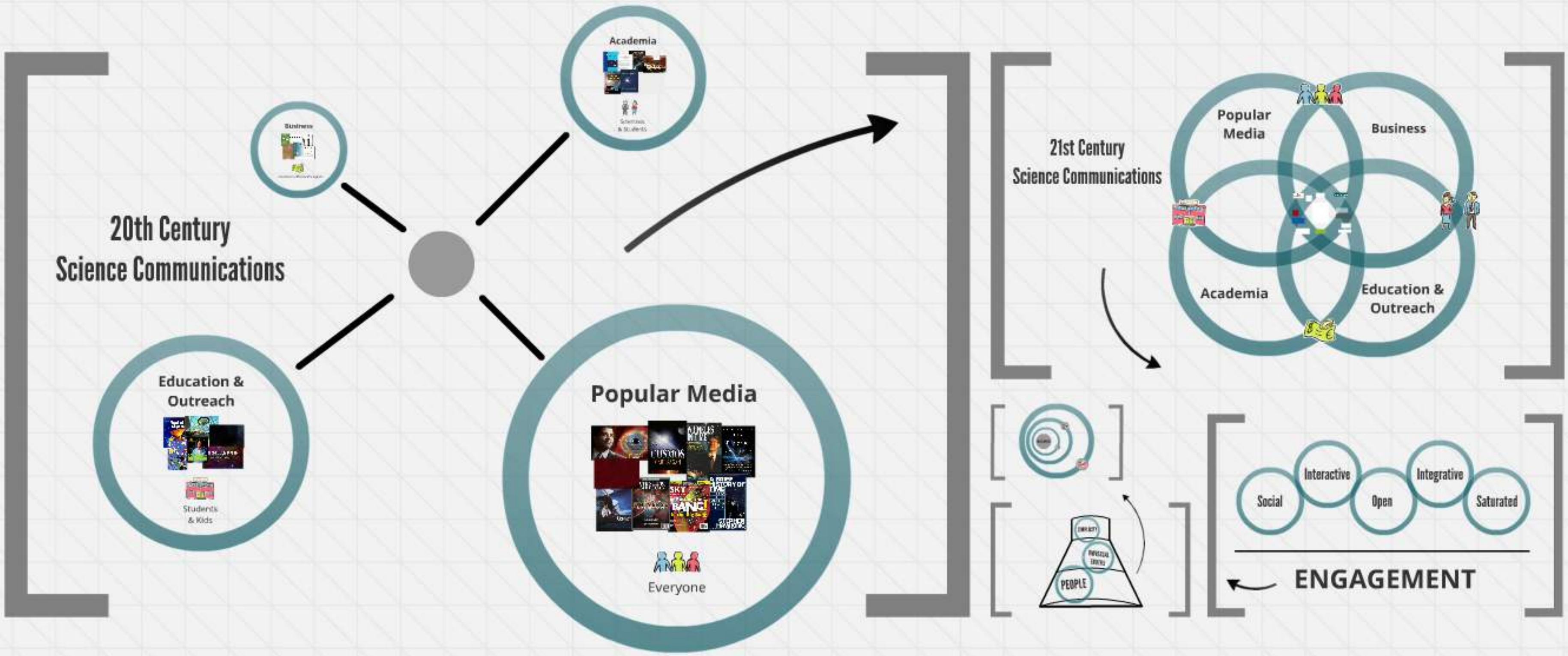
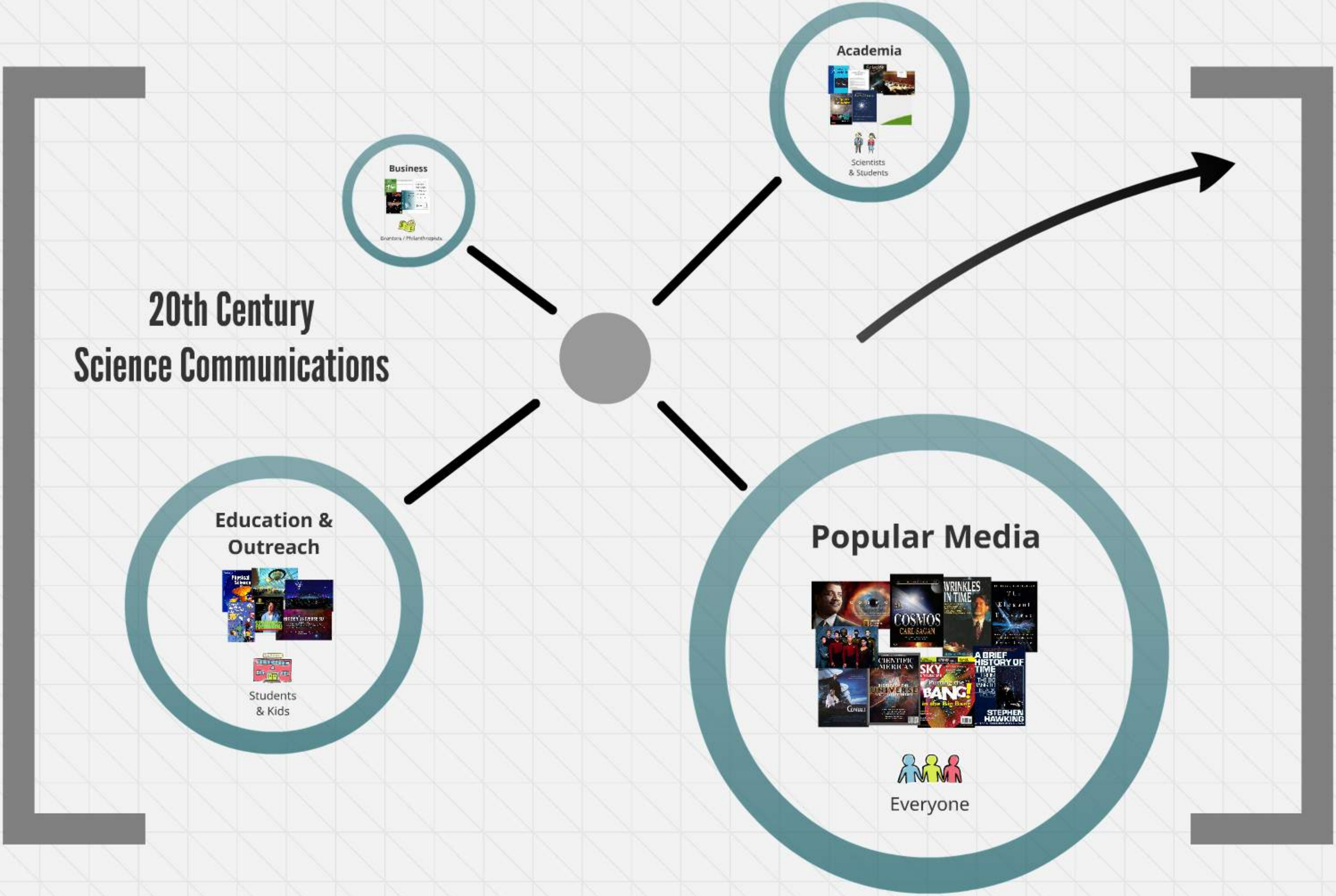
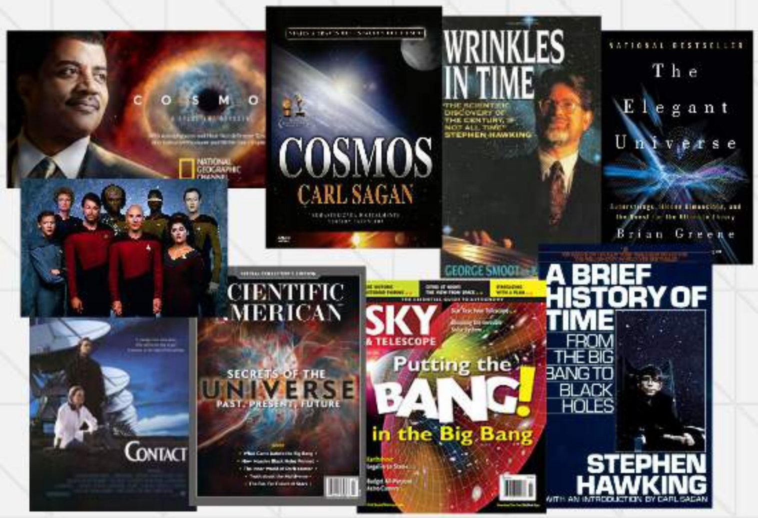



20th Century
Science Communications
Business
Grantors / Philanthropists
Academia
Scientists
& Students
Education &
Outreach
Students
& Kids
Popular Media
COSMOS
CARL SAGAN
A BRIEF HISTORY OF TIME
STEPHEN HAWKING
Everyone

