



“My thoughts on science communication”

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FEWER MOLES

MORE MOLES



SCIENTISTS
ARE BAD;
ACTIVISTS
ARE GOOD



EATING
MEAT
CAUSES
GLOBAL
WARMING



MEAT IS
ALWAYS BAD
FOR YOU



PINK
SLIME



ANTIBIOTIC
USE IN
ANIMAL AG
IS ALWAYS BAD



FARMERS
MISTREAT
ANIMALS



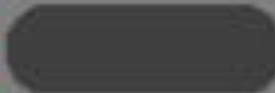
CONVENTIONAL
AGRICULTURE
DESTROYS THE
ENVIRONMENT



GMOS MAKE
LIVESTOCK
SICK



GRASSFED IS
BETTER





My job often involves dealing with skeptical audiences – and need to contact with shared values





The problem is the public, not scientists or policymakers



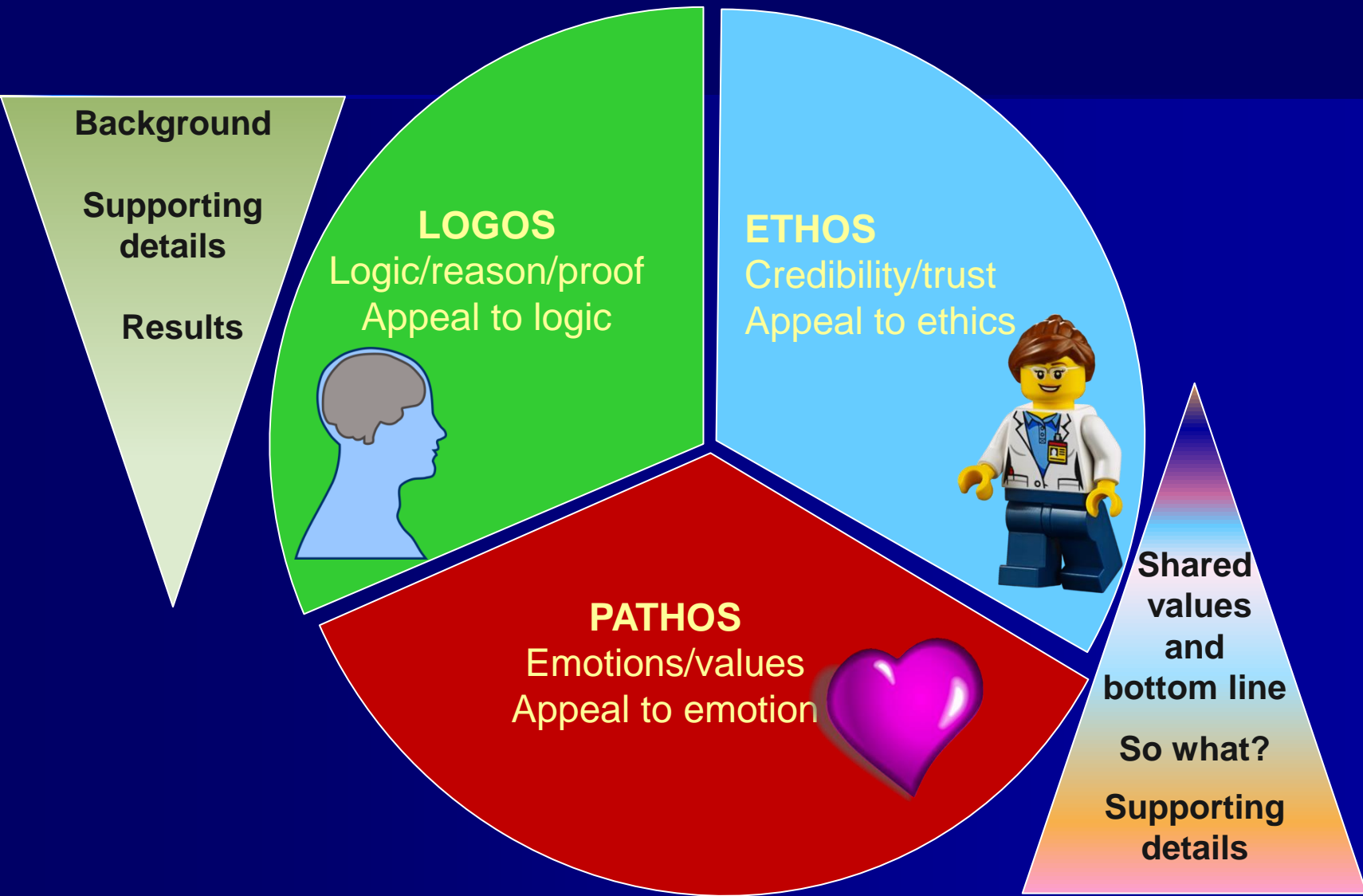
“Scientists have long believed that when the public disagreed with them on matters of policy, public ignorance was to blame..... But research shows that science literacy has only a limited connection to public attitudes. Instead, **trust, emotion, social identity, and how an issue is framed** matter more, putting much of the burden of effective communication on scientists and their institutions.”

