

Darwin Was Right: *A Scientist Needs a Heart of Stone**

Robert T. Lackey

Department of Fisheries and Wildlife
Oregon State University
Corvallis, Oregon 97331

Video Recording: https://media.oregonstate.edu/media/0_melddnvc

I appreciate the opportunity to wrap up this session: *“Communicating Science Across Different Domains.”* Yes, it is certainly a fitting topic for all of us — and based on the range of perspectives we’ve heard this morning — it reinforces its significance. Further — these days — given the privileged standing afforded science in the legal and policy world — and the potential for its misuse — both intentional and unintentional — it is absolutely critical for all of us all “to get the science question right.”

OK — my specific assignment today is to answer this question: *How should scientists assure that they are sticking to science — and not drifting into policy advocacy?*

I am very sure that each of you frequently see examples of “advocacy masquerading as science.” I know I do — every day! And — for those of us who are scientists — and those of us who work at interface of science – policy – and management — how do we avoid this?

Let me start with a simple “role playing” exercise.

First — imagine that you are now in the spotlight — having been summoned to the state capitol to provide information to the Natural Resources Committee of the Oregon State Senate. Great career opportunity!

Second — imagine that the Committee is faced with a contentious question: whether they should officially support — or oppose — construction of a dam designed to store water to help alleviate August droughts. And — be assured — dams are always politically controversial!

*Presented at the 56th Annual Meeting of the *Oregon Chapter of the American Fisheries Society*, March 6, 2020, Bend, Oregon. Email: Robert.Lackey@oregonstate.edu

Third — you are a scientist who has studied in great detail this particular proposed dam. In short — you are indisputably a scientific expert on the topic.

What is the proper role for you — a scientist? This is not trick question — but it is also not a simple one.

My blunt answer: follow Charles Darwin's recommendation for scientists who find themselves in such circumstances — develop a heart of stone!

Why exactly did Darwin call for scientists to develop a Heart of Stone? For sure — today his advice might seem a bit passé in this era of trigger warnings — safe spaces — and postmodernism! But — what exactly are the alternatives to a heart of stone idea? — and why did Darwin not support these?

At a basic level — legislators — policy makers — and the public — expect scientists to even-handedly present scientific information relevant to the question under consideration. Seems simple enough! And — it is hard to argue against this expectation — this idealized view that you heard way back in Political Science 101 — right?

But — more fundamentally — what exactly — is scientific information? And — equally important — what information is not science? In short — what is this thing everyone casually labels as “science?” After all — relatively speaking — the notion of science is only a few hundred years old — at least it has only been broadly popular for a few hundred years. And — for sure — there are many other ways to acquire information — and indeed science is only one.

Francis Bacon popularized the basic principles of the “scientific method” several hundred years ago. This is the reason why modern science is sometimes referred to as “Baconian Science.”

To be considered scientific information — it must have 4 characteristics. In philosophy — as described in their often opaque — even cerebral — philosophical jargon — they are called the “big 4.”

First, the information must be rational — that is — it relies on the senses. Second, it must be acquired in a systematic way — a path that is clearly explained. Third, it must be testable — others can evaluate the results — it is not based on faith. Fourth, the results must be reproducible — others following the same procedures and methodologies will come up with the same answer. If the results cannot be reproduced — it is back to the drawing board!

But — there are other kinds of knowledge — and these are not better — or worse — but they are not science. For example — knowledge gained through experience is ubiquitous — but it is not science. A common example is fishermen's knowledge accumulated after years on the water — or perhaps passed down over generations based on a sort of collective experience.

Most definitely — experiential knowledge may be a terrific source of information — but it does not possess the 4 essential characteristics of science.

Think back to Darwin's time — the dominant faith affecting science was what might be called the classical Christian view of creation. These days — in my experience — the dominant faith in the areas of science that I work — is what is often called "Green Religion." In its simplest formulation — this faith assumes that natural ecosystems — those undisturbed by humans — are inherently superior to human-altered ones. And — applying a similar theological litmus test — native species are a priori superior to non-native ones.

Don't get me wrong — there is absolutely nothing inappropriate — or appropriate — with religious or faith-based postulates — but they are outside the purview of science.

But in Darwin's time — it was not Green Religion — but rather Christian theology that conflicted with the scientific method. In Darwin's time — scientists were expected to accept up front the creationist view of the origin of species — and most did so voluntarily. But — Darwin argued — do your research — test your hypotheses against the observable facts — draw your conclusions. Stop there! Do not presuppose anything! In short — as uncomfortable as it might be — Darwin encouraged scientists to develop a heart of stone.

But even if a scientist follows Darwin's advice to the letter — that scientist must be trusted. Thus — managers — policy makers — and especially the public — would might like to assume that a scientist is presenting straight — unbiased facts and interpretations. But in reality — the question is always there — is that scientist sticking to the science — or is he slanting the science to cleverly push a particular policy preference? As a practical matter — if a reader or listener trusts a scientist — that reader or listener will almost certainly accept the veracity of what is being presented by that scientist.

OK — the central question still remains — are scientists trusted by the public these days? In essence, given that trust is essential for scientists to play a useful role in policy making and management — what do the national polls show?

First — the good news — there have been a lot of polling done on the trust question. Now the bad news — no poll that I could find addressed fisheries — or any other aspect of natural resource management. The closest discipline I could find was "environmental science" — for sure not a perfect fit — but it will have to do.

OK — to what extent does the public trust scientists on the topic of environmental issues? The results? In a Washington Post/ABC national poll — 40% — 4 in 10 — said they place little or no trust in the impartiality of scientists. But — even more disturbing to me — the other 60% were not all that supportive — they were lukewarm in their level of trust of scientists.