Popular Media

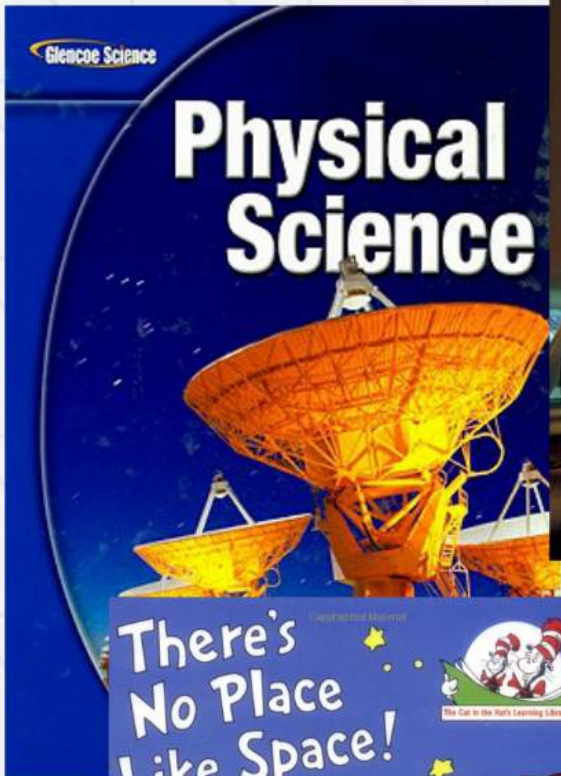


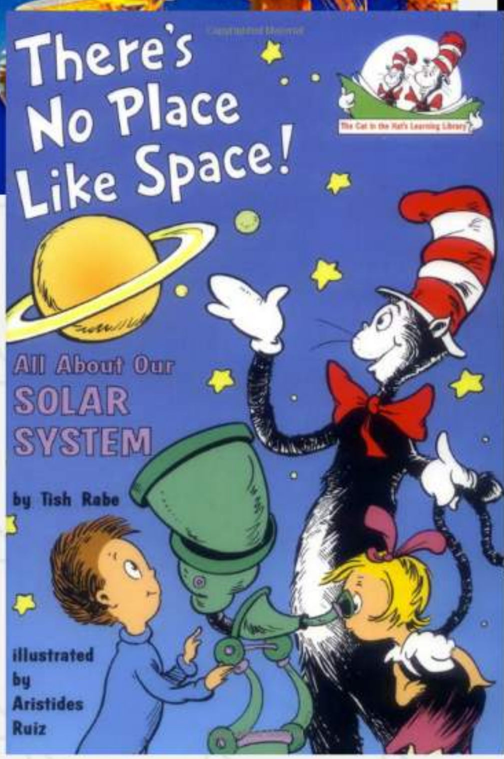
Everyone

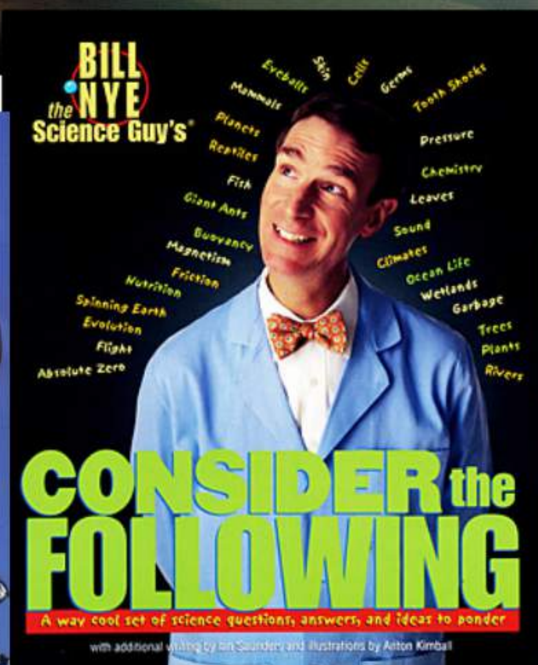

COSMOS
A SPACETIME ODYSSEY
With Astrophysicist and Host Neil deGrasse Tyso
and Executive Producer and Writer Ann Druyan
NATIONAL GEOGRAPHIC CHANNEL
VIAJES A TRAVÉS DEL ESPACIO Y DEL TIEMPO
COSMOS
CARL SAGAN
REMASTERIZADA DIGITALMENTE
VERSIÓN EXTENDIDA
DVD
WRINKLES IN TIME
"THE SCIENTIFIC DISCOVERY OF THE CENTURY, IF NOT ALL TIME"
STEPHEN HAWKING
GEORGE SMOOT AND K
NATIONAL BESTSELLER
The Elegant Universe
Superstrings, Hidden Dimensions, and the Quest for the Ultimate Theory
Brian Greene
SPECIAL COLLECTOR'S EDITION
CIENTIFIC
MERICAN
SECRETS OF THE UNIVERSE
PAST, PRESENT, FUTURE
INSIDE
• What Came before the Big Bang •
• How Massive Black Holes Formed •
• The Inner World of Dark Matter •
• Truth about the Multiverse •
• The Far, Far Future of Stars •
A message from deep space.
Who will be the first to go?
A journey to the heart of the universe.
CONTACT
THE ESSENTIAL GUIDE TO ASTRONOMY
SKY & TELESCOPE
Putting the BANG! in the Big Bang
100 WEEKS ON THE NEW YORK TIMES BESTSELLER LIST
THE MILLION-COPY HARDCOVER BESTSELLER
A BRIEF HISTORY OF TIME
FROM THE BIG BANG TO BLACK HOLES
STEPHEN HAWKING
WITH AN INTRODUCTION BY CARL SAGAN

Education & Outreach

Students
& Kids


Glencoe Science
Physical Science


There's No Place Like Space!
The Cat in the Hat's Learning Library
All About Our SOLAR SYSTEM
by Tish Rabe
illustrated by Aristides Ruiz


BILL NYE the Science Guy's
CONSIDER the FOLLOWING
A way cool set of science questions, answers, and ideas to ponder

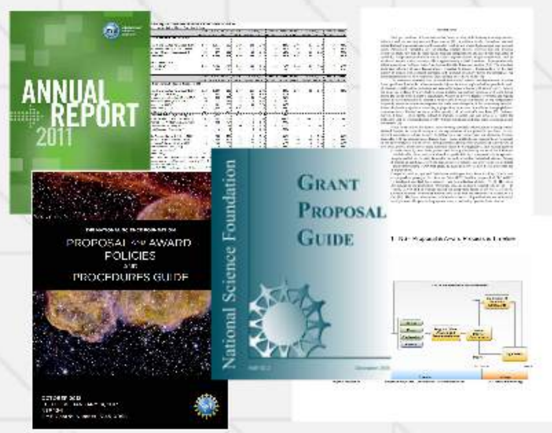

HIDDEN UNIVERSE 3D
DECEMBER CINEMA PRODUCTIONS
FILM VICTORIA SWINBURNE UNIVERSITY OF TECHNOLOGY EUROPEAN SOUTHERN OBSERVATORY (ESO)
TONY WRIGHT MACGILLIVRAY FREEMAN FILMS STEPHEN AMEZDROZ RUSSELL SCOTT
hiddenuniversemovie.com
Coming Soon to Select IMAX® Theatres and Giant Screen Cinemas
hiddenuniversemovie.com

