

Flat Earth International Conference

November 9-10, 2017 | Raleigh, North Carolina

Video available at

<https://www.youtube.com/watch?v=x3vcSab13Sk>

Responsibility in the Search for Truth

Roy Blake Dec. 2017

Fourth Principle

- A Free and **Responsible Search for Truth** and Meaning.
- Truth first, then meaning!
- Confusing Beliefs with Facts
 - “Everyone is entitled to their own opinions, but they are not entitled to their own facts. “
 - Daniel Patrick Moynihan

How Not to Find Truth

- Religious Beliefs (“Satan’s greatest lie”)
- Conspiracy Theories (“I feel that I’ve been deceived”)
- Social Media and similar echo chambers
- Psychological needs
- Coolness or contrarianism (Happy the Artist)
- Gut feelings, “common sense”
- Sleek presentations (“Working model”)
- Pseudo-scientific “experiments”

Governor-General Julie Payette

Nov. 1, 2017

- Video available at

<https://www.youtube.com/watch?v=t2o4Q7M5cBY>

Payette Clip

- Frustration and impatience (“Can you believe”)
- Topics mentioned:
 - Climate change
 - Evolution
 - Unscientific medicine
 - Quack remedies (“sugar pills”)
 - Affirmations (“If you will it, good enough”)
 - Astrology
- We must be vocal to correct information and avoid echo chambers.

The Search for Truth - Sources

- Personal experience
- Anecdotes
- Authority
- Tradition and culture
- Science

- Personal experience and anecdotes
 - Notoriously unreliable as guides to general truth.
- Authority
 - Value depends on where the authority comes from
 - If it is based on power, it is useless as a guide to truth.
 - If it comes from study and experience, it may be useful.
 - Must always be questioned and suspected.
- Tradition and Culture
 - Some traditional knowledge may be accurate.
 - If so, it can be tested and found to be so.
 - Often more useful in finding meaning than in determining facts.

Some Problems with the Search

- Tendency to maintain pre-existing beliefs and to look for evidence to support them
- Confirmation Bias
 - We emphasize evidence in favour of our beliefs, discount evidence against.
- “Post ergo Propter” (after therefore because)
 - Correlation doesn’t imply causation.

