

How *Not* To Do Science Communication – Lessons from the Front Lines

L. Val Giddings, Ph.D.
Senior Fellow

13 June, 2018

The Challenge Between Critical Thinking & Emotional Decision Making
International Consortium on Applied Bioeconomy Research Conference
The World Bank, Washington, DC

vgiddings@itif.org @PrometheusGreen

About ITIF

- Independent, nonpartisan research and education institute focusing on intersection of technological innovation and public policy, including:
 - Innovation and competitiveness
 - IT and data
 - Telecommunications
 - Trade and globalization
 - Life sciences, agricultural biotech, and energy
- Mission to formulate and promote policy solutions that accelerate innovation and boost productivity
- Ranked by University of Pennsylvania as top science and technology think tank in United States and number two in world



Key elements in effective science communication

A truly extraordinary variety of alternatives to the chemical control of insects is available. Some are already in use and have achieved brilliant success. Others are in the stage of laboratory testing. Still others are little more than ideas in the minds of imaginative scientists, waiting for the opportunity to put them to the test. All have this in common: they are *biological* solutions, based on understanding of the living organisms they seek to control, and of the whole fabric of life to which these organisms belong. Specialists representing various areas of the vast field of biology are contributing—entomologists, pathologists, geneticists, physiologists, biochemists, ecologists—all pouring their knowledge and their creative inspirations into the formation of a new science of biotic controls.

Key elements in effective science communication

“A common misconception about myths is the notion that removing its influence is as simple as packing more information into people’s heads.”

Key elements in effective science communication

“...the battle is never between truth and lies, or science and religion, but always between storytellers.”

— Manu Joseph, “How the Defamation of GMOs was Achieved”

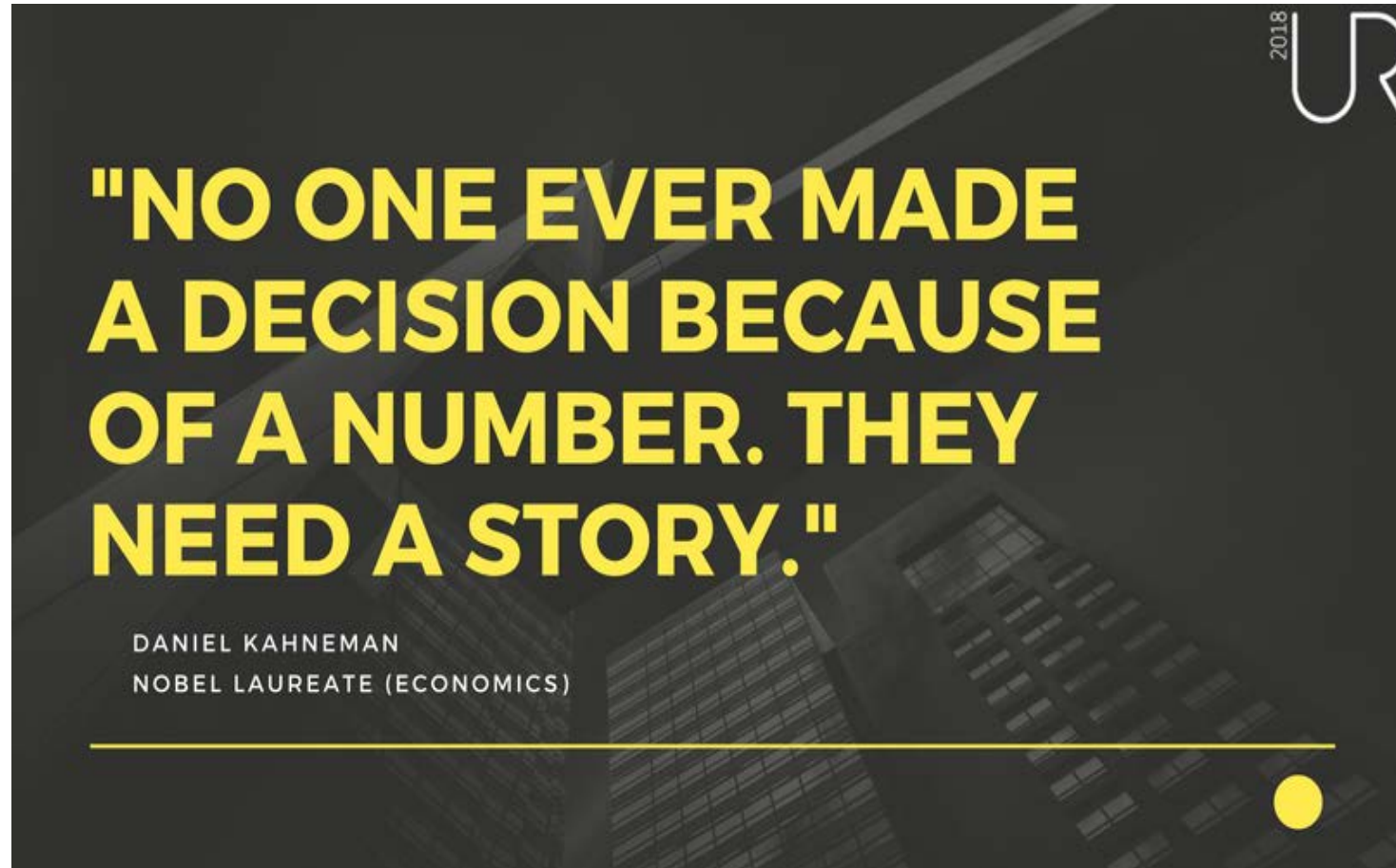
<https://www.livemint.com/Leisure/bn6nB3beBsxmi7EZE8Mozl/How-the-defamation-of-GMOs-was-achieved.html>

