EEES Retreat 2015

Defining our new department: So what exactly do all those E's stand for?

Practice your elevator talk! Everyone go around the table and give a 30 sec explanation of your research and highlight a motivating question.

Each participant will take a notecard and they will write one over-used term, phrase, concept, or theory that they have come across in their work. Some examples include: intermediate disturbance hypothesis, Darwinian evolution, global warming.

To counter that over-used term, word, or concept, take a separate notecard and write one term, phrase, concept, or theory that excites you and that propels your field forward.

Share your notecards with your group. Do you see common linkages in research motivation spanning across the group?

Now let’s say that your group was given $1 million dollars to conduct research on any topic relating to Ecology, Evolution, Ecosystem and Society, with the stipulation that you had to work collaboratively with the other members of your group. Can you think of possible research questions that would connect your disciplines?
Open data is one of the domains advocated by the open science community (e.g. Open Science Federation; http://opensciencefederation.com/; see Box 1 for definition of “Open”), and currently one of the hottest topics in scientific communication discussions. Although the need for open access of scientific papers seem to be somewhat of a general consensus among scientists (see discussion following Agrawal 2014), open data seems to be a much more controversial topic. What are the reasons behind such controversy with open data?

**Box 1: “OPEN” DEFINITION:**
(Copied from: http://opendefinition.org/od/2.0/en/index.html; linked to the Open Knowledge Foundation; https://okfn.org/)

The Open Definition makes precise the meaning of “open” with respect to knowledge, promoting a robust commons in which anyone may participate, and interoperability is maximized.

**Summary:** Knowledge is open if anyone is free to access, use, modify, and share it — subject, at most, to measures that preserve provenance and openness.

The increasing number of scientific journals that require data to be archived is possibly a response to the public and academic demand for data sharing. This demand has been substantiated by arguments on the scientists’ responsibilities to the public (e.g. Beardsley 2010; Boulton et al 2011; Duke and Porter 2013), including transparency in cases of scientific misconduct (Boulton et al 2011), which can, from the academic perspective, influence the ability of science to correct itself (e.g. Whitlock et al. 2010). Additionally, the availability of data to be used in meta-analyses, for example, is integral. Not only meta-analyses greatly contribute to the development of scientific knowledge (see Whitlock et al. 2010) but in days of funding shortage, it can be of great value to the scientific community to make each dime count!

On the opposite end of the discussion, however, scientists are concerned with the misinterpretation of data when one does not spend the appropriate time getting familiarized with the system and methods used during data collection (reviewed in Michener 2015). Moreover, if one is spending a significant amount of resources (i.e. money and time) to collect data, why would they not be the ones to benefit from the utmost use of these data (e.g. https://emckiernan.wordpress.com/2014/02/26/my-concerns-about-ploss-new-open-data-policy/; http://smallpondscience.com/2014/03/03/i-own-my-data-until-i-dont/)? Ironically, then, the increasingly competitive funding environment is evoked as a reason why *not* to share data, especially when considering long-term studies. Moreover, there are innumerable practical and ethical issues around open data that need to be resolved (see Box 2), including clear guidelines on the use and credit for the shared data (Duke and Porter 2013). Roche et al (2014) suggest some solutions for these concerns, such as flexible embargo periods to ensure the “right to first use” by primary authors, and the need for a reward/recognition system for data archiving.

So, how do we feel about open data?
Box 2: SOME PRACTICAL AND ETHICAL ISSUES FOR OPEN DATA SHARING

**Cost–benefit** (from Boulton et al 2011):
Making scientific data publicly available would be expensive. Who would (or should) pay? To what extent would this eat into the funding of primary research, and would it be compensated for by greater efficiency in the research system? Is the potential for misuse, misinterpretation, and the triggering of spurious findings from data a price worth paying for greater openness?

**Credit to data collectors**
When should coauthorship be offered to data collectors? Should data collecting be simply listed as a contribution to the paper? Should new metrics of “impact factor” be created to account for data sharing?

REFERENCES:


Sometimes personal and societal beliefs and values, like religion, economics, and/or politics, coupled with a lack of adequate background knowledge can confound the acceptance of certain scientific findings by the general public. Numerous examples of this battle between science and belief structures are often debated in the main-stream media: the consensus on climate change, evolution, and habitat conservation under the Endangered Species Act just to name a few. Faced with this growing divide between scientists and ‘believers’, is there a better way for scientists or government agencies to present their findings on divisive topics?

To start off this exercise, please have everyone in the group read the article:


After everyone in your group has read the article, discuss why this case study is relevant to science communication. Are there any lessons that we can learn? Does this conflict have any relevancy for us as we initiate an interdisciplinary program with EEES?

**Discussion prompts:**

Identify the conflict. Who are the interested parties and what is their opinion about mute swans? Are their opinions based on empirical evidence or personal beliefs?

Do you think that NY State is correct in their assessment to eradicate mute swans? If yes, what do you think is the best way to justify this decision to the general public?

Is invasive species eradication always the best practice for land and resource management agencies?

What is the best way for scientists to present results or findings that might be perceived as controversial?

When should public opinion be factored into decisions by government agencies about wildlife, habitat, and natural resource conservation?
On Earth Day 2015, the NY State Senate passed a bill for the second year in a row that put a two year moratorium on the state DEC plan to completely eradicate NY State’s entire mute swan population. It is unclear whether Gov. Cuomo will veto the bill later this year. What information could scientists provide to convince the governor to either sign or veto the bill?
As scientists, it is frequently our job to convey our work to a broader audience through interaction with scientific news outlets. However, news coverage of scientific findings is notorious for providing misleading information, omitting relevant data, and sensationalizing stories. Given these problems, how do we improve the accuracy of transmission of relevant science to broader audiences? What other avenues are available to us and is it our responsibility to find them?

To start of this discussion there is a small activity. There are three news stories based on work done by fellow members of EEES. Choose one story and use the highlighters to mark in:

- **Blue**: What information the story is actually trying to tell us?
- **Yellow**: What evidence do the authors provide that supports this idea?
- **Orange**: What are the sources for this information?

Think critically about what constitutes evidence and sources, e.g., are quotes sufficient as evidence?

Once everyone is done, discuss what you saw with your group. How much color is on your page? Are all three colors present? Do you find the same amount of color on all three articles? Are there any trends in how information is presented in these news stories?

**Discussion prompts:**

Why is science hard to convey to the public compared to other topics? Do you think the problem is with how the general public understands science or with how it is presented to them?

Do you believe science news is different from other news? Does it have more impact on the general public than other stories? Can it change the way people act or think about a problem? (For this question, it might be interesting to consider the case study of global warming.)

How should we as scientists handle interactions with members of the media? Is it better to speak directly or use email? Or to avoid it all together? What are the resources here at Dartmouth to help with these kind of communications?
How does the representation of science in the media effect funding opportunities? Is this a necessary component?

What other options are available to scientists to spread their findings to the general public beyond mass media (e.g., twitter)? What are the advantages of these options? What are the draw backs?