# How to talk to a non-specialist

Explaining research to scientists beyond our immediate community is a useful skill, but it requires a few adjustments to the way we communicate.

A lab coat, goggles, monitoring an array of colourful liquids in complicated glassware on a bench — that's how scientists are often depicted in the media. There is a lot wrong with this cliché but it contains a grain of truth: performing experiments or calculations is often considered a scientist's main job. But what good are the most meticulously collected data if they are hidden on someone's hard drive?

Communicating these results is an integral part of the scientific endeavour. All too often, though, ideas are only exchanged within a particular community working on similar questions. At *Nature Physics*, we believe that there is value in making research accessible to non-specialists — or rather to specialists in different areas — which is indeed the raison d'être for our *News & Views* section. But it's easier said than done.

The first and possibly biggest step is away from one's own experience, to imagine what somebody else may already know and what may need explaining. This can be tricky, especially after spending a long time with a piece of research. But most people are quite good at putting themselves in other shoes, it just takes a conscious effort.

Once this clear picture of the audience is established, the task of talking across a community divide reduces to helping them focus on what's important — the central message. That means eliminating all distractions that take up mental capacity and don't contribute to understanding.

The most important, yet most difficult, task here is to peel away the layers of detail until only the idea at the heart of a piece of research is left. This is a process akin to the deconstruction practiced by modern artists. In his series *Le Taureau*, Pablo Picasso sought to uncover the essence of the animal. Although the final image (pictured) contains only a handful of lines, it is unmistakably a bull. Letting go of technical details can be uncomfortable for someone immersed in a subject because the result may feel 'not quite right'. But good science communication lies in the compromise between precision in every detail and easy-to-grasp ideas.

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Although simplicity is key, it is important not to oversimplify. Picasso's bull would be unrecognizable had he depicted the animal as an oblong; it needs the horns, tail and legs. Similarly, certain details are often crucial to grasping why a scientific result is an important advance because they provide the context to understand the problem the research addresses.

Once a finding has been distilled to its essence, it is crucial to not add new distractions from the way we tell its story. Descriptive, non-technical language is best. For example, the sentence "A grows faster than B" provides the important information more clearly than "A scales quadratically whereas B scales linearly". As a rule of thumb, phrases that are easy to visualize help with understanding, as most people process information by imagining it in their mind's eye.

Like all groups, research communities develop a shorthand that allows them to concisely and precisely convey information to another member of the group. It also bonds together the different members, who in research will be from a range of linguistic, cultural and social backgrounds. But at the same time, 'groupspeak' excludes anyone belonging to a different community, and it is not helpful for communication with a broad field of scientists. Leaving behind this specialist vocabulary to benefit an audience can prove an obstacle. When we are used to a certain terminology we no longer think about what the words actually mean, and it takes more effort to explain than to name.

The same is true for acronyms and abbreviations. They may be quicker to write but they are a distraction for the reader. The effort it takes to remember what the letters mean would be better spent on understanding the science. Abbreviations can also be a form of jargon when they are commonly used in one community, but there is no guarantee that a combination of letters is unique in its meaning. For example, the most frequent use of DFT signifies density functional theory, but it can also mean dispersive Fourier transform. The exception here are terms whose abbreviations are more readily understood than their long-form. Fewer people will stumble across DNA than over deoxyribonucleic acid.

Indeed, the easiest language to process is the way we speak — short, common words and short sentences using active rather than passive voice. Needlessly wordy and complicated constructions tend to obscure meaning, as George Orwell pointed out in his 1946 essay *Politics and the English Language*, in which he recommended a clear and simple style instead. This also applies to science communication. Uncomplicated language allows the reader to focus on the science because they don't have to decode the language first.

Communicating results across different disciplines may require a lot of thought, but it is worth the effort. Not only may it inspire others, you may discover new ideas and questions in the process of breaking down a problem to its bare essentials. ❐

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