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The Nature of Knowledge

Decolonizing Scientific Expertise and Discourse

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Wednesday, November 9th, 2016.

I dressed for lab in a rush, throwing on sweatpants and a baggy shirt. My head was pounding, exhaustion and grief fighting for dominance in the space behind my eyes. By the time I scrambled into the room, 16 of my 18 students had already shuffled in and taken their seats, all looking shell-shocked and distant. No one spoke.

At 1:32 p.m. the instructor breezed in, hair ruffled and glasses askew.

“Alright, folks,” he said, “let’s talk about invertebrates.”

My heart dropped into my stomach. I don’t know exactly what I had been expecting, but suddenly I found myself choking back tears. Kneading my fists in my lap to stay calm, I tuned out the lecture, concentrating on trying to read the titles of the books stacked on a shelf across the room, until, “Look alive, folks. I’m upset about it, too, but we’ve got work to do.”

Without a word, I leapt to my feet and all but dashed to the bathroom, where I cried in a stall for nearly five minutes.

Less than twenty-four hours before, I had sat in my living room surrounded by my friends and watched as one of my worst possible nightmares came true: Donald Trump won the presidential election. We had decorated the house in red, white and blue streamers and balloons in a premature celebration of Hillary Clinton’s win. As the numbers came in, my friend starting popping balloons one by one.

When I woke up the next morning in a grief-stricken fog, I half expected to find an email from my instructor, saying that the biology lab section for which I TA had been canceled in light of the election results. No such email ever came. Instead, I spent three hours watching students count *Daphnia* and rotifers in samples of pond water, trying to stay calm and composed.

There was no

mention of what had transpired on November 8th; if anyone was afraid or in pain, the way I was, they kept it to themselves.

Later that evening I sat in my living room, drawing absentmindedly, listening to my friends recount their days. Most of them had discussed the election in their history classes, their gender, sexuality and feminist studies classes, their creative writing classes. These professors had held space for the hurt of their students, had taken time to express their own fear and trepidation.

For two of them, like me, the subject had not even come up in their science classes that day. On one of the most heartbreaking, terrifying days of my 21 years, it was business as usual in the biology department. This is, I believe, a glaring part of a much larger problem.

In STEM fields, we are often guilty of believing that our areas of study are somehow removed from the social and political contexts in which we are studying them. This was the justification, the explanation, that I heard from many professors following the election: despite their own devastation, they did not see an appropriate way to integrate a discussion of the political atmosphere into a lecture on population genetics, evolutionary theory, or the meiotic process. Yet one doesn’t have to look very far to uncover the countless examples of science being used to legitimize systematic oppression – for example, the medical experimentation involving black slaves throughout the 17th, 18th, and 19th centuries barely even scratches the surface of the often exploitative nature and history of Western science. Isn’t that worth talking about, even when it doesn’t fit perfectly into our discussions of next-generation sequencing or mitotic division?

By looking at the history of the use of science as a tool of colonialism and capitalism, we as scientists can begin to understand the processes that have dictated who has access to scientific discourse and who does not, who can claim to possess true scientific expertise and, conversely, what knowledge systems are considered illegitimate. This type of self-reflection is critical in laying the groundwork for engaging with cultural distrust of science, while also recognizing and beginning to deconstruct the exclusionary, Eurocentric model upon which the modern scientific community is current built.

What is science’s relationship to colonialism? The answer is complicated, and requires an engagement with the history of science itself. Often, the dominant scientific narrative conceives of colonialism as the major force for bringing science, medicine and technology from “civilized” European societies to “primitive” non-European ones. In this narrative, folks of color are portrayed as newcomers to science, which blatantly ignores the actual history of scientific epistemology and methodology; white Europeans have never had a monopoly on scientific innovation, and many of the advances credited to Europeans were in fact stolen or co-opted from non-European scientists





as a direct result of colonial regimes. Today, history tells us about the abundance of scientific discoveries that began with the Ancient Greeks, when many of those Greeks were actually Egyptians under Greek rule. Despite current misconception, much of our most foundational science is not intimately tied to European innovation.