Academia

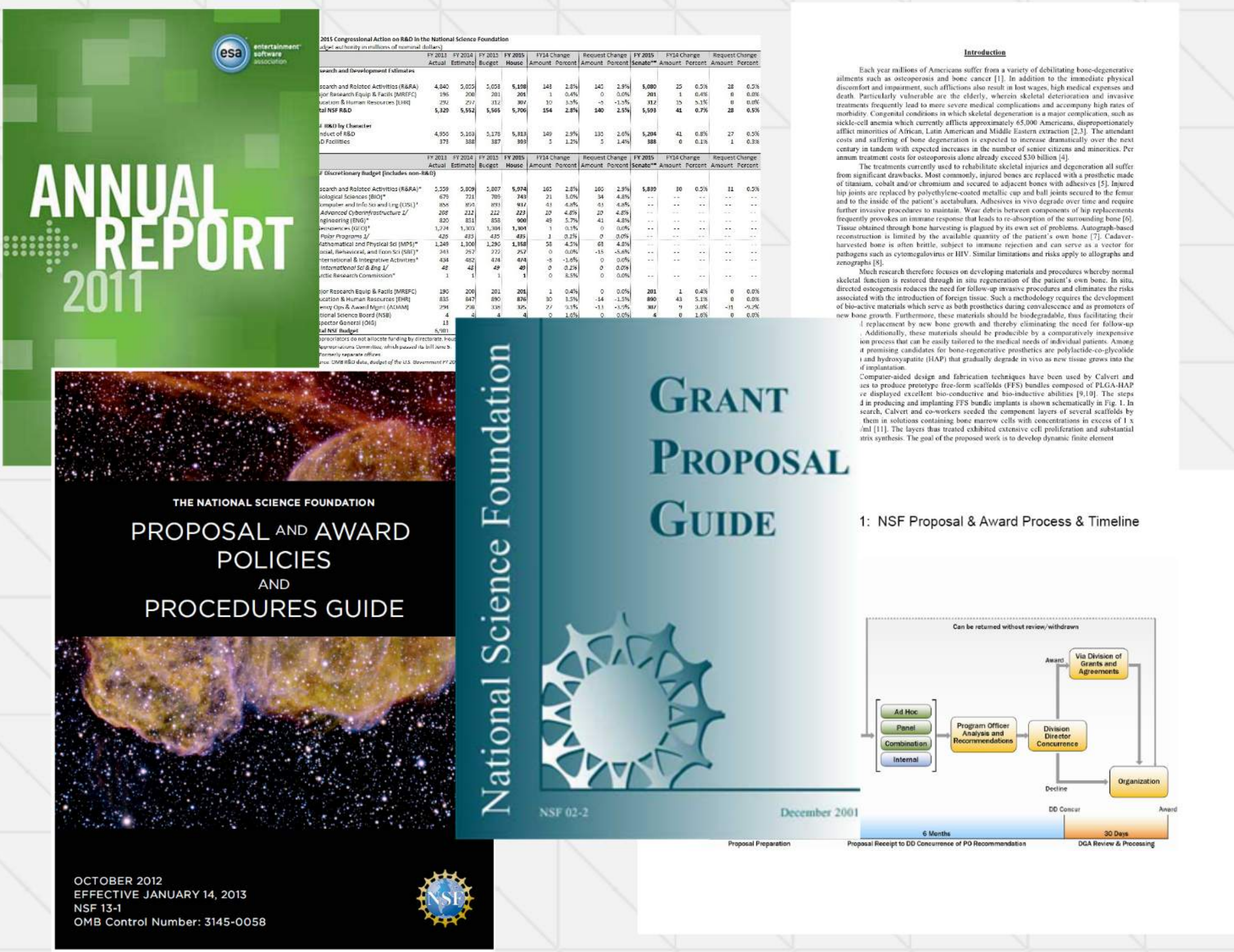
Scientists
& Students

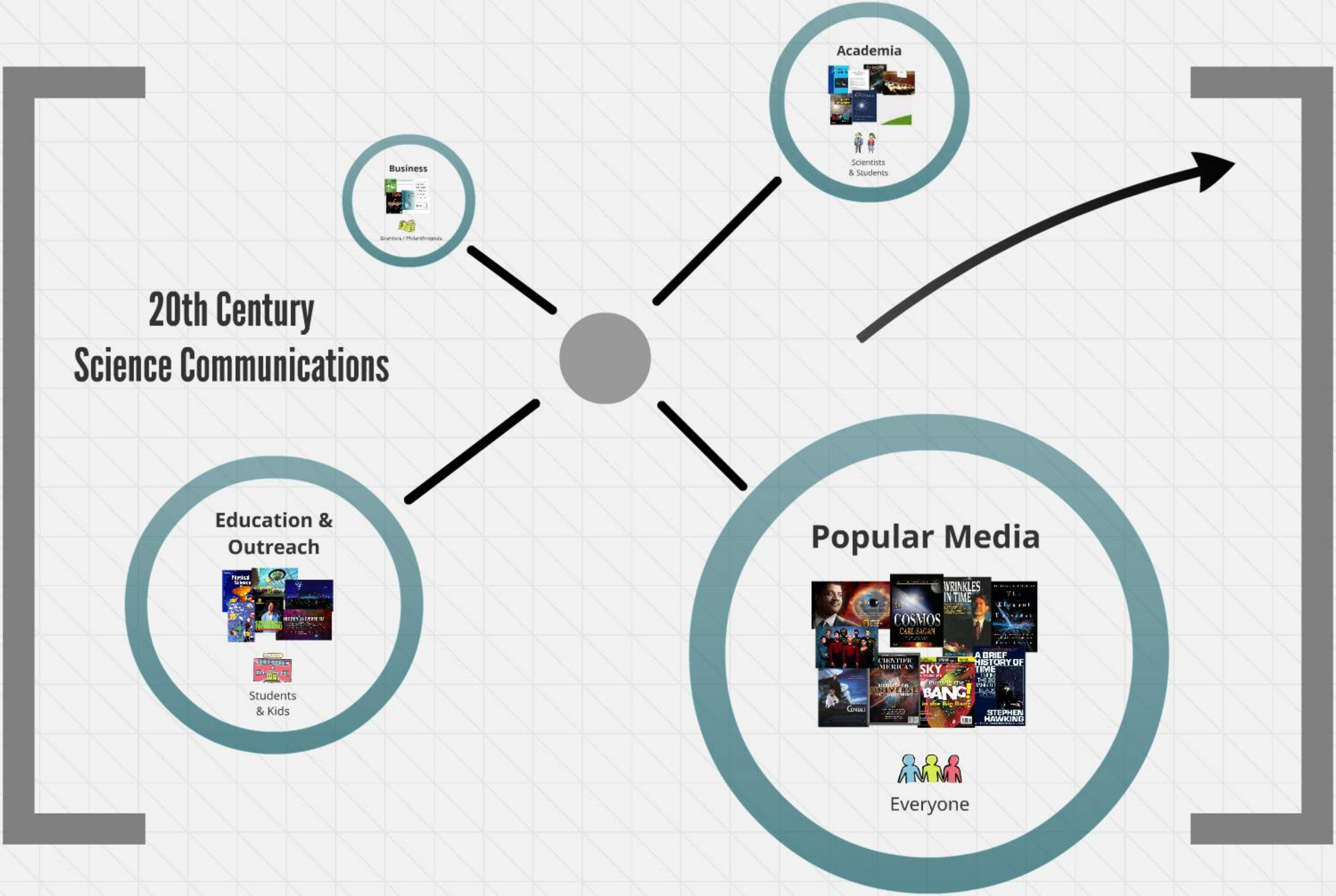

Astronomy & Astrophysics
observation
major merger
Vol. 538 - Part II
FEBRUARY • 2012
NUMBER 1, PART 1
THE ASTROPHYSICAL JOURNAL
2000 MARCH 1
Science
14 August 2009
Fermi
Constructing the World
Lecture 1: A Scrutable World
High Energy Astrophysics
Second Edition
VOLUME 2
Stars, the Galaxy and the interstellar medium
MALCOLM S. LONGAIR
Astrophysics for Physicists
Arnab Rai Choudhuri
CAMBRIDGE
1. Project galaxies into radius-redshift space
2. Determine the density surface using a kernel density estimate
3. Calculate the Caustic Amplitude
4. Solve for the mass profile
Caustic Mass Estimate Procedure
The Need for HPC Computing
Calculate density for a cluster with 1,000,000 particles
x 1000 Bootstrap Error Analysis per Cluster
x 3000 Clusters
Using the escape velocity surface to estimate an interior mass profile is difficult when observing real clusters. Uncertainties arise from a lack of knowledge about the shape of the mass distribution and 3D velocities of the galaxies. By observing simulated clusters we have all this information and can "observe" a set of clusters with this knowledge to test the theoretical limits of our technique. We find that we recover the mass within the critical radius of a cluster to 12%. The uncertainty is entirely due to non-smooth shapes in the cluster not captured by our mass model.
Future Work
Galaxy clusters are the most recently collapsed objects in the universe. Their number as a function of mass depends on the cosmological parameters which govern the history and evolution of our universe. By using large surveys of galaxy clusters and the member galaxies in them, we can calculate the potential mass of the systems and create a number function for the sample. We are currently following up on a large cluster sample in the Sloan Digital Sky Survey by gathering spectra for galaxies missed in the survey. We will then have a complete sample of nearly 1000 clusters for which we can estimate unique masses and provide constraints for cosmology. In all this work, high performance computing plays a vital role in analysis and visualization of our large data sets.
Acknowledgments
similar clusters in the real universe have revealed discrepancies. Because the potential mass does not require the cluster to be in equilibrium, it stands as a worthy additional measurement of the masses.

