

Adventures of the Mind

Calling it a war sounds too dramatic, but the dynamic between scientists and the public is definitely becoming antagonistic. We are wary, distrustful, even dismissive of each other. A disconnect this large threatens the very topology of society because the seemingly abstruse experiments conducted in remote labs, testing theories written in unreadable symbols, are not as peripheral to the everyday world as they seem. Advances in cutting-edge science have an irreversible impact on 'real life' and vice versa because a disenchanted public, ill at ease with science, has the power to make decisions that have dire consequences, personal, political, and global.

Spurred on by this realization, scientists are more active in outreach than ever before. There is a concerted effort to communicate the (often quite dire) situation — to lay out data and outline arguments clearly — but despite our best attempts, the public hasn't quite come around. The reality is, no matter how attractively they are presented, facts alone will never solve the problem, because the real issue isn't a lack of information, it is a broken relationship. The troubling lack of 'belief' or trust in science fuels a dynamic which has, for centuries on end, led to battle — fear of the other. The only way out of this situation is still the same as it has always been — empathy.

No matter how startling the data, how compelling the argument, nothing we say will matter until the public engages with us. We must connect emotionally before we can convince intellectually. And in that, we are hampered by our training. Academia conditions scientists to present a clinical, impartial narration of fact from an omniscient third-person point of view. We are taught to speak about science in a particular vocabulary, to frame our arguments in a certain way, arrange them in a specific order. We learn to present our case logically and economically, even at the cost of being dry. The resulting compositions are clinical and efficient yet they do a great disservice to the spirit of the endeavor.

Einstein described the process of scientific discovery as “a continual flight from

wonder,” but that sense of joy and mystery is missing in our prosaic chronicles of the origins and development of physical theories. The overwhelming emphasis on the universality and objectivity of the discipline completely drowns out the organic, subjective nature of the practice, and when all signs of human participation are erased, an outsider is left with nothing to identify with, no portal through which to pass into the ever more specialized world of cutting-edge research.

Even worse, scientific accounts typically trace the most efficient path from question to answer, as if to imply the convoluted route traversed in between was obvious. [Several studies have pointed out that a major reason why students \(particularly young girls\) choose not to pursue STEM subjects is because they never hear of scientists failing.](#) The image of perfection we project is not only false, but damaging, because it discourages many creative minds from engaging with fascinating problems. Far too many curious students conclude they’re not ‘smart enough’ to understand science the first time they bump up against a problem, being completely unaware of the geniuses who spent decades forging the paths that are now mapped out in a few lines of uninspired textbook prose.

Not only is this artifice forbidding, it also misrepresents the process of science. In [“Is the Scientific Paper A Fraud?”](#), Nobel Laureate Peter Medawar writes “The scientific paper in its orthodox form does embody a totally mistaken conception, even a travesty, of the nature of scientific thought.” He goes further, and calls upon scientists to acknowledge that they often form hypotheses while traversing “uncharted by-ways of thought,” to admit that hypotheses “are imaginative and inspired in character; that they are indeed adventures of the mind.”

To be fair, I understand the hesitation. It is only natural to fear that if we let go, the pendulum might swing too far in the other direction — that the public may come to view science as a biased, partisan exercise, and we may end up unjustly undermining the credibility of our life’s work, and indeed, our discipline. But the way I see it, we are at an impasse. Our current relationship

with the public is clearly not working, the consequences are severe, and something drastic needs to be done.

Perhaps it is not so much of a stretch after all, to begin by trusting people — trusting them to understand the process, to grasp the fact that our behavior as a collective is not tainted by our individual preferences. To appreciate how, while on a personal level, we may each often be driven by intuition, swayed by aesthetic judgments and carried away on flights of creativity, there is also a ‘hive mind.’ Everyone understands that a swarm can move with purpose, even while the flight of a single bee appears chaotic and haphazard. Why should it be so difficult to accept that Science as a whole can make objective statements, even while scientists are driven by personal passions?

The strength, and indeed the beauty, of science is that on the individual level we are far from being clones, and yet we manage to reach consensus as a community. In fact, as Hungarian chemist/philosopher Michael Polanyi argues, “the scientist’s personal participation in his knowledge, in both its discovery and its validation, is an indispensable part of science itself.”

Science is testament to the truth that, despite proceeding in different ways, for different reasons, there *are* commonalities we can extricate from our vast array of experiences, there *do* exist some absolutes we can agree upon. How powerful must these statements be, if they apply across such a wide range! And yet, even those we declare to be Laws are treated as contingent — true, until proven otherwise. To me, conveying this attitude is far more important than imparting any set of facts. We, as scientists, could vastly improve our relationship with the public if we are able to communicate what science is and is not; what it does, and how; what its strength and limits are — and this, I feel, is best done by immersion, by having particular, idiosyncratic voices tell specific stories steeped in the culture and methodology of science.

As an added advantage, a diverse collection of narratives would counter the damaging impression, shared by many people hailing from diverse backgrounds, that [Science is not for people like me](#). Science is acted out by a vast and varied cast. Chances are, there is a role for anyone who wants to play

a part in this play. But how is anyone to know that, if we keep hiding in an ensemble, speaking in a chorus and moving in lockstep? It is only when more of us step into the limelight and speak our own pieces, when our unique contributions become evident, that individual audience members will recognize the particular role that is right for them.

If scientists are to develop a rapport with the public — a much desired outcome for many different reasons — we need to drop the neutral, objective, almost surgical facade we have adopted over the decades, and be willing to display a more complex and nuanced view of science. No worthwhile relationship can be established if we insist on keeping our guard up — we must be willing to be vulnerable. Drawing someone into the process involves being honest about the process. Motivating someone involves being honest about our own motivations.

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