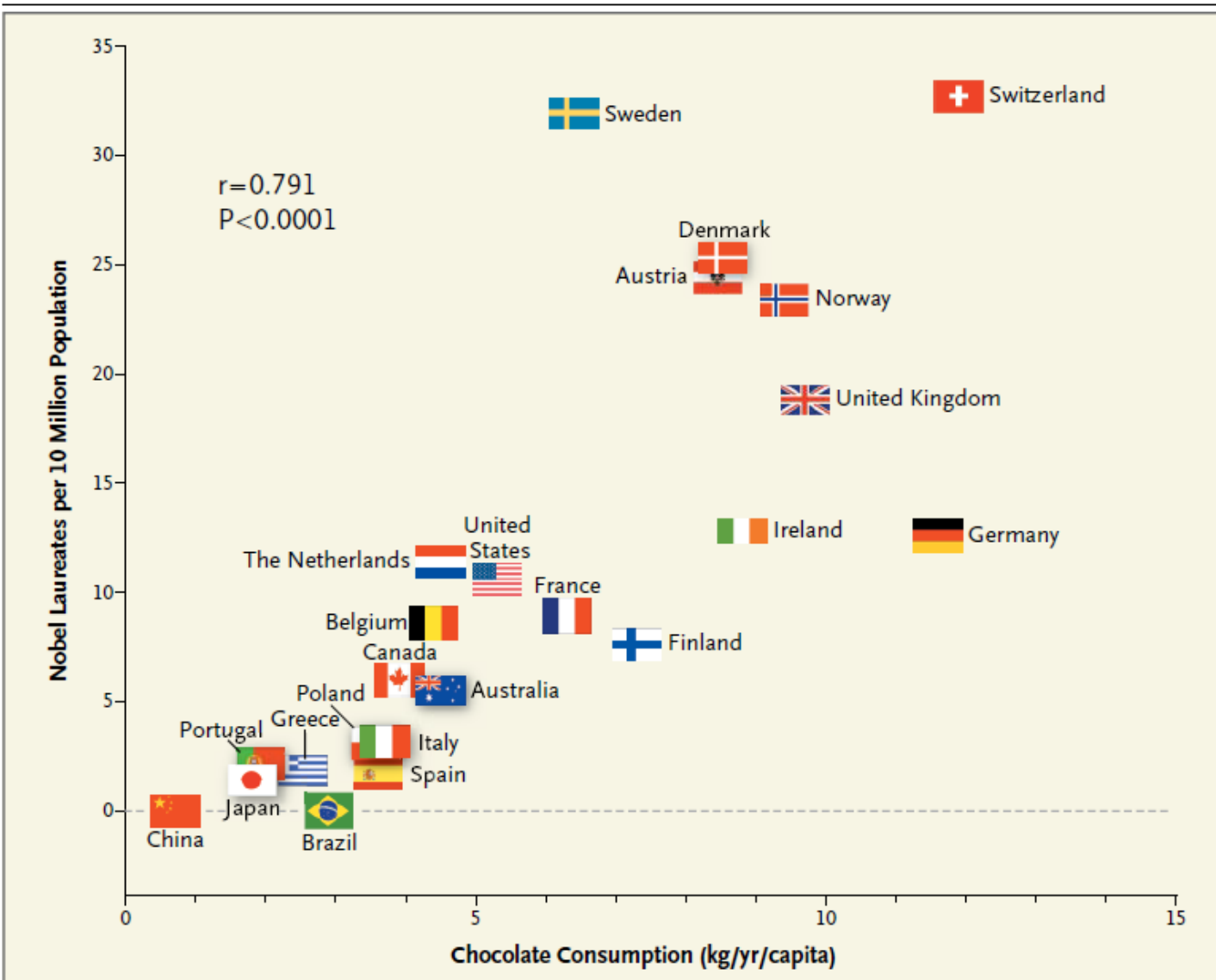


Figure 1. Correlation between Countries' Annual Per Capita Chocolate Consumption and the Number of Nobel Laureates per 10 Million Population.

Science!

- Relies on repeatable experiments, tested predictions to approach truth more closely.
- Self-correcting given enough time
 - Errors and prejudices of individual scientists will be revealed and corrected.

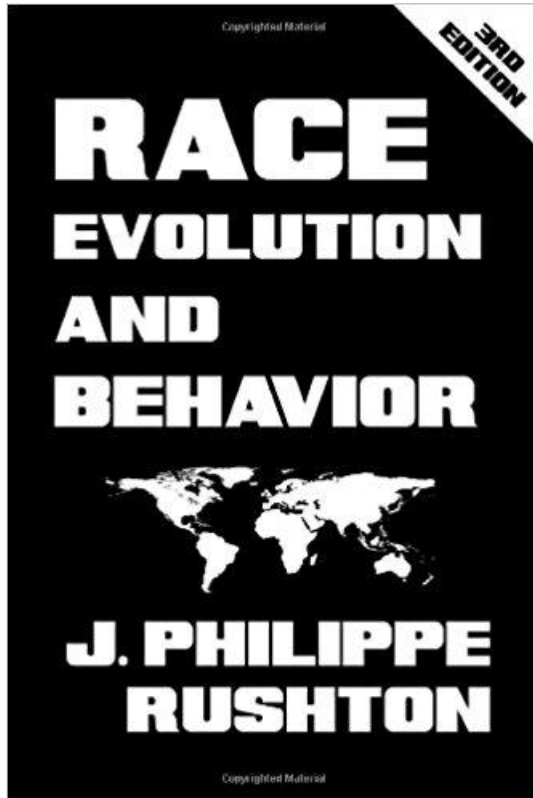
Problems with Science

- Choosing what to study (needs money!)
- Finding truth can take a long time.
 - Meanwhile errors can cause serious problems.
- Science can never be sure it's found the exact truth.
- Applications of science depend on other (non-scientific) factors.