Business

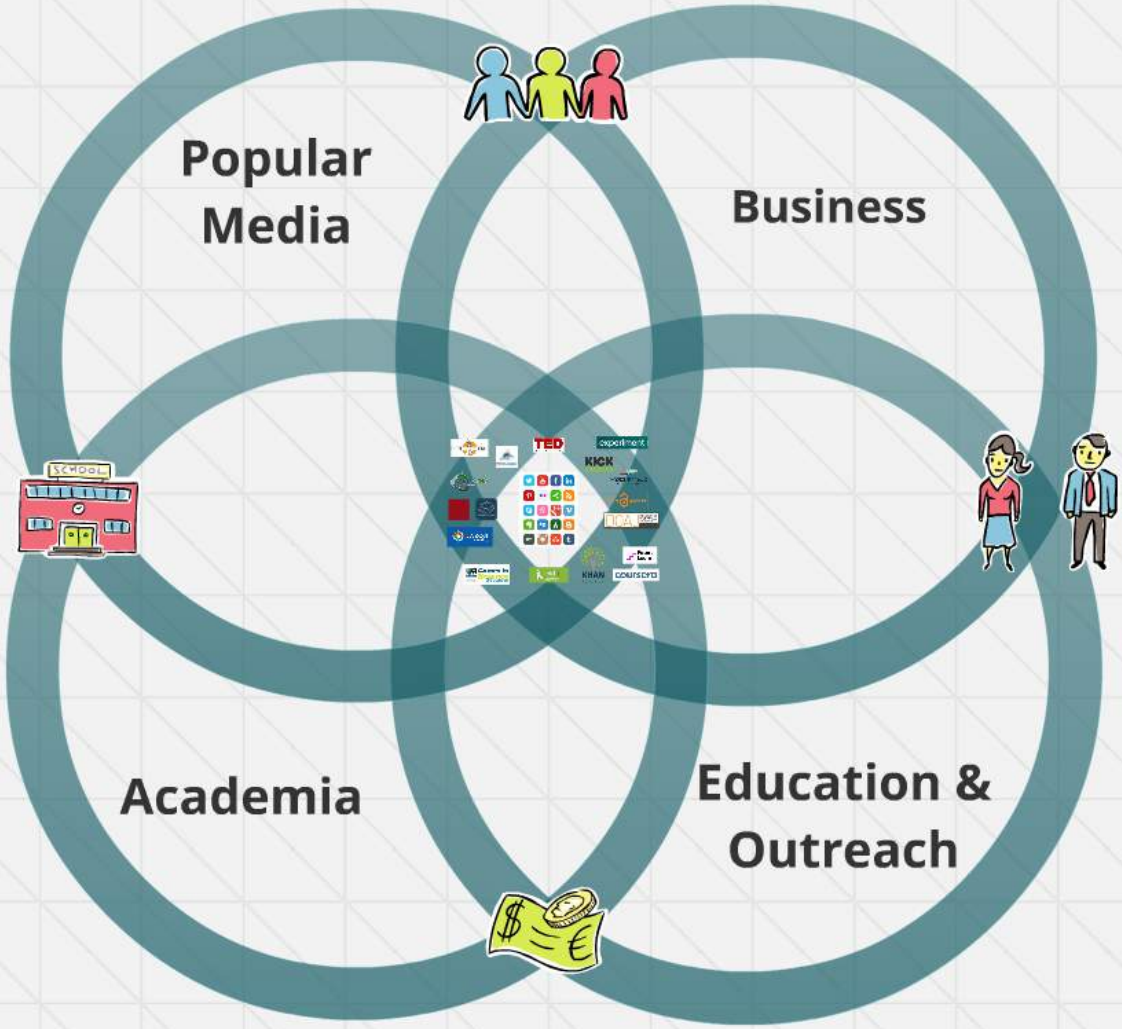


Grantors / Philanthropists


esa entertainment software association
ANNUAL REPORT 2011
2015 Congressional Action on R&D in the National Science Foundation
Introduction
THE NATIONAL SCIENCE FOUNDATION
PROPOSAL AND AWARD POLICIES AND PROCEDURES GUIDE
OCTOBER 2012
EFFECTIVE JANUARY 14, 2013
NSF 13-1
OMB Control Number: 3145-0058
National Science Foundation
GRANT PROPOSAL GUIDE
NSF 02-2
December 2001
1: NSF Proposal & Award Process & Timeline
Can be returned without review/withdrawn
Award
Via Division of Grants and Agreements
Ad Hoc
Panel
Combination
Internal
Program Officer Analysis and Recommendations
Division Director Concurrence
Organization
Decline
DD Concur
Award
6 Months
30 Days
Proposal Preparation
Proposal Receipt to DD Concurrence of PO Recommendation
DGA Review & Processing


20th Century
Science Communications
Business
Grantors / Philanthropists
Academia
Scientists
& Students
Education &
Outreach
Students
& Kids
Popular Media
Everyone

21st Century Science Communications



CITIZEN SCIENCE

OPENROV

TED
Ideas worth spreading

experiment

KICK
STARTER

ResearchGATE
scientificnetwork

RocketHub
LAUNCH, FUND, AND FLY!