Matthew C Nisbet and Dietram A Scheufele

<http://www.the-scientist.com/?articles.view/articleNo/32384/title/Opinion--Scientists--Intuitive-Failures/>



Aristotle's Rhetorical Triangle - the available means of persuasion



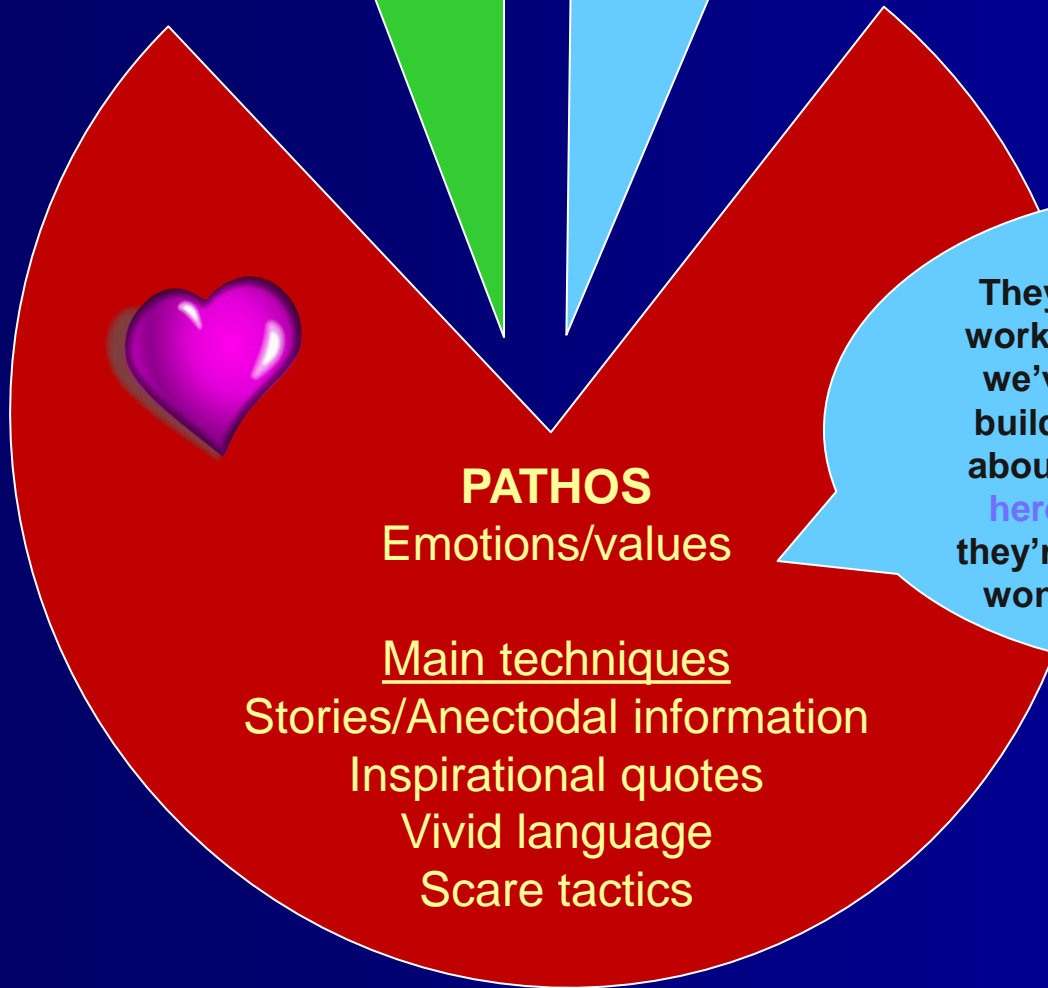


This is very effective



LOGOS
Logic/reason/proof

ETHOS
Credibility/trust



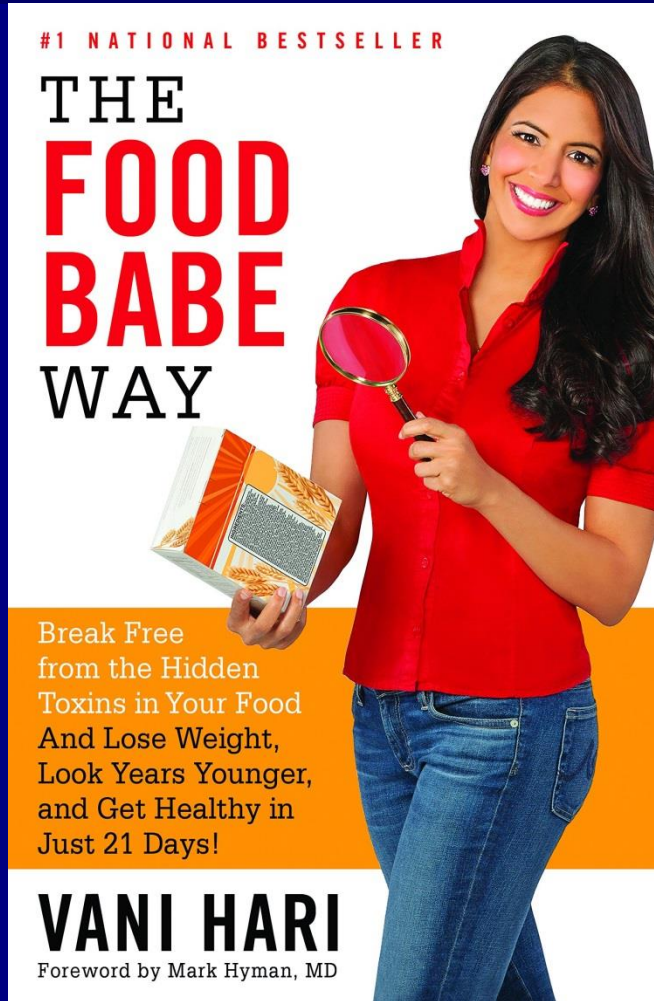
They (**insert enemy here**) worked against everything we've worked so hard to build, and they don't care about (**insert shared value here**). Make no mistake, they're the enemy, and they won't stop until we're all destroyed.



Narratives that are based on emotion or fear are difficult to address using logic or reason