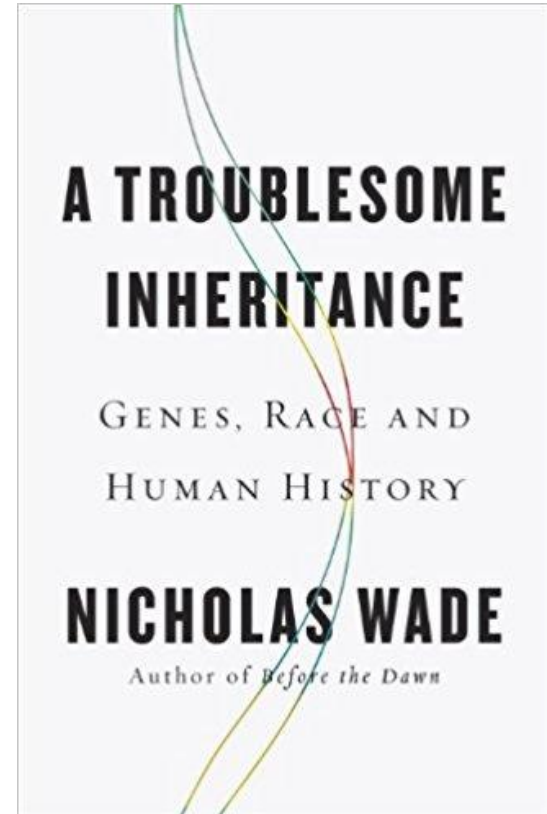
Example: “Scientific” Racism

- Flourished in 19th, early 20th century.
- Influenced by theory of evolution, as interpreted by Francis Galton (Darwin’s cousin)
- Generally held “white race” to be superior
- “Evidence” from skull measurements, rigged intelligence tests, etc.
- Used to justify imperialism, slavery, eugenics.
- Completely refuted by modern genetics.
- Survives as pseudoscience.

Modern Pseudoscientific Racism



1995



2014

“Scientific” Frauds - Examples

- Scientists or institutions who rush to publicize a possible discovery
- Companies that try to suppress unfavourable test results
- For-profit “open access” journals without peer review:
 - One journal had a dog listed as associate editor for a time.

Cold Fusion



- Pons and Fleischmann (1989) introduced the idea at a press conference at University of Utah.
- Submitted a flawed paper without much peer review.
- No-one could replicate their experiments
 - The idea died.

Sick Kids – Olivieri vs Koren 1998



- Nancy Olivieri publicized side effects of an experimental drug (1998).
 - Sued by Apotex, temporarily fired by Sick Kids.
- Gideon Koren wrote anonymous letters complaining about his former collaborator Olivieri.
 - Later scandal (2016): his Motherisk program incorrectly found women to be drug addicts.

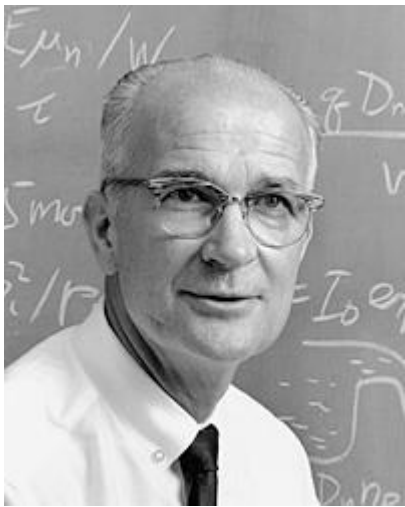
Olivia Doll



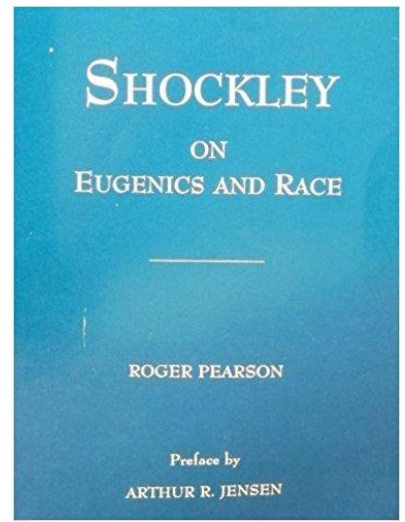
Was listed for a time as an associate editor of
Global Journal of Addiction & Rehabilitation
Medicine

Understanding Science

- No one can understand all science (not even scientists).
- Sometimes prominent scientists assume they can easily master a completely different field.
 - Often with embarrassing results for science.



