On a recent trip, my flight home from Washington DC was delayed by a day due to thunderstorms in the Boston area, and so I ordered a taxi to a nearby hotel. When I entered his car, the driver named Nasir asked: “have you seen the recent image of black hole in M87 and heard about the discovery of an interstellar meteor just reported in the media?” It took me no time to admit “as a matter of fact, I was involved in both studies”, and to follow with a dialogue about the related details and uncertainties. Even though my visit to DC in the preceding days focused on defining future priorities in the fields of physics and astronomy, this conversation was its highlight. What made this random encounter so uplifting?

Early in my career I noticed that my mentors regard interactions with the media as unnecessary and sometimes even damaging to the nature of scientific research. The rationale for this state of mind was that media coverage is often superficial and the public is not sufficiently informed and technically educated to weigh in with the scientific discourse in a meaningful way. In the spirit of “professional shoemaking should be left the those who know how to make shoes”, scientists should avoid the limelight as much as possible.

Later in my career I realized that it is actually our duty as scientists to communicate results that are of interest to the public rather than stash them in the ivory tower of academia behind opaque walls made of technical language and complex equations. There are three fundamental reasons for that.

First, academic research is supported by the public through federal research grants as well as student and postdoctoral fellowships. In return, the public deserves to know what academia is doing with these funds. A widespread attention from the public has the benefit of providing feedback in highlighting topics that are of greater interest and relevance to the society we live in. An example for a research topic which is out of step with public interest and in need of such a feedback is the search for alien technological civilizations. About a quarter of all stars host a rocky planet with surface temperatures similar to Earth’s, enabling the chemistry of life in liquid water. On Earth, the leap from a soup of chemicals to the first living cells was far more challenging than the transition from simple cell organisms to complex life. Hence, it should be natural for astronomers to search for signs of both microbial and technological life as mainstream activities. Even if most extraterrestrial civilizations are dead by now, one can engage in “space archaeology” by searching for their relics in the form of radioactive products from a nuclear war, industrial pollution of planetary atmospheres, megastructures, photovoltaic cells on planetary surfaces or space debris of defunct technological equipment. Despite this natural expectation, there is a taboo on discussing the search for alien civilizations in the mainstream of astronomy, while the search for microbial life is considered legitimate. This state of affairs is in stark contrast to the public interest in both searches.

Second, the exposure to exciting scientific work could inspire kids all over the world to become scientists. The future of innovation rests on attracting the best minds to
blue-sky scientific research. And there is also the broader benefit of enriching the appreciation of science for those curious kids who later become policy makers or business executives.

Third, science communication serves the important purpose of educating the general public on the latest frontiers and breakthroughs. This, in turn, could stimulate industrial applications of scientific developments for practical use by inspiring technology entrepreneurs and innovators to establish new businesses.

Textbooks portray a misleading impression that science is about well formulated and agreed-upon results. But the reality “under the hood” is very different. Much of the scientific process involves a debate with multiple opinions due to uncertainties and inconclusive evidence. Some of my colleagues argue that scientists should therefore be publicly silent and shy away from discussing ongoing research that is plagued with uncertainties. In other words, scientists should have their debates behind closed doors until they reach consensus on their results. If the public notices scientific disputes, science will lose its credibility in the public eyes and conclusive results such as “global warming” will not receive their deserved respect among policy makers.

But this argument goes opposite to the Socratic dialogue as a method for finding the answer to a question. For science to gain credibility, it is crucial that we exhibit transparency to debating as its most abundant phase. At its core, science is a human activity and scientists often follow common sense and sometimes prejudice, just like detectives in a crime scene. When the scientific community reaches consensus in the face of overwhelming evidence, its view will appear credible even more when contrasted with the more common phase of uncertainty. As long as the scientific process is honest and the pimples on the face of young research are not covered by make-up, the public will appreciate its authenticity. There is a condescending tone to the act of closing off the walls around academia, while keeping only distinguished professionals as part of the conversation before the discussion concludes and policy makers are approached. With this attitude from scientists, it is only natural for populist movements to be suspicious of academia and consider it part of the elite whose deliberations are often hidden from view. The public should not be approached as a passive audience but rather be engaged in an honest dialogue.

We live at a time when Machine Learning, Artificial Intelligence (AI), and social media threaten to replace the traditional Socratic dialogues among humans. These technologies advance so rapidly that a student asked me recently in class: “Will AI take over the scientific endeavor or will humans always be needed?” My answer was that data analysis and theoretical simulations are already carried by computers but human innovation is still required in guiding the overall process. And given the need for humans, we should keep the public abreast with our latest scientific findings - since it is the entire reservoir of humans from which we should draw our best ideas to define our common future.

What started as an unfortunate delay in my return home, ended up as a stimulating exchange with a taxi driver who provided inspiration for my future scientific projects. Honest dialogues add value to the sum of the independent parties engaged in them; they offer a win-win strategy to both science and society.
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