OPEN ACCESS

MENDELEY

Academia.edu

DOAJ
DIRECTORY OF OPEN ACCESS JOURNALS

JASON
Learning

Future Learn

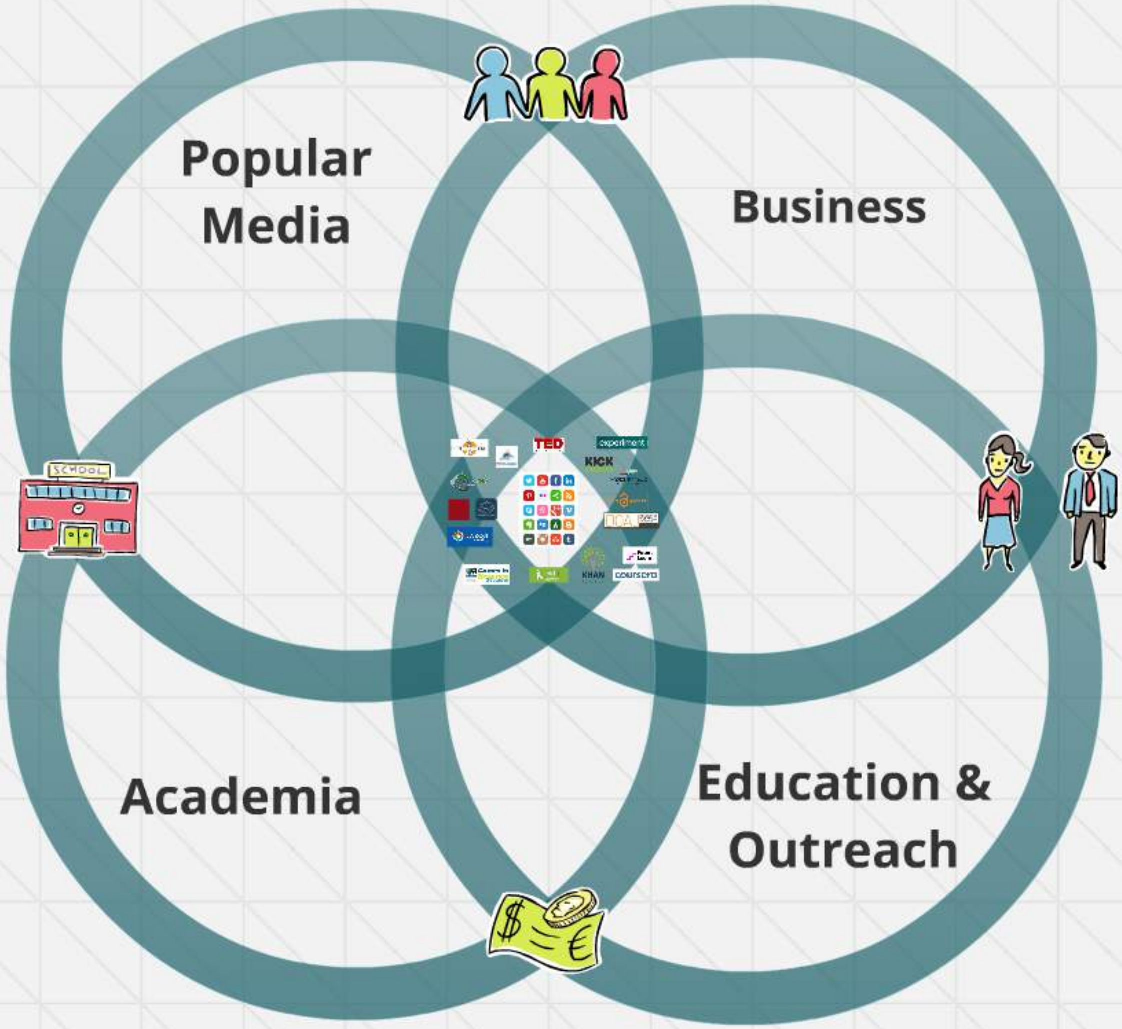
Games in Science Education

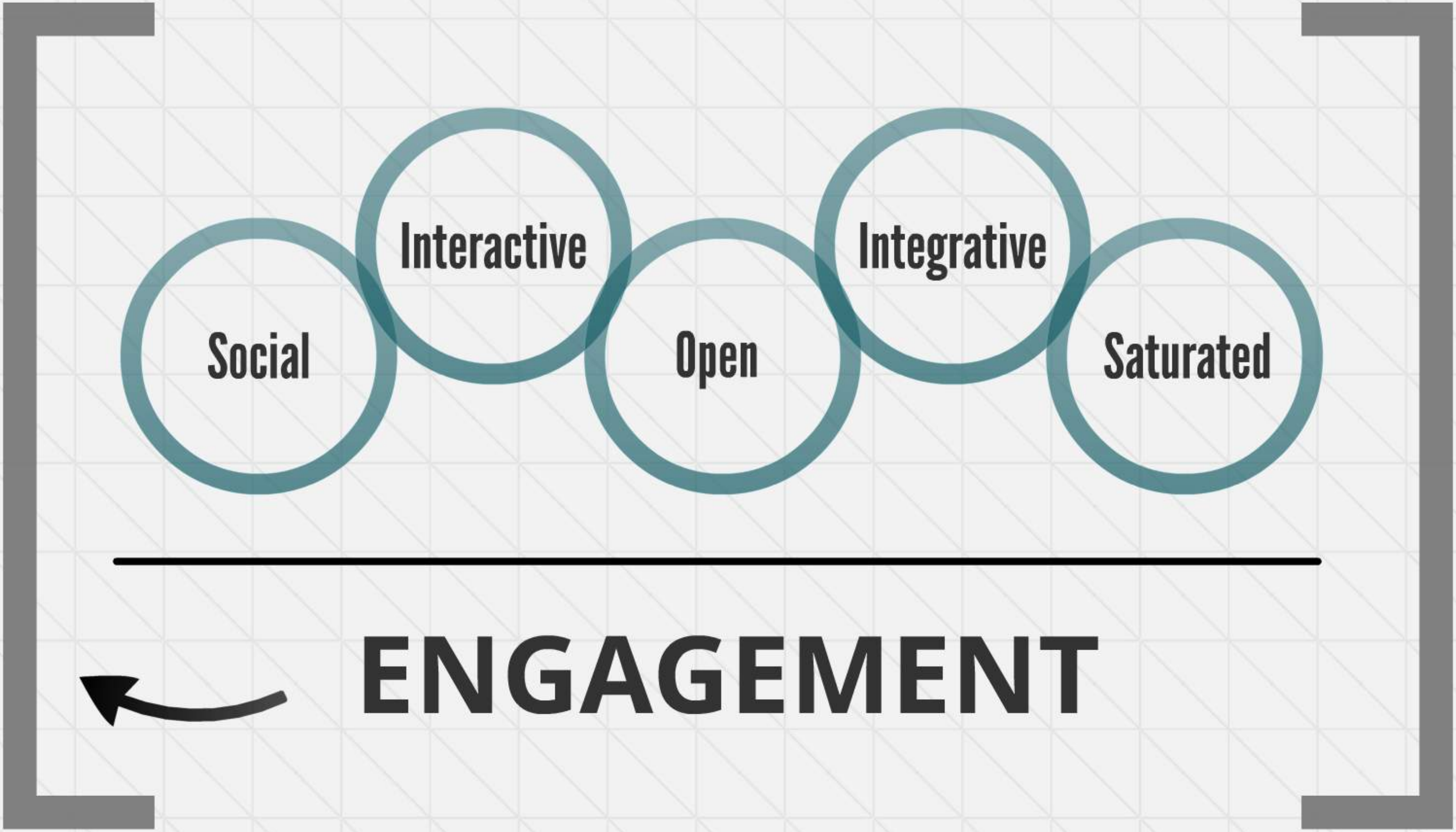
fold it
Solve Puzzles for Science

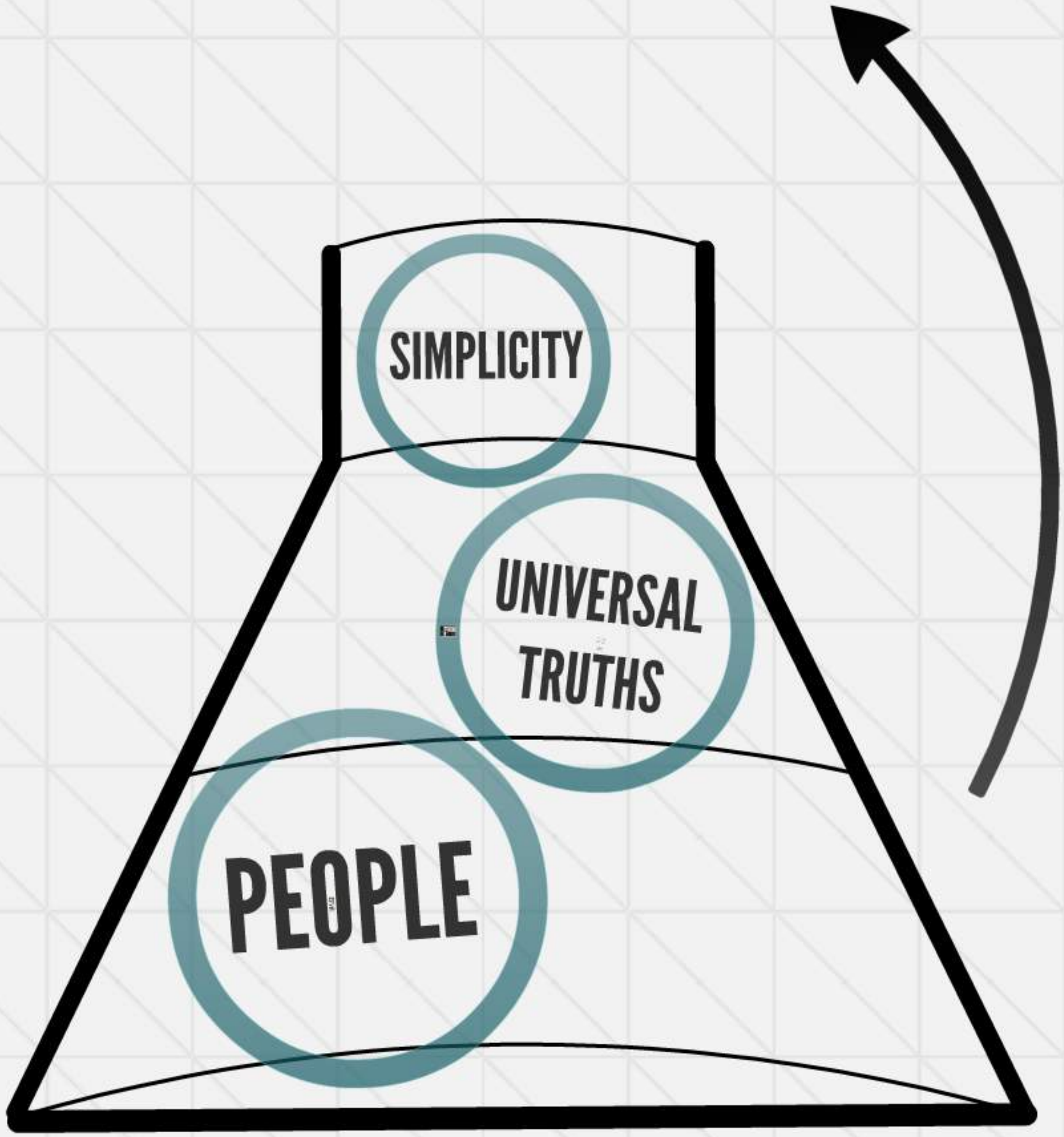
KHAN
ACADEMY

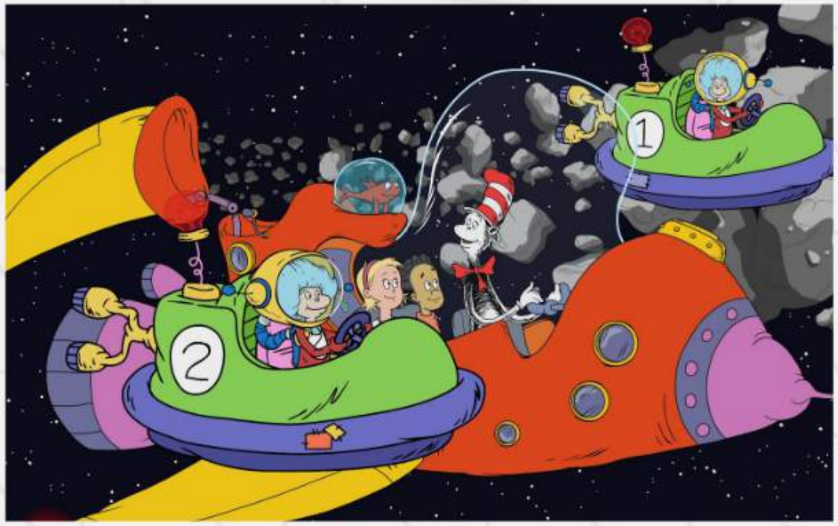
coursera

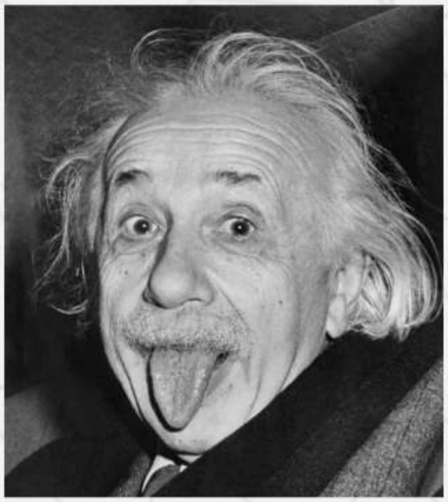
21st Century
Science Communications



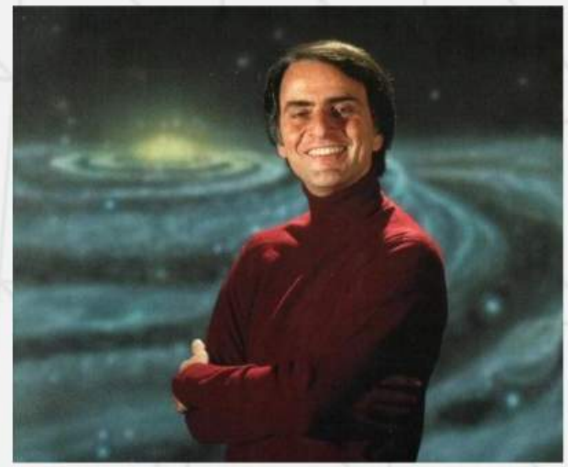

Interactive
Integrative
Social
Open
Saturated
ENGAGEMENT

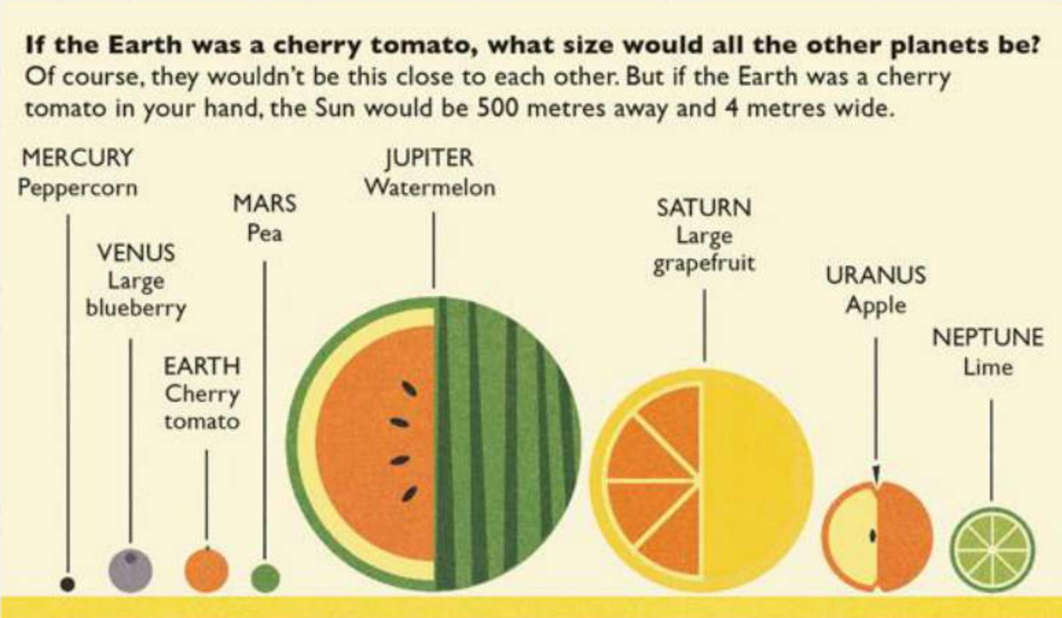

SIMPLICITY
UNIVERSAL TRUTHS
PEOPLE



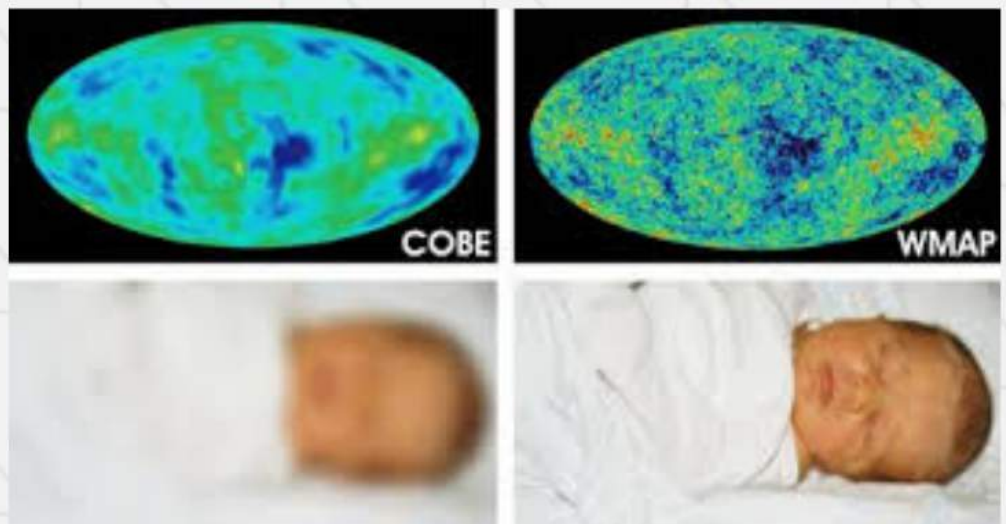