William Shockley (1910-1989)



- Co-inventor of the transistor (1951)
- Nobel Prize in physics (1956)
- Set himself up as an expert on race and eugenics (1970s).
 - Advocated sterilization of anyone with below-average IQ.
 - Taught that blacks were genetically inferior.
 - Donated his own sperm to a “Nobel prize sperm bank.”

Judging “Scientific” Claims

- Knowledge of fundamental scientific principles can help.
 - Conservation of Energy
 - Basic ecology (water cycle, etc.)
 - Basic physics (energy levels, radiation, etc.)
 - Basic biology (cells, DNA)

Interpreting Science

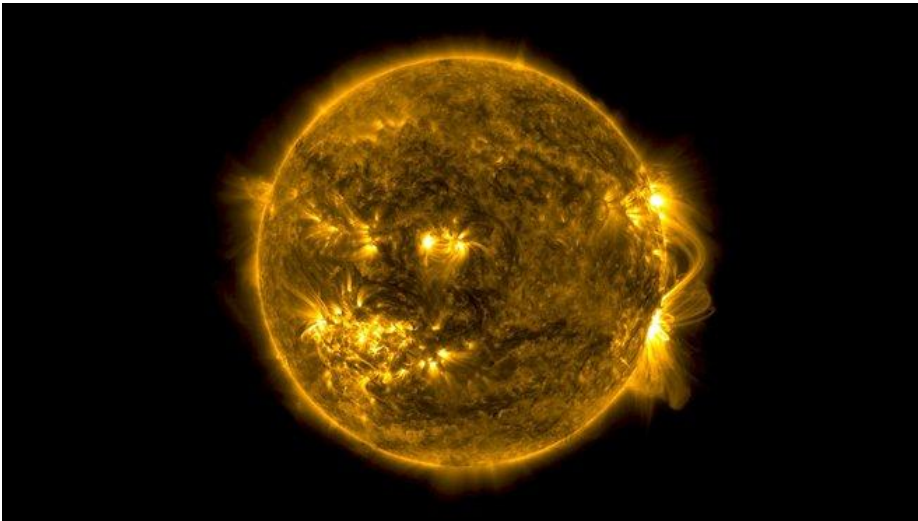
- Separate science from those who fund it.
 - Can we hate big pharma and still use vaccines?
 - Can we hate Monsanto and still eat GMO food?
- Look for consensus building
 - E. g. climate change – more scientists have come to accept it as time goes on. Now almost unanimous.
- Keep Up to Date
 - Science improves as time goes on.
 - No scientist can be used as a permanent “authority.”

Responsible Reading

- Avoid “echo chambers” and “silos.”
 - Read widely (not just memes on Facebook.)
 - Be suspicious of claims, but equally suspicious of conspiracy theories.
- Look for reputable institutions.
- Have “breakthroughs” been peer reviewed and tested or are they just hypotheses?
- Question anything that seems to violate basic science.

The Place of Science

- Pretty good at telling us what is true.
 - Gives an indication of what is possible.
- Not as good at telling us what to do.



Science with Humanity

- Our first and seventh principles can be a guide.
- Anything that violates the worth and dignity of people should be highly suspect.
 - Would include racism, “scientific” or not.
- Anything that severely impacts the ecosystem should be highly suspect.
 - Makes reducing climate change a high priority.

Precautionary Principle

- Idea that we shouldn't do anything until we are pretty certain we won't be doing harm
 - Note that we can never be perfectly certain
- Law in EU, included in Rio Declaration and Montreal protocol but not specifically in Canadian law
- Strong versions have been criticized for limiting desirable innovations.

Conclusion

- Science is usually the best route to knowledge of the physical world.
- Care must be taken in what is studied, in integrity in developing it, and in application.