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## Internet Has Helped Spread Information, But Not Necessarily Knowledge

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And electrical work is straightforward compared with some challenges we face, like global security, weather prediction, energy, environmental sustainability, socioeconomic inequality, disease and others. Complex problems require complimentary expertise or many experts working together across disciplinary boundaries. Experts are important – necessary, even – to find effective solutions to our toughest problems.

Yet, for some reason, experts often are ignored. It's a paradox of our times that we are each specialized in our own skill set, and we rely upon one another to function, yet often we are all too eager to dismiss expert judgment in favor of our own.

Take anthropogenic climate change, for example. The science is in and the evidence is overwhelming: Human activity is dramatically changing our planet. Empirical evidence has reached the gold standard for science. Scientists are 99.7 percent certain that human activity drives climate change.

The rest of the developed world is taking action by setting emissions targets, shifting away from fossil fuels, enacting laws, and changing social policy. Yet in the United States, many politicians debate the issue rather than address it, and many lay people dismiss the science.

So why the disconnect? Why are many ignoring expertise?

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We think one reason is the rapid rise of access to misinformation. The internet and other forms of rapid communication technology have democratized information, but not necessary knowledge. Easy access to information is one great benefit of the technological world we inhabit. It is now easy to find products, services, videos on how to make things, explanations of how things work, and social and professional groups with whom we can work, play and grow. Yet, all that bandwidth has created a home for misinformation.

Misinformation originates from many sources, including urban myths, statements taken out of context, politically driven agendas, poor investigative reporting, and most nefariously, state and private-sponsored disinformation campaigns. Some bits of misinformation are laughable – such as the idea that the Earth is flat. Others are dangerous – such as the false claims that vaccines cause autism, or that the Sandy Hook shootings never occurred.

But all forms of misinformation share one important consequence: They disrupt our society and undermine our ability to work together toward the common good.

Scientists have studied information dynamics for decades and discovered, long before the internet, that the way misinformation spreads is strikingly similar to a viral disease. If a piece of information spreads quickly enough to a large enough fraction of a population, it can take on a life of its own and effectively become “fact,” even if it's false.

Each of us can unwittingly become an agent for propagating false information. Anytime we see a meme that reinforces our beliefs, and then repost it, or tell others face-to-face without fact-checking, we can spread the misinformation virus. Here in the United States, a false equivalency has taken root between freedom of speech and the right to express an opinion, but without recognition that we all share an ethical responsibility to vet information and become properly informed before championing a viewpoint.

But we know better. We know that division of labor helps societies advance. Few of us raise our own food, maintain our own defense, cure our own illness, or watch our children 24/7. Instead, we have jobs, and if we are lucky we have thriving careers and areas of specialization. We trade our services to others for income, and through money we trade our own expertise for food, clothing, shelter, education and so on.

We rely upon specialized expertise to make society function.

Policy makers and voters need to support infrastructure that promotes the generation and exchange of real knowledge. This includes funding education.

To solve our problems and achieve our goals, we need to acknowledge and leverage expertise – whether it comes from the chemist, philosopher or electrician. And this idea brings obligations with it. Policy makers and voters need to support infrastructure that promotes the generation and exchange of real knowledge. This includes funding education.

When it comes to acknowledging expertise, the onus is not only on the lay person. Experts, too, have an ethical responsibility to maintain and communicate their credibility. They have a role to play in communicating what they do and how they do it in ways that lay people can understand. This fosters trust in expertise.

Climate scientists must continue to explain their field in spite of its complexity so the lay public can understand why a 1-degree rise in average global temperature really *is* cause for alarm, and why an exceptionally cold day in February does not mean there is no global-warming problem. And academics have an obligation to help the lay public understand what they do; how their training, teaching and research builds expertise, and how expertise is the key to making progress.

So, the next time you're tempted to repost a meme or tweet without doing the background work to learn about the issue, stop and think. Because like doing your own electrical wiring – if you're not an expert – you might burn your house down.

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