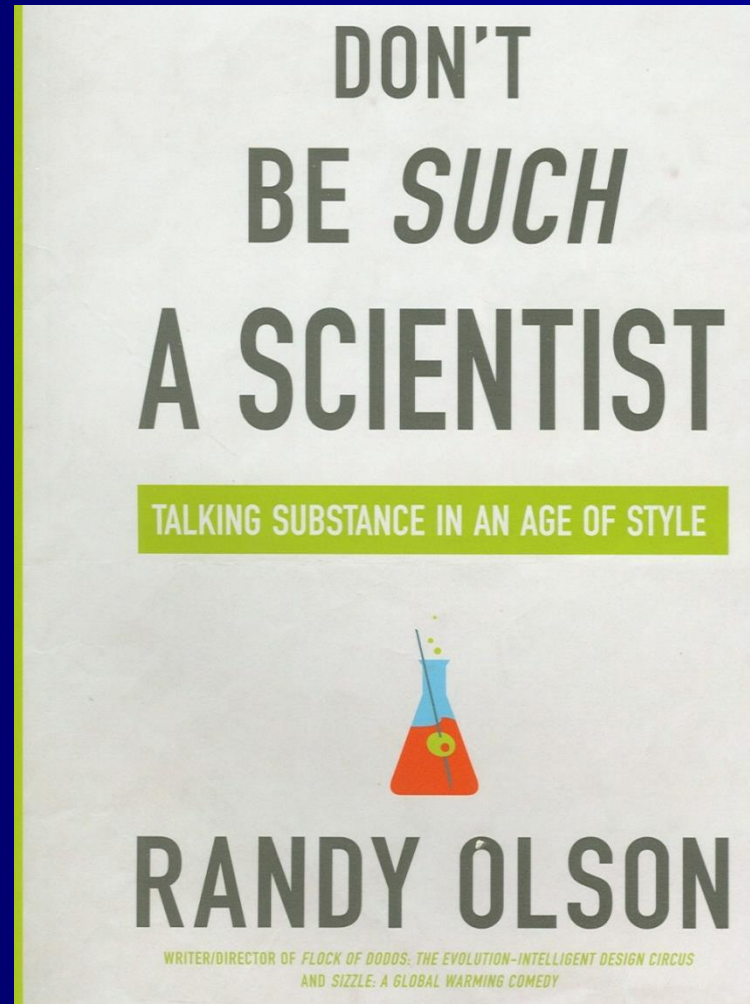
Jenny McCarthy – Vaccinations

Vani Hari – Chemicals in food





Part of the problem is that communication styles need to differ depending upon the audience

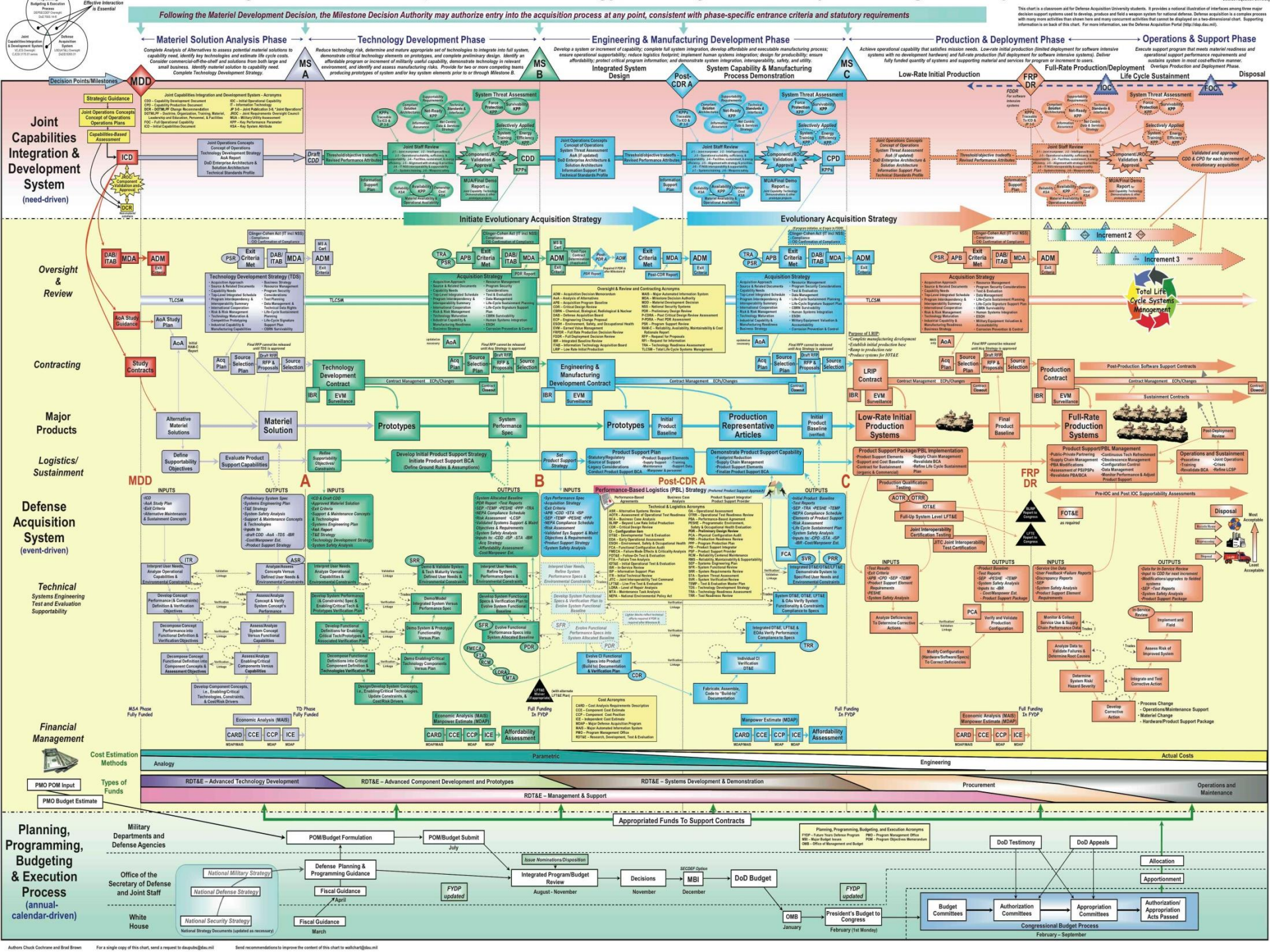




How Academic audiences respond to various aspects of communication



Communication aspect	Academic
Main information channel	Audio and visual
Structure	Information is fine
Mode of response	Cerebral
Need humor?	Not necessarily
Like sincerity?	Suspicious of it
Sex appeal?	Potential disaster
Prearoused?	Yes
Effective elements	Information
Effective organs	Head
Preferred voice	Robotic