Moreover, for as long as colonialism has been a driving global force, Europeans have engaged in “internalist” science, wherein scientific improvement is sought specifically to bolster colonial power. For example, in the 17th century, astronomers Giovanni Cassini and Christiaan Huygens directed many of the astronomical observation missions for which they are famous in order to help France determine more precisely the location of Haiti and the Dominican Republic. The island was then used to deliver French slaves and export the products of slave labor, improving the overall efficiency of the French colonial regime. The historical co-construction of colonialism and science contextualizes the fact that many of our most important scientific discoveries have come, not as the result of a pure desire for an improved understanding of the world in which we live, but instead have been motivated by power and capital.

With this in mind, it is worth considering further what barriers to knowledge and discourse exist in the modern scientific community and what types of knowledge have come to be considered legitimate. In a historical context, the tendency to reduce a conception of colonialism to the physical process of land theft that occurred as major Western powers expanded beyond the European continent consistently overlooks the epistemic marginalization that occurred in order to enforce and maintain land theft. The colonial rejection of indigenous knowledge, culture and history extends into modern constructions of what constitutes legitimate science. Today, the elitism of science requires an intimate connection to the academy, an institution to which low income folks and folks of color often can only gain access by scaling countless barriers. Scientific innovations and theories that arise from outside the academy are typically labeled “pseudo-science.” Within the academy, the scientific process demands a rigorous and unbiased process of experimentation and peer-review; we ought to apply that same critical eye to our own understanding of what voices we choose to value within the scientific community.

Taking all of this into account, it should come as no surprise that the entrenchment of the model of colonial Western science has ignited a war between scientific and cultural knowledge that has manifested the world over. For example, former South African president Thabo Mbeki viewed indigenous African medicine as the antithesis of the exploitative, capital-driven Western pharmaceutical industry, which led to his public health policy famous for denying crucial antiretroviral drugs to countless AIDS patients. This deadly opposition – traditional African medicine pitted against Western science – contributed to an AIDS mortality figure of over three million. The deep-seated distrust of Western medicine in

South Africa can undoubtedly be traced to the country’s fraught history of colonial oppression, of which science was long a co-creator.

Here in the United States, we are currently suffering from a similar sort of science war. From the anti-vaccine campaign to the Trump Administration’s persistent denial of climate change, the collision of cultural knowledge and scientific expertise is highly polarizing. Often, attempts to situate science within a social context are seen as playing into the hands of religious fundamentalists – as in the ongoing debates regarding the teaching of evolution versus creationism in schools – or cultural traditionalists. The cultural divide over science is aggravated by the fact that science education stops for most at the high school level, and those who are able to or choose to attend colleges and universities are often not required to take science courses. Science articles and news tend to be written using prohibitively complex and specific jargon. Even science museums and science centers, often designed for the purpose of building bridges between scientists and the general populace, still generally require entrance fees, which can be unaffordable for low income folks; likewise, the ability to spend leisure time in a science museum speaks to an affluence not enjoyed by many Americans. The exploitative, expertise-driven history of the scientific field has created, in the U.S., a culture where the tools to engage in scientific discourse are reserved for the elite few.

How do we rectify this? As scientists, we first have a responsibility to interrogate and investigate our roles, and the role of our discipline, in the construction of the false dichotomies of nature versus culture or science versus religion. Likewise, it is crucial that we recognize the barriers of elitism that prevent the accessibility of scientific knowledge and discourse to the general public, and locate ourselves within the historical interplay between science, capitalism and colonialism. In tandem with this self-reflection, science communication and accessibility practices need a complete overhaul, ranging from the use of social media and journalism by science researchers and academics to the breakdown of systematic barriers within the academy that keep out low income folks and people of color. Perhaps most importantly, we as scientists must begin to realize – and to openly admit – that science cannot and should not be used to solve all problems. Science is an incredibly useful tool for understanding the world in which we live, but it is only one available tool out of many. In moments of crisis, like that fateful election day, we must realize we would not have the ability to learn about evolutionary theory or population genetics without science’s long history of exploitation, without our own complicity in the systems that create elitist barriers. Breaking down these barriers and engaging with the complicated and often dark history of modern scientific practice is one crucial step to preventing days like November 9th, 2016. ●