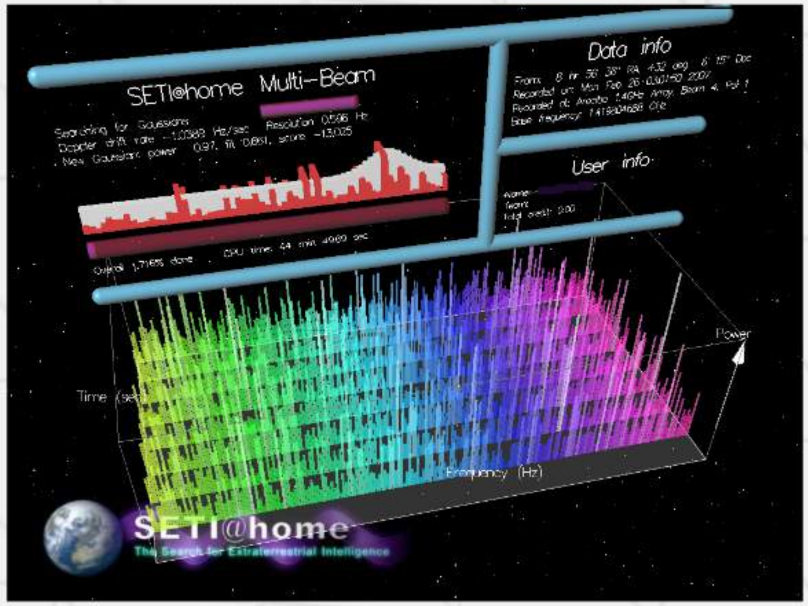
Include Characters



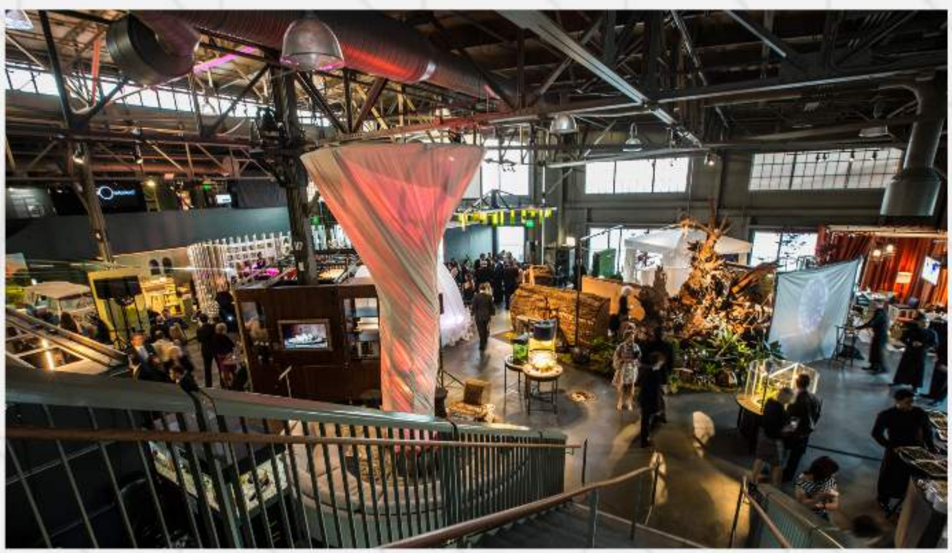


Create Human Context





Enable Interaction



PEOPLE

SIMPLICITY

UNIVERSAL TRUTHS

WHEN I heard the learn'd astronomer;
When the proofs, the figures, were ranged in columns before me;
When I was shown the charts and the diagrams, to add, divide, and measure them;
When I, sitting, heard the astronomer, where he lectured with much applause in the lecture-room,
How soon, unaccountable, I became tired and sick;
Till rising and gliding out I wander'd off by myself,
In the mystical moist night-air, and from time to time,
Look'd up in perfect silence at the stars.