How Academic versus “General Public” audiences respond to various aspects of communication



Communication aspect	Academic	General Public
Main information channel	Audio and visual	Visual
Structure	Information is fine	Need a story
Mode of response	Cerebral	Visceral
Need humor?	Not necessarily	Pretty much
Like sincerity?	Suspicious of it	Always
Sex appeal?	Potential disaster	The ultimate
Prearoused?	Yes	No
Effective elements	Information	Humor, sincerity, sex
Effective organs	Head	Heart, gut, gonads
Preferred voice	Robotic	Human

Olson, R. 2009. **Don't be such a scientist. Talking substance in an age of style.** Island Press.



Orange Juice
May Soon
Contain
Pig Genes

GMOs

5 DANGERS + THE AUTISM/ALLERGY CONNECTION



Genetically Modified Oranges gene spliced with Frogs



Coming soon to a grocery store near you.

One New Apple Product
Your Family Doesn't Need.



Just say "know" to
genetically engineered apples.

400% increase
in allergies since GMOs were introduced.

Coalition Powered by Green America
GMO INSIDE! #SimilacNoGMO

Pro-GMO organizations argue that in a world where food is scarce, they are helping to feed the hungry. Feeding people untested lab modified food (GMOs) is like one giant science experiment gone bad! You can feed rice mixed with a little rat poison to a starving African child each day and claim, "I am feeding this child!" The ability to stave off starvation does not counteract the poisonous side-effects!

GMO FOOD IS DANGEROUS!