Key elements in effective science communication

If you want somebody to change what they think, you must give them a reason to change it. This can be helped along by;

- Affirmation of shared values
- Affirmation of shared objectives
- Hearing their concerns
- Empathy

Key elements in effective science communication



Key elements in effective science communication

“A powerful story is always about you. Activists often tell good stories because they talk about how you will be affected, which is more influential than how you will not be affected. Scientists get caught in facts and concepts, and they should learn an important lesson from the cesspool of activism—never try to tell a popular story without first creating a villain.”

— Manu Joseph, “How the Defamation of GMOs was Achieved”

<https://www.livemint.com/Leisure/bn6nB3beBsxmi7EZE8Mozl/How-the-defamation-of-GMOs-was-achieved.html>

Key elements in effective science communication

“Refuting misinformation involves dealing with complex cognitive processes... It’s not just what people think that matters, but how they think..”

Key elements in effective science communication

“Once people receive misinformation, it’s quite difficult to remove its influence... The last thing you want to do when debunking misinformation is blunder in and make matters worse...”

Key elements in effective science communication

“...people acquire knowledge through others that share their values... the impact of taking a position that conflicts with their cultural group could be disastrous.

“People whose beliefs are at odds with those of the people with whom they share their basic cultural commitments risk being labelled as weird and obnoxious in the eyes of those on whom they depend for social and financial support.” – Kahan, 2012

Key elements in effective science communication

An effective debunking requires:

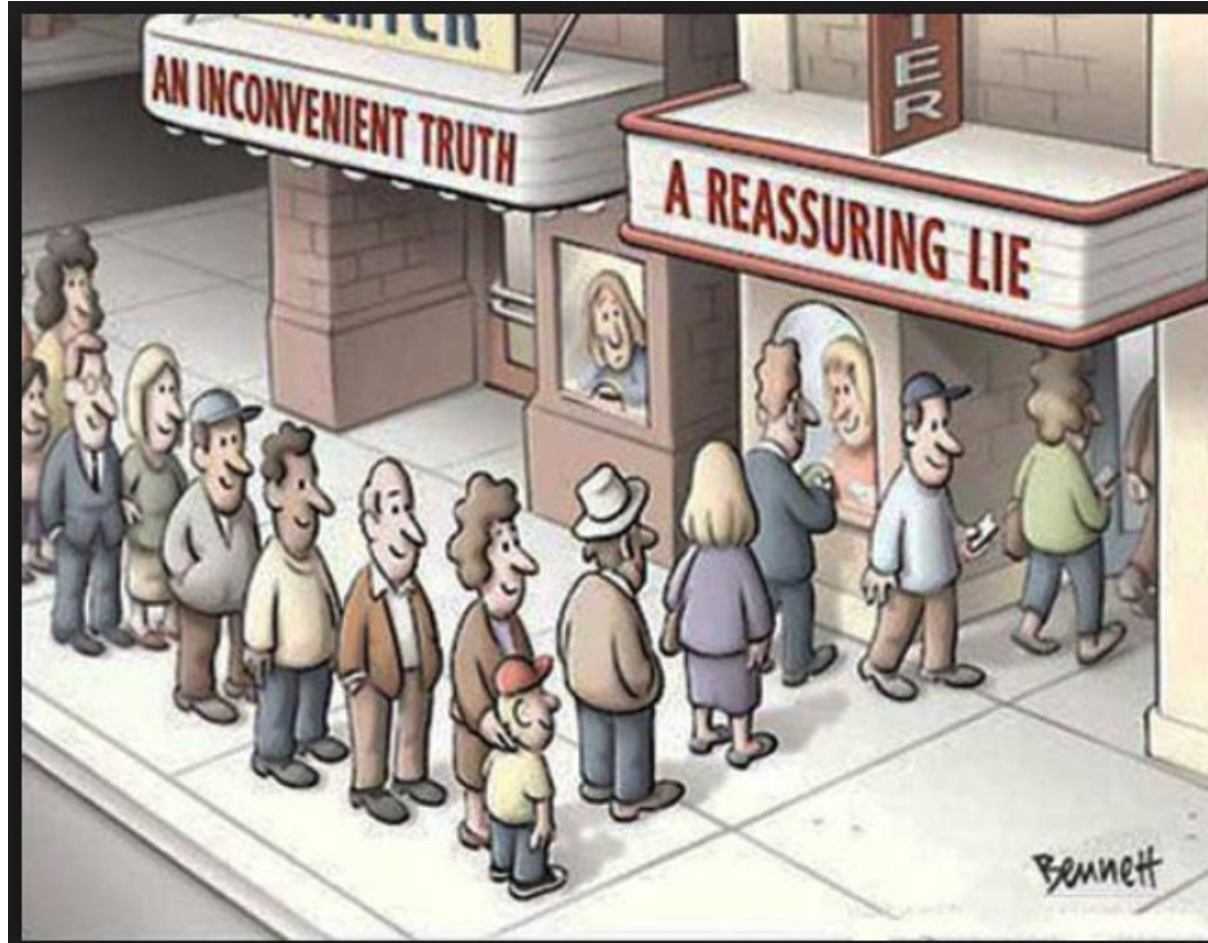
- **Core facts**—a refutation should emphasize the facts, not the myth. Present only key facts to avoid an Overkill Backfire Effect;
- **Explicit warnings**—before any mention of a myth, text or visual cues should warn that the upcoming information is false;
- **Alternative explanation**—any gaps left by the debunking need to be filled. This may be achieved by providing an alternative causal explanation for why the myth is wrong [*through a compelling story!!*] and, optionally, why the misinformers promoted the myth in the first place;
- **Graphics** – core facts should be displayed graphically if possible.