- WALT WHITMAN

FACTS

TRUTH

WONDER

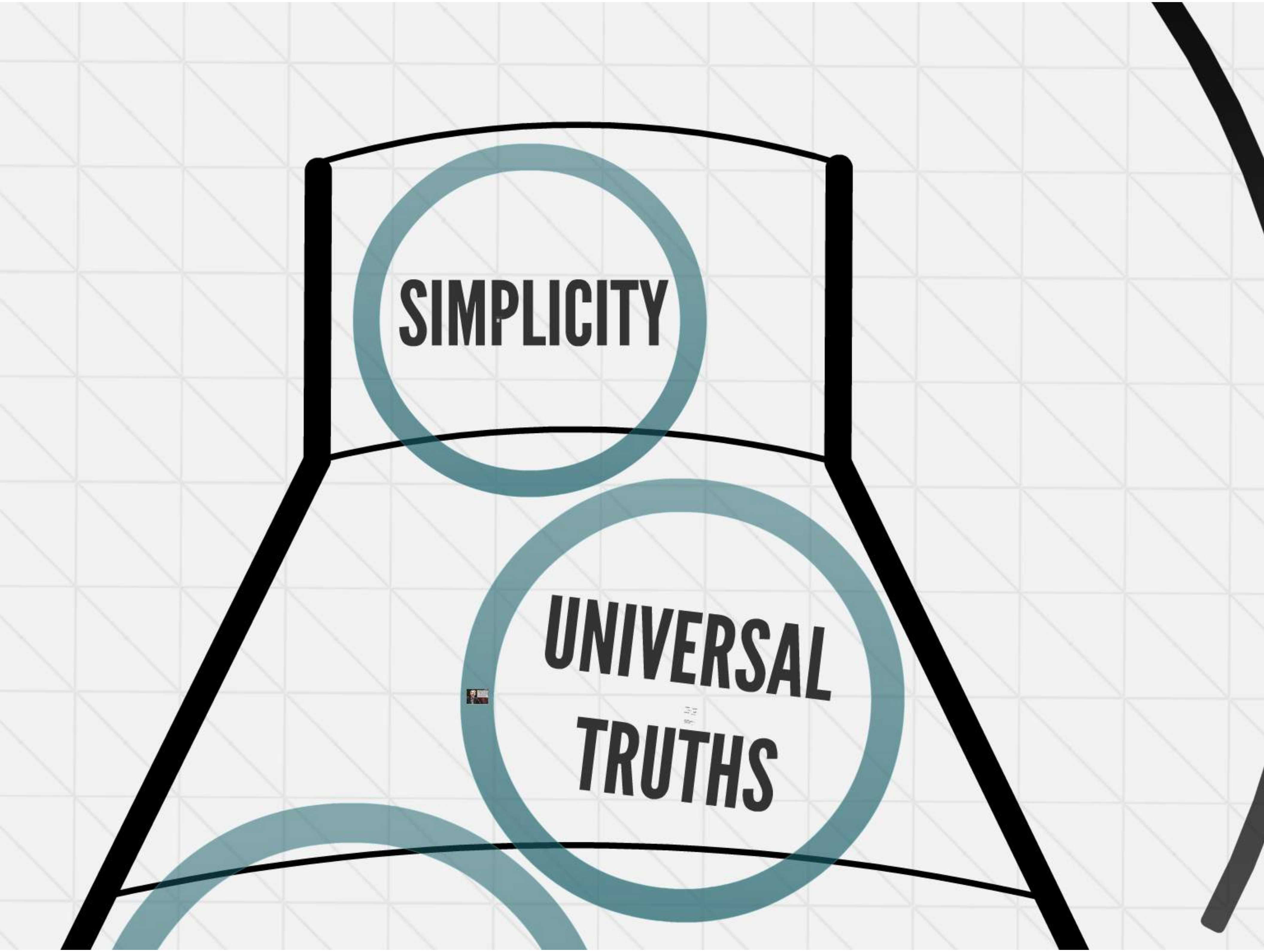
DANGER

CONNECTION

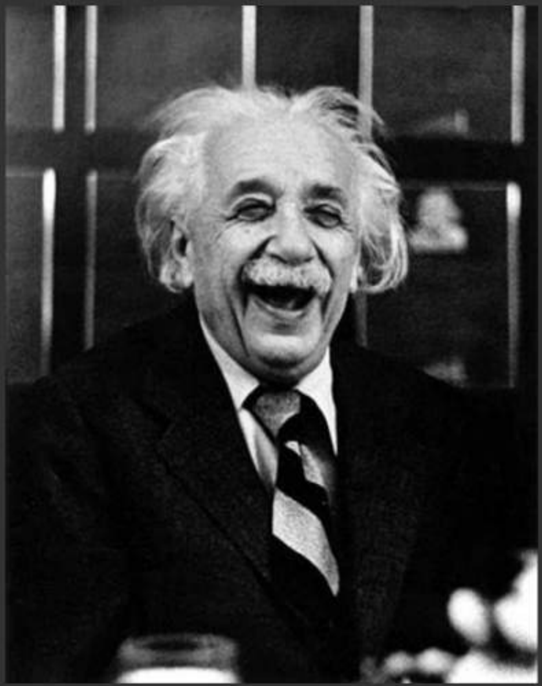
AWE

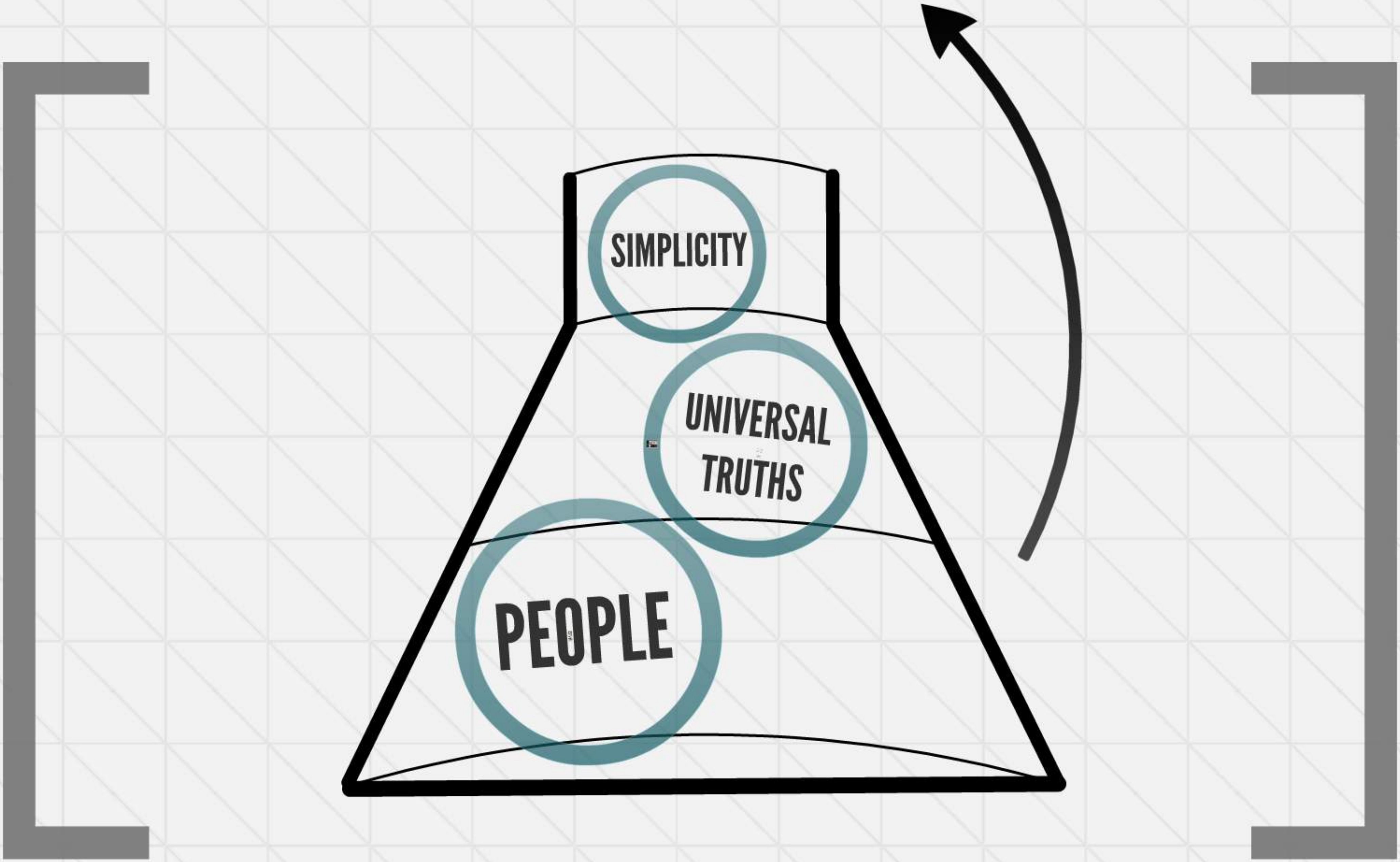
HUMOR

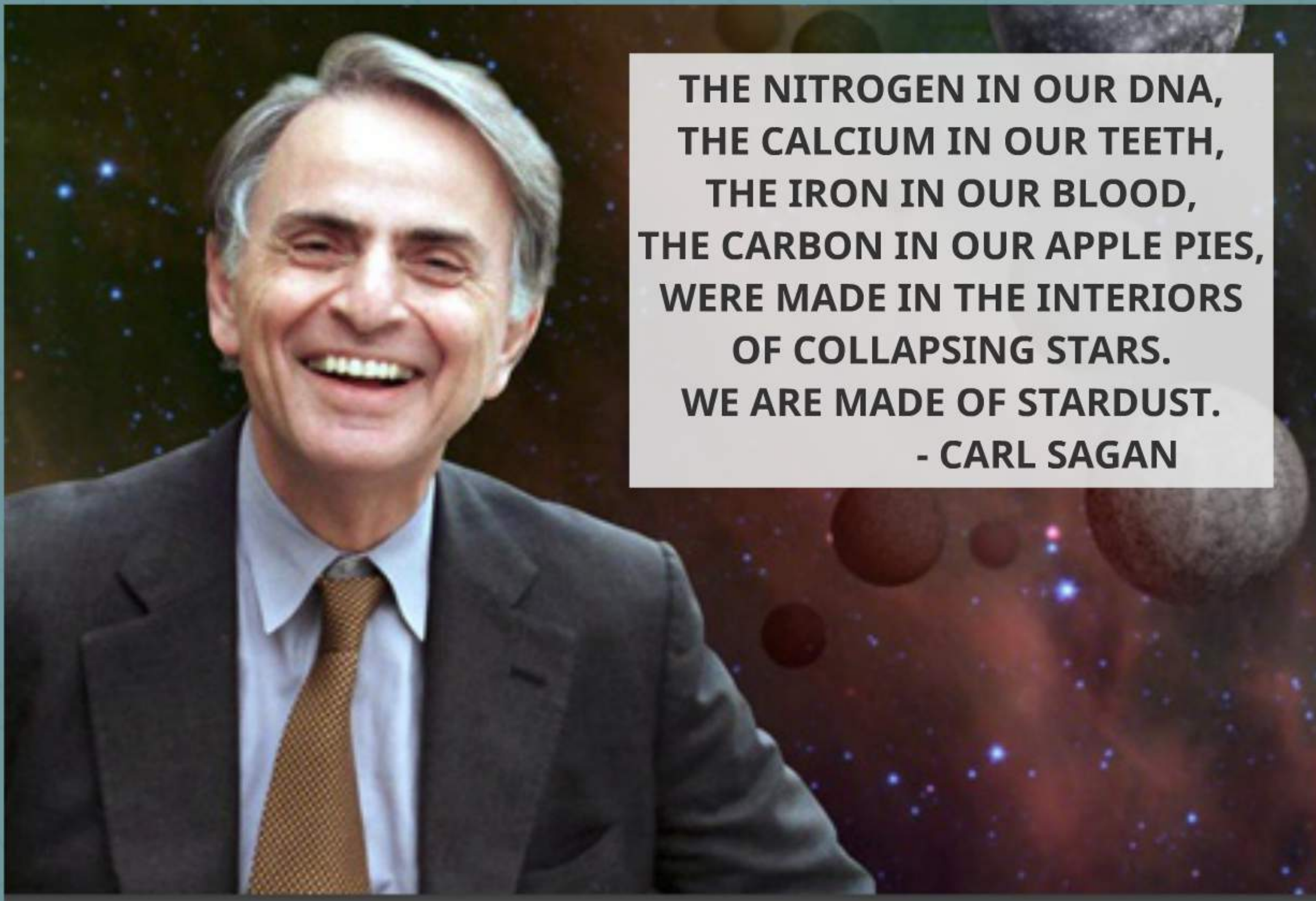
EMOTION

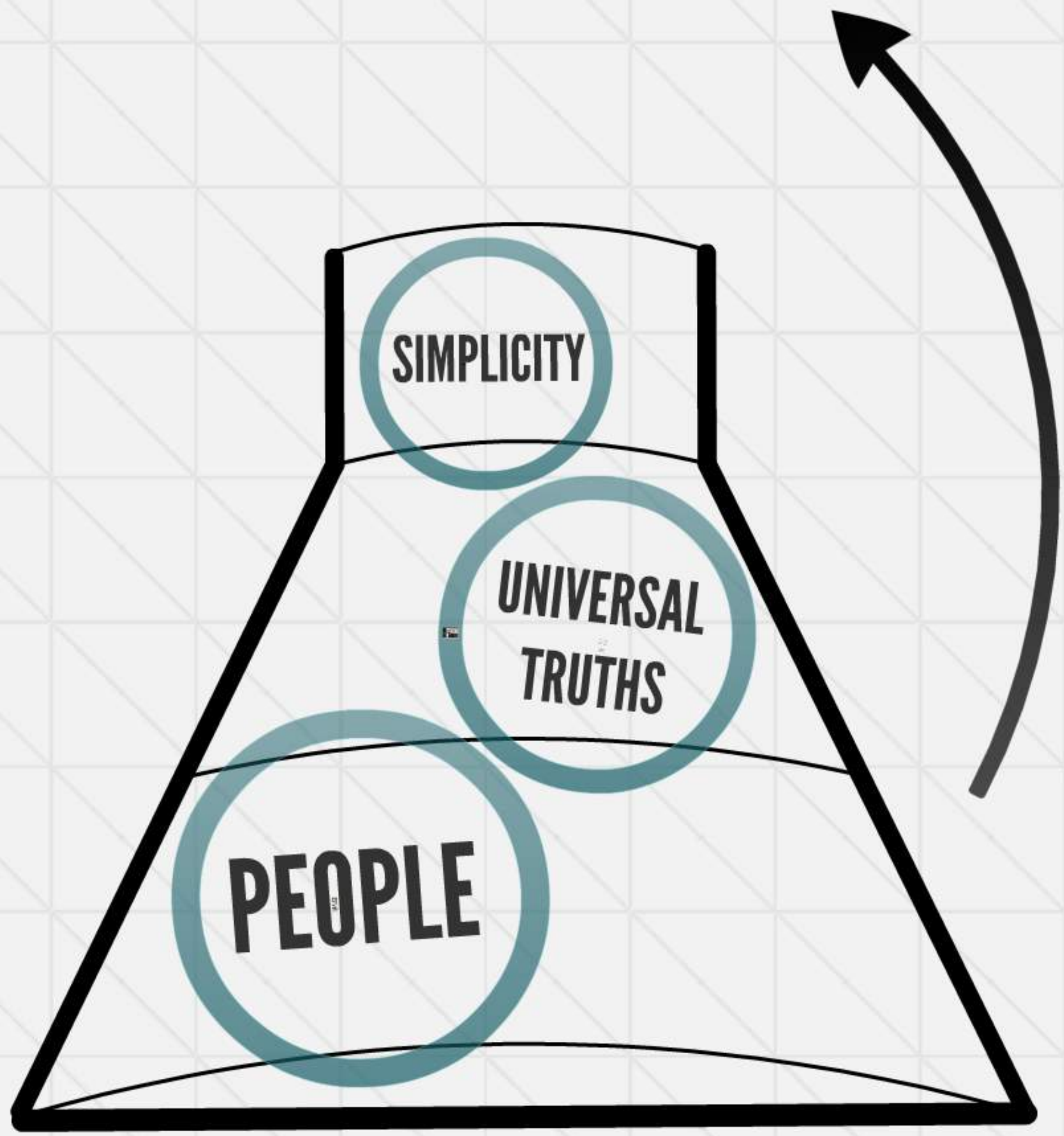

SIMPLICITY
UNIVERSAL TRUTHS

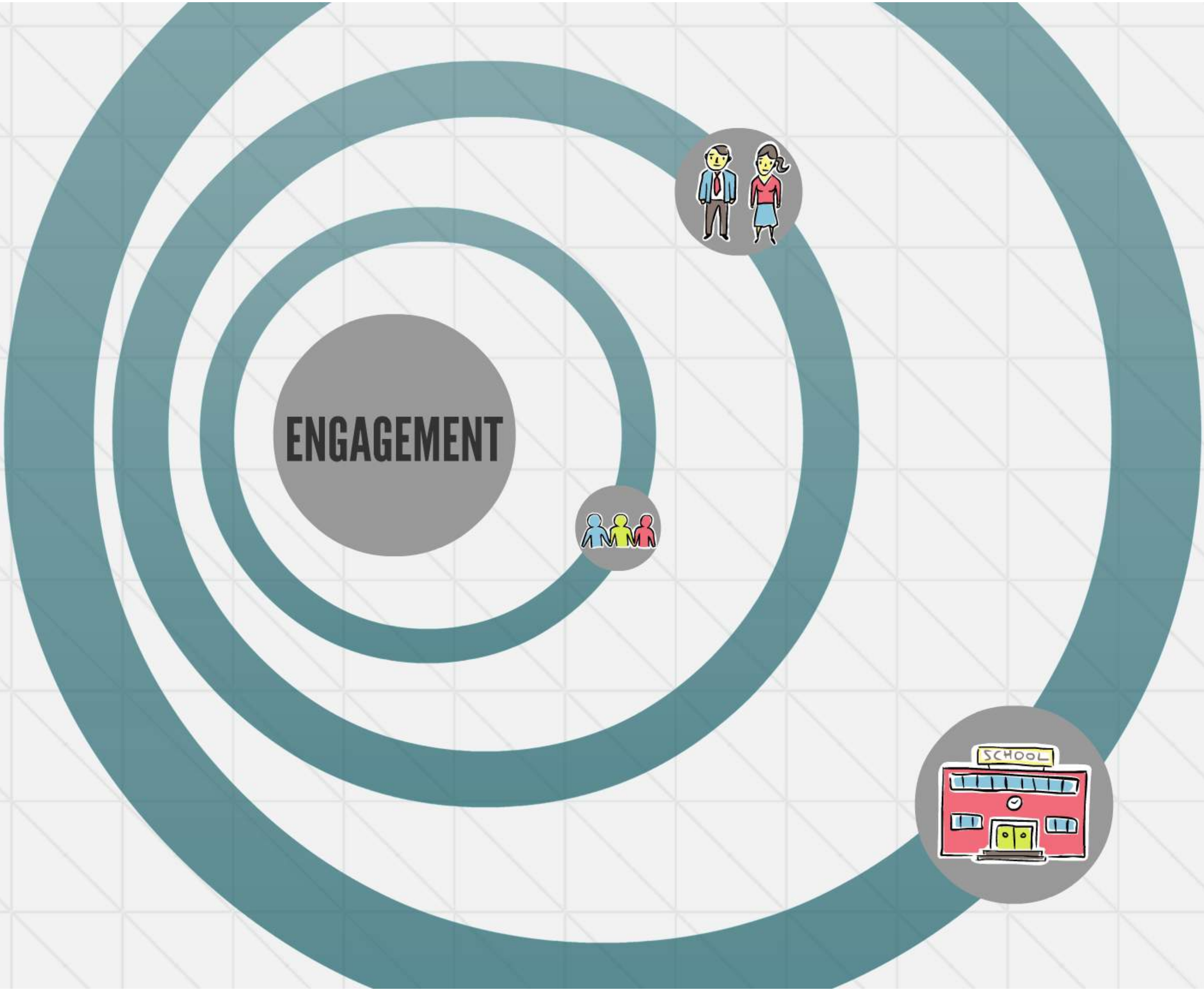
"Everything should be made as simple as possible, but not simpler."




SIMPLICITY
UNIVERSAL TRUTHS
PEOPLE


THE NITROGEN IN OUR DNA,
THE CALCIUM IN OUR TEETH,
THE IRON IN OUR BLOOD,
THE CARBON IN OUR APPLE PIES,
WERE MADE IN THE INTERIORS
OF COLLAPSING STARS.
WE ARE MADE OF STARDUST.
- CARL SAGAN


SIMPLICITY
UNIVERSAL TRUTHS
PEOPLE


ENGAGEMENT
SCHOOL

Science Communications

Liz Smith, MFA