United Nations Photo

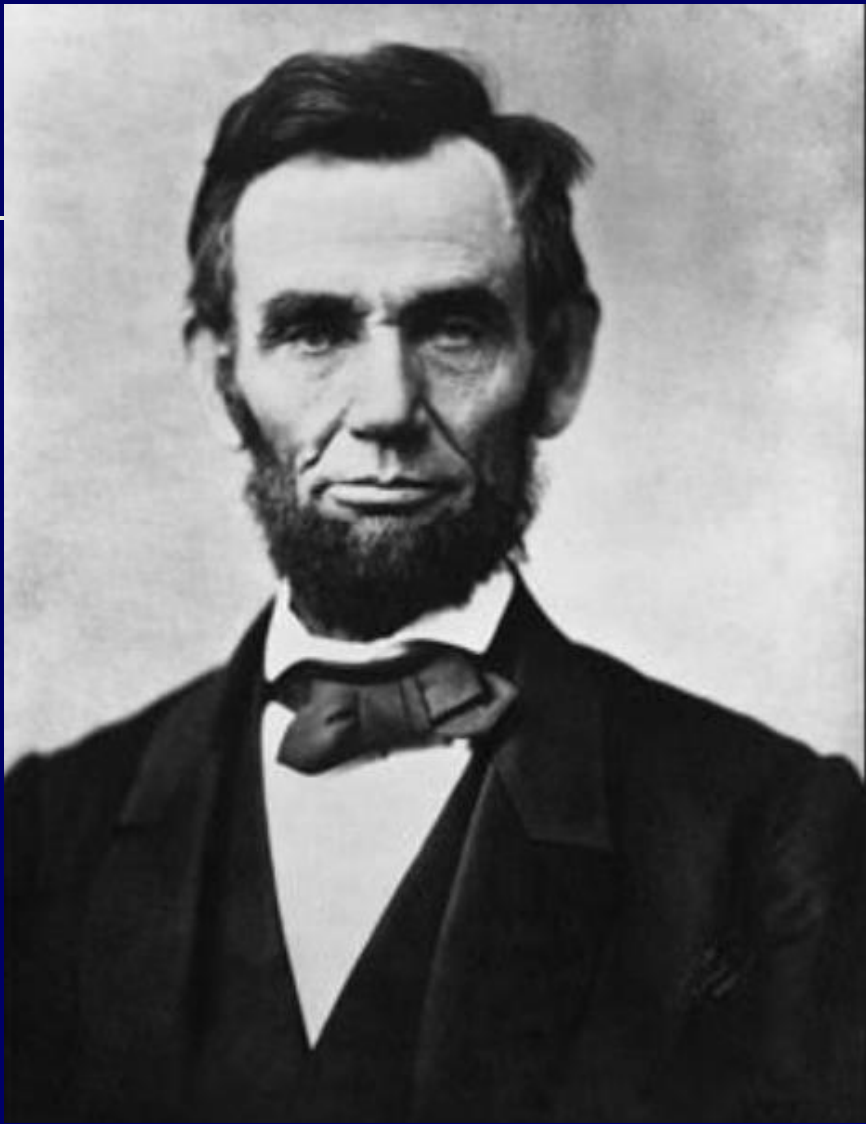


GMO FREE U S A

Will **Roundup** rob him of someday having babies of his own?

Gerber uses RoundUp Ready GMOs in its Good Starts for American babies. But a new study published in the journal *Free Radical Medicine & Biology* implicates Roundup in male infertility at concentration levels well within the EPA's "safe levels" for food.

That's NOT a Good Start, Gerber!



“Don’t believe everything you read on the Internet just because there’s a picture with a quote next to it.”

—Abraham Lincoln

<http://weknowmemes.com/2012/07/dont-believe-everything-you-read-on-the-internet>



Gene Edited Polled Calves

Naturally-occurring bovine allele at polled locus



Carlson DF, Lancto CA, Zang B, Kim E-S, Walton M, et al. 2016. **Production of hornless dairy cattle from genome-edited cell lines.** Nat Biotech 34: 479-81