Key elements in effective science communication

““One of the saddest lessons of history is this: If we’ve been bamboozled long enough, we tend to reject any evidence of the bamboozle. We’re no longer interested in finding out the truth. The bamboozle has captured us. It’s simply too painful to acknowledge, even to ourselves, that we’ve been taken. Once you give a charlatan power over you, you almost never get it back.”

— Carl Sagan, *The Demon-Haunted World: Science as a Candle in the Dark*

Key elements in effective science communication



Key elements in effective science communication



Key elements in effective science communication

“Holistic efforts to tackle disinformation should also address concretely the sources of disinformation, their business models and funding sources. Additionally, we need a clear European policy on whether or not public institutions should be using taxpayers’ money to fund campaigns that intentionally spread disinformation.”

EuropaBio, Press Release 26 April 2018, “Disinformation should be tackled at its source,” <http://www.europabio.org/cross-sector/publications/disinformation-should-be-tackled-its-source>

Further Reading

- Cook, J., Lewandowsky, S. 2011, *The Debunking Handbook*. St. Lucia, Australia: University of Queensland. November 5. ISBN 978-0-646-56812-6. [<http://sks.to/debunk>], https://www.skepticalscience.com/docs/Debunking_Handbook.pdf
- [Kahan, Dan. 2012. Why we are poles apart on climate change. Nature \(488\): 255; 16 August. https://www.nature.com/polopoly_fs/1.11166!/menu/main/topColumns/topLeftColumn/pdf/488255a.pdf](https://www.nature.com/polopoly_fs/1.11166!/menu/main/topColumns/topLeftColumn/pdf/488255a.pdf)
- Bhalla, Jag, *How Stories Configure Human Nature*, <http://bigthink.com/errors-we-live-by/how-stories-configure-human-nature>
- Tsipursky, Gleb, *Behavioral Science Can Be Used to Win War with Fake News*, <https://www.socialsciencespace.com/2018/05/behavioral-science-can-be-used-to-win-war-with-fake-news/>
- Plüss, Mathias, *Advanced instructions for imparting knowledge: getting scientists heard amidst the noise of fake news*, <https://www.horizons-mag.ch/2018/06/05/advanced-instructions-for-imparting-knowledge-how-scientists-can-make-themselves-heard-amidst-the-noise-of-fake-news/>
- Haidt, Jonathan, 2012, *The Righteous Mind*, <http://righteousmind.com/>
- [Sagan, Carl, *The Demon-Haunted World: Science as a Candle in the Dark*](#)

Thank You!

Val Giddings | @PrometheusGreen