The Wired Word

Sunday, October 9, 2016

(Student Copy)

Dear Class Member,

For the upcoming class, this is an alternate option for possible class discussion.

This alternate discussion topic is based on the release of a series of six short films celebrating the residents of the Greek island of Lesvos who were nominated for the Nobel Peace Prize in recognition of their compassionate response to thousands of refugees fleeing violence and starvation. The story gives us the opportunity to go deeper into the meaning of Jesus' promise to make his followers "fishers of people."

If you wish to start thinking about our topic in advance, below is some introductory material, including a link to the films; you may find it especially useful to watch some or all of them before we gather.

The Wired Word invites us to contribute news story suggestions for upcoming lessons. If you have a story you'd like to suggest, post it to *The Wired Word* forum at http://thewiredword.squarespace.com/.

Pressure to Publish Incentivizes Bad Science -- With Consequences for Us All

***The Wired Word* for the Week of October 2, 2016**

In the News

The inner workings of the field of science and research may seem a long way from the everyday concerns of most of us, but consider how often you make decisions about diet, health, lifestyle, product purchases and other matters based on the results of scientific studies.

Now imagine that some of the findings you rely on have been made public not because they are as correct as rigorous testing can demonstrate, but because the findings have likely been published due to their novelty or the level of surprise or excitement they generate.

That, says a study published September 21 by researchers at the University of California, is what often happens when scientists compete for academic prestige and jobs.

In our day, the upward trajectory of scientists' careers depends on publishing as many papers as possible in the most prestigious journals. Those who succeed are the ones most likely to receive grants and jobs and to be held in high esteem.

Regarding this trend, Ed Yong, who covers science for *The Atlantic*, writes (see article in links list below), "Now, imagine you're a researcher who wants to game this system. Here's what you do:.Run many small and statistically weak studies. Tweak your methods on the fly to ensure positive results. If you get negative results, sweep them under the rug. Never try to check old results; only pursue new and exciting ones.

"These are not just flights of fancy," Yong continues. "We know that such practices abound. They're great for getting publications, but they also pollute the scientific record with results that *aren't actually true*. As Richard Horton, editor of *The Lancet* once wrote, 'No one is incentivized to be right. Instead, scientists are incentivized to be *productive*.'"

That scenario, of course, means the scientist involved is deliberately going for publication success rather than true results. But Paul Smaldino, one of the researchers of the just-released study, says that a similar outcome can happen "even if individuals aren't *trying* to maximize their metrics."

For the study, Smaldino and his research colleague Richard McElreath created a mathematical model which simulated labs competing with each other and "evolving" -- that is, as researchers varied their methods to achieve success, they passed those practices on to the students they were training, meaning that over time, the very culture of science is changed by natural selection.

This becomes a vicious cycle in which studies that get published because their results seem remarkable help the researcher get grants to conduct more research.

"There will always be researchers committed to rigorous methods and scientific integrity," Smaldino has written. "But as long as institutional incentives reward positive, novel results at the expense of rigor, the rate of bad science, on average, will increase."

There is indication that the problem has already reached significant levels. Recently, researchers found that only 36 percent of psychology studies examined could be reproduced. A major cancer research organization was unable to replicate over 90 percent of the "landmark"" cancer studies evaluated. (See articles in links list.)

It is hoped that studies such as the Smaldino one -- which is itself novel and attention-grabbing -- will raise awareness of this problem and lead to solutions, including changing the incentives to put a premium on transparency. After its results have been replicated, of course.

One solution being employed by almost 40 journals is something called "registered reports." In such cases, journal teams evaluate proposed experimentation ahead of time on the basis of its ideas and plans, before any actual work is launched. Then, for the plans they accept, the journal commits to publish the results, no matter what those findings are. It "moves the focus away from eye-catching results and towards solid, reliable methods," writes Yong. There are also moves to tie grants to registered reports.

More on this story can be found at these links:

The Inevitable Evolution of Bad Science. *The Atlantic*
Study Warns That Science as We Know It Is Evolving Into Something Shoddy and Unreliable. *Science Alert*
In Cancer Science, Many "Discoveries" Don't Hold Up. *Reuters*
The Natural Selection of Bad Science. *Royal Society Open Science*
Only a THIRD of Scientific Studies Can Be Replicated .... *Daily Mail (UK)*

The Big Questions
Here are some of the questions we will discuss in class:

1. Regarding information, which fields or institutions are you most likely to trust? Why? Which ones are you most likely to be skeptical of? Why?

2. What gives any institution or field of inquiry authority and trustworthiness?

3. Regarding the spiritual life, to what do you grant authority? Why?

4. Is knowledge of truth in any absolute, objective sense even possible when declared by human beings? Or is truth always entangled in personal motivations that inherently distort it, whether deliberately or unintentionally? Or something else?

5. Can there be the genuine trust necessary for right understanding when there is not openness? Explain your answer.

Confronting the News With Scripture and Hope
We will look at selected verses from these scripture texts. You may wish to read these in advance for background:

> **Deuteronomy 19:15-21**
> **Ecclesiastes 1:12-17**
> **Proverbs 24:3-4**
> **Matthew 6:1-6, 16-18**
> **Colossians 3:18-25**

In class, we will talk about these passages and look for some insight into the big questions, as well as talk about other questions you may have about this topic. Please join us.