https://www.youtube.com/watch?v=-Qks_LMmodw



Dorothy, we are not in Kansas anymore – truthiness exists

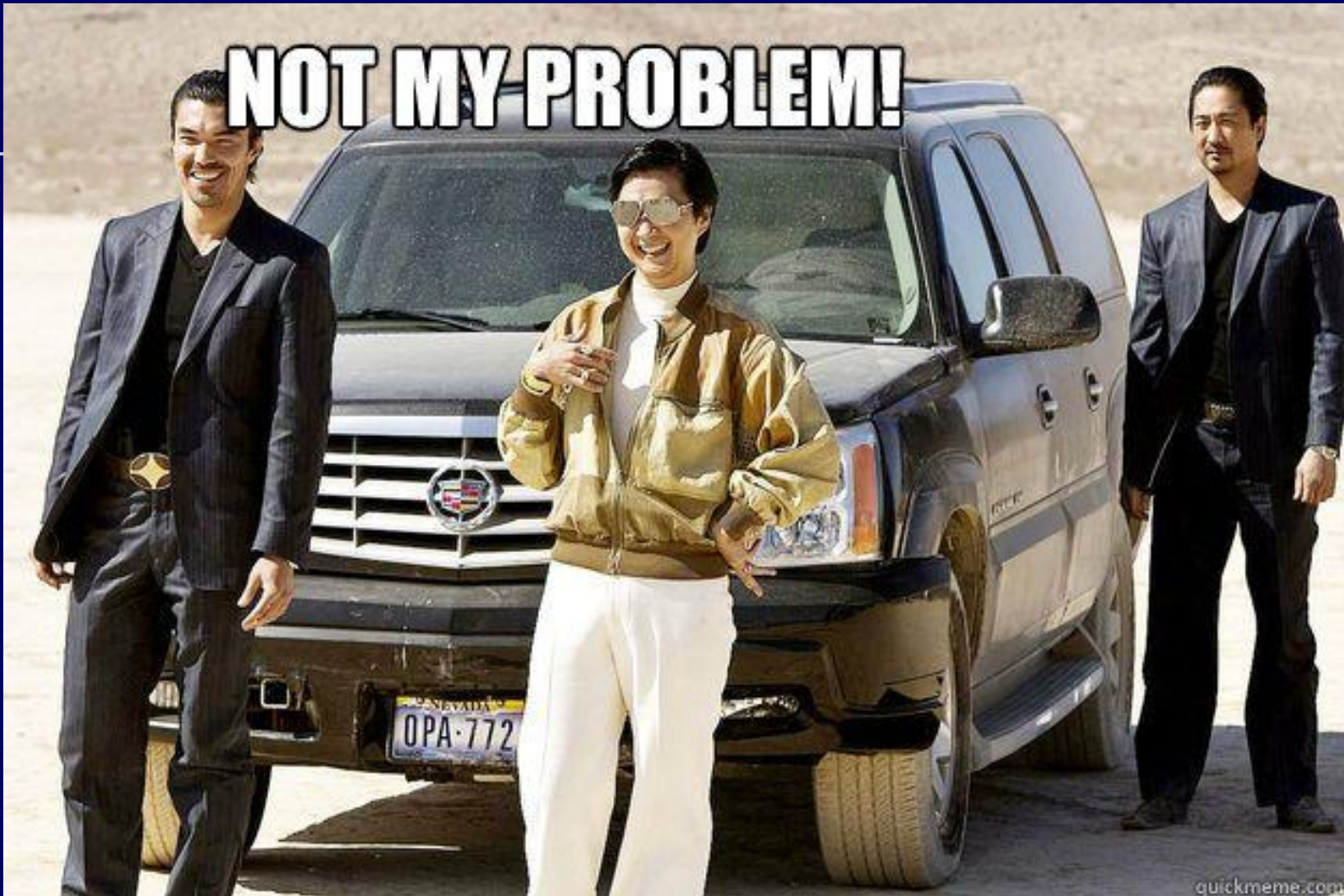


- Special interest groups have become disciplined, strategic and have little interest in scientific accuracy
- Need to communicate in language the public can relate to (and understand!)
- Social media has changed everything – need to respond in real time












Mr. Chow from The Hangover



<https://www.pinterest.com/pin/475552041874709302/>

Crop/species	2014 total production	2014	Amount needed at 1950s rate	Additional needed
Soybeans 	3,927,090,000 BU (235,562,540,000 lb) (106,849,370,802 kg)	82,591,000 Acres (33,423,392 ha)	180,971,889 Acres (73,236,725 ha)	~ 98 million Acres  (~40 million ha)
Corn 	14,215,532,000 BU (796,069,979,000 lb) (361,091,268,460 kg)	83,136,000 Acres (33,643,946 ha)	372,134,346 Acres (150,597,427 ha)	~ 289 million Acres  (~120 million ha)
Dairy cattle 	206,046,000,000 lbs milk (93,460,893,469 kg)	9,257,166 head	38,774,181 head	~ 30 million head 
Broilers 	51,373,100,000 lbs meat (23,302,446,000 kg)	8,544,100,000 head	16,679,545,455 head	~ 8 billion head + an additional 81.5 billion lbs feed due to less efficient FCR

FEAST ON FACTS

FROM ACADEMY AWARD® NOMINEE **SCOTT HAMILTON KENNEDY**

FOOD|EVOLUTION