In another more recent national poll — this one by the PEW Research Center — barely a third of the respondents said environmental scientists provided fair and accurate information all — or most of the time.

Why such a low level of trust? We can speculate about what has caused this loss of trust — and many people have. Regardless — there are some things that scientists themselves can do to help rebuild trust.

The first thing that we need to do is to eliminate “stealth policy advocacy.”

The second is to stamp out normative science from all aspects of the scientific enterprise.

Now — the stealthy part — normative science is very similar in appearance to regular or traditional science — but it has an embedded or hidden policy preference. And the challenging part — it is often very difficult to pick up on this embedded policy preference!

Don’t be so sure that you are not at risk for normative science. Why? Detecting normative science is not as easy as it might appear. After all — what is being presented:

- Looks like regular science
- Sounds like regular science
- Is offered by people who appear to be “scientists”

Even experienced policy makers and managers can be deceived! What chance does the general public have?

Let me circle back to the example I started with — the proposal to build a water supply dam — and the proper role of scientists in the decision-making process. Let’s have a little more role playing — imagine that you are a world expert in some ecological discipline. You have been assigned to a blue ribbon team of similarly elite scientists. Your job is to determine the likely ecological consequences of building a dam on this river.

OK — exactly how would you describe the scientific results to that Senate Committee — or to the public?

Would you be tempted to use the term “degradation” to describe the river with the dam? If you do — you have slipped into normative science. Why? — because you have made an assumption that a free flowing river is preferable to a dammed one. Perhaps it is better policy-wise — but not better scientifically — just different — a value judgment that others should make — not scientists.

Or — you could take the exact same scientific information and label the river with the dam as “improved.” After all — it will provide badly needed water in late summer — but the relative importance of that goal is a political determination — a value judgment — not a choice for scientists to make. Again — the science is the same — the only thing that has changed is that you have embedded a different policy preference. No other change!

This is so common these days that many listeners will not pick up on it! How should scientists report these results? My answer — scientists should use terminology that does not presuppose a value judgment — nor presuppose a policy preference.

In short — in this example — I suggest using the word “alteration” as being much more policy neutral. Using “alteration” in this example does not imply that either state of the ecosystem is preferred policy-wise.

Let me wrap up — what should scientists do — my recommendation — play the science straight up — do not build in subtle policy preferences. Be alert. Test your wording for signs of policy bias.

For sure — there are temptations aplenty to co-opt scientists — mostly they come from policy advocates and politicians. Whatever the temptation — avoid falling into the trap of stealth policy advocacy. Leave the advocacy to advocates — stick to science.

And remember Charles Darwin’s advice — he was dead-on — all those years ago — a scientist needs a “Heart of Stone.”

Thank you!

Abstract

In 1857 Charles Darwin offered a blunt admonition to scientists: *“A scientific man ought to have no wishes, no affections, — a mere heart of stone.”* His advice was strict, uncompromising, and unequivocal, but spot-on for scientists, then and now, regardless of the type of employer. These days, regrettably, many scientists seamlessly substitute "normative" science (i.e., information that superficially appears to be legitimate science, but contains an embedded policy preference) for "policy neutral" science (i.e., politically and policy unbiased information derived following the scientific method) when communicating with policy makers, natural resource managers, and the public. Not only is such behavior a misuse of science, it is insidious because the consumer of normative science is often unaware of the hidden policy preference contained in the information being offered (i.e., "stealth policy advocacy"). The practice of science, as with all human enterprises, is not free of bias, but it should be as policy neutral as possible. Confidence that scientific information is both accurate and policy neutral is fundamental to informed resolution of fisheries policy and management issues, but in a YouGov national poll, 34% of the respondents believed that scientists "often" let political ideology influence their science. Another 44% felt that the influence of political ideology "sometimes" occurred. In a Washington Post/ABC national poll, 40% of the respondents said that they place little or no trust in what scientists have to say about the environment. Scientific information communicated by scientists to managers, policy makers, and the public should be the relevant, unvarnished facts, including probabilities, uncertainties, and caveats — information that only scientists can credibly provide, but will only be trusted if the providers are perceived to be even-handed and policy-neutral. Science must be a cornerstone of fisheries policy and management, but I advise scientists to be careful. Play an active, engaged, and responsive role, but be ever vigilant to stick to the proper role — the one recommended by Darwin 163 years ago.

Video: https://media.oregonstate.edu/media/0_melddnvc



Robert T. Lackey

Dr. Bob Lackey is professor of fisheries science at Oregon State University. In 2008, he retired after 27 years with the Environmental Protection Agency's 350-person national research laboratory in Corvallis where he served as Deputy Director, Associate Director for Science, and in other senior science leadership positions. Since his very first fisheries and wildlife job as an undergraduate mucking out raceways in a trout hatchery, he has worked on an assortment of environmental and natural resource issues from various positions in government and academia. His professional assignments involved diverse and politically contentious issues, but mostly he has operated at the interface between science and policy. He has published over 100 articles in scientific journals and is a fellow of the American Fisheries Society and the American Institute of Fishery Research Biologists. Dr. Lackey has long been an educator, having taught at five North American universities and currently teaches a graduate course in ecological policy at Oregon State University. Canadian by birth, he is now a U.S.-Canadian dual-citizen living in Corvallis, Oregon.

*Department of Fisheries and Wildlife
Oregon State University
Corvallis, Oregon 97331*

OFFICE: (541) 737-0569
CELL: (541) 602-5904
EMAIL: Robert.Lackey@oregonstate.edu
WEB: <http://blogs.oregonstate.edu/lackey/>