NARRATED BY **NEIL deGRASSE TYSON**

BLACK VALLEY FILMS IN ASSOCIATION WITH BOOMDOZER, INC. "FOOD EVOLUTION" A FILM BY SCOTT HAMILTON KENNEDY
DIRECTOR OF PHOTOGRAPHY LARKIN DONLEY ORIGINAL SCORE BY WILLIAM KINGSWOOD SUPERVISING SOUND EDITOR PAUL HACKNER EDITED BY ALEX BLATT SCOTT D. HANSON SCOTT HAMILTON KENNEDY
NARRATOR & SCRIPT CONSULTANT NEIL deGRASSE TYSON WRITTEN & PRODUCED BY TRACE SHEEHAN SCOTT HAMILTON KENNEDY
DIRECTED BY SCOTT HAMILTON KENNEDY



WWW.FOODREVOLUTIONMOVIE.COM



www.foodevolutionmovie.com

To request a screening contact: matt@foodevolutionmovie.com

Twitter: [@foodevomovie](https://twitter.com/foodevomovie)





Perhaps doing nothing is even more scary than participating in the debate!



Picture you will probably never see as part of speaker profile – although sometimes apropos – riding the “Drop of Death” at the State fair

Need humor? Pretty much

"It's a foreboding I have – maybe ill-placed – of an America in my children's generation or my grandchildren's generation.... when clutching our horoscopes, our critical faculties in steep decline, unable to distinguish between what's true and what feels good, we slide almost without noticing, into superstition and darkness"

Carl Sagan

(9 Nov 1934 - 20 Dec 1996)



Questions



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