demonstrate that bogong-moth brains are tuned to information from the starry night sky, which is an important advance in efforts to unravel the neuronal basis of long-distance migration.

Excitingly, there remains much to learn from the bogong moth, which is a relatively new model system for navigational research. It is also one of the few long-distance migrants that is amenable to both behavioural and neurophysiological studies.

How the moth brain interprets star patterns and uses them to gain directional information remains unknown. One possibility is that moths 'know' that the south is marked by stars that move comparatively little during the night (Fig. 1b). This is a strategy similar to that used by some migratory birds, which learn the pattern of the stars[9], but moths might either learn or have innate knowledge of this. Alternatively, moths might orient themselves relative to star patterns that rotate and then adjust for that rotation over the course of the night, in the same way that the Sun compass of migrating monarch butterflies (*Danaus plexippus*) compensates for the changing position of the Sun during the day[3,10].

A time-compensated star compass has not been reported for any species, but perhaps, in bogong moths, the brain circuitry underlying the Sun compass in other insects has been co-opted for a stellar compass. Future work should explore these possibilities.

There is growing evidence that most mobile animals have several ways of guiding themselves[4]. Dreyer and colleagues' work highlights that the moths' navigational system includes a star compass, which depends on the sky being clear, and a magnetic compass, which works even when the sky is overcast[5,7]. Interestingly, it has been proposed that monarch butterflies also have at least two compasses[3,10], suggesting that dual compasses might be a common feature among migratory insects.

The bogong moth, with its one-year lifespan and single round-trip itinerary, provides a fascinating contrast with animals such as sea turtles, which live for decades and repeatedly migrate back and forth between foraging and reproductive destinations. There is speculation that one-time migrants such as bogong moths have greater dependence on inherited systems for navigation than is the case for longer-lived animals, which have more opportunity to incorporate learnt information into their navigational systems[11].

Dreyer and colleagues' work expands our understanding of animal-guidance mechanisms. It also highlights the ingenious mechanisms that arise by natural selection to shape the navigational strategies leading diverse animals to their goals.

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Communication

Scientific jargon can be 'satisfying' but misleading

Todd Rogers & Hillary Shulman

Research shows that jargon can make weak explanations feel complete by masking their gaps. What can experts do to communicate science effectively to laypeople?

When scientists write for lay audiences, they face a familiar dilemma: should they use technical language that reflects precision and authority, or simpler language that maximizes clarity? In a study published in *Nature Human Behaviour*, Cruz and Lombrozo[1] offer fresh insights into this communication dilemma. The paper shows that jargon has different effects on how readers perceive and understand explanations — and that these differences have consequences for both science consumers and science communicators.

Across nine online experiments, the researchers presented nearly 6,700 participants with explanations of scientific phenomena that varied by quality (whether the explanation was circular, meaning that its conclusion was used as part of its premise, or complete) and language (whether the explanation was plain or used jargon). Participants were then asked to rate the text along three key dimensions.

The first was 'gappiness': to what extent did the explanation have gaps in it? This reflects whether the reader felt that the explanation was incomplete. The second was satisfaction: how satisfying did they find the explanation? This is a proxy for perceptions of the coherence and completeness of the argument, and the expertise of the writer. Finally, comprehensibility: how easy was the explanation to understand? This provides a direct measure of whether the reader felt that they understood the explanation. The researchers' goal was to unpack why jargon might boost reader satisfaction but decrease their understanding.

The authors found that jargon can reduce perceived gappiness, especially in circular or weak explanations. For example, saying 'Candy emits light when crushed because charged leptons collide and release electromagnetic waves' sounds more scientific than 'Candy emits light when crushed', despite the jargon adding little comprehensible information. Therefore, readers rated the jargony version as more satisfying — because it seems to fill explanatory gaps. Notably, when jargon was replaced by plainer language, readers recognized that the argument was deficient and were unsatisfied. The argument similarly fell apart when readers were asked follow-up questions or to explain the phenomenon in their own words.

Why does jargon work? The pattern observed by the authors reflects a psychological tendency: when people lack knowledge, they often rely on surface cues to assess the credibility of a statement. Jargon becomes a signal of the communicator's expertise. Even when readers don't understand the technical terms, they assume the explanation refers to existing knowledge. In other words, readers gave statements with jargon the benefit of the doubt.

To illustrate, imagine that a person tells their doctor, "My foot hurts," and the doctor replies, "You have podalgia." The person might feel reassured — until they realize that 'podalgia' means 'foot pain'. The jargon makes it seem as though the doctor (and the person) understands what is happening, when they are simply restating that the foot is in pain. This is 'perceived gappiness' in action: jargon reduces the feeling that information is missing, even when the explanation is poor.

What does this mean for readers? The study reveals how readily readers can conflate language complexity with substance. Jargon

YANG GUANYU/XINHUA/ALAMY LIVE NEWS

Figure 1 | A medical expert talks to a patient.

can boost satisfaction and reduce perceived explanatory holes even when it does not improve – or might even reduce – a reader's understanding. This helps to explain why pseudoscientific or misleading content can feel persuasive: if it sounds technical, it seems trustworthy and sounds true.

In real-world settings, people often skim content or engage in it with low motivation, so these cues matter even more. Jargon can discourage engagement altogether – people stop reading, glance through or ignore content that feels dense or inaccessible[2]. Therefore, although the explanation in jargon-laden messages might be tacitly accepted by readers, a reader is less likely to engage with these texts in the first place.

From the perspective of science communicators, these findings highlight a trade-off. If a writer's goal is to persuade, to make an explanation seem credible or to win acceptance, jargon can help. If the goal is to teach, clarify or build real understanding, jargon probably hinders.

This research raises an important question: what should science communicators aim for – explanations that readers find acceptable and satisfying, or ones that are clear and understandable? Unless a communicator has a compelling reason to do otherwise, we think that clarity should prevail. Plain language deepens understanding, supports sound decision-making and reduces the risk of harmful misinterpretation. This is especially crucial in the context of politically important and fast-developing fields, such as climate science, technology and medicine (Fig. 1).

Like all experiments that use online surveys, this study has limitations. Participants rated short, pre-written explanations embedded in online surveys, which is an artificial setting. In the real world, audiences encounter information through headlines, social media, dense reports and casual conversations. As such, a broader question about this work, as for many other studies, is whether these effects would be replicated in less-controlled settings and in competitive information environments in which different parties vie for the reader's attention.

Given the competitive attention ecosystem in which much of science communication exists, the deeper challenge for science communicators is not just how to explain things clearly, but also getting people to engage at all. Readers often skim. Many stop reading after a few lines[3]. In these conditions, jargon doesn't just obscure, it repels.

Ultimately, this study underscores a simple point: scientists and communicators should think carefully about their goals. Jargon can be useful, but it is not neutral. It can enhance the appearance of understanding while eroding the real thing. Clarity should be the default. If people are to trust science, they should also be able to follow it.

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Condensed-matter physics

Solid gold superheated to 14 times its melting point

Artur Tamm

Lasers have been used to heat solid gold well beyond its melting temperature without losing the metal's crystalline structure – exceeding a theoretical superheating limit. **See p.950**

A cup of distilled water can sometimes be heated in a microwave for a long time without boiling, only to erupt explosively when the water is disturbed. This is an example of a phenomenon called superheating: the water is heated beyond its boiling point but remains a liquid until an input of energy causes it to rapidly change state. Superheating is also exhibited by crystals that are heated above their melting temperature but remain in a solid state. On page 950, White *et al.*[1] explore the limits of superheating in solid gold. The team used lasers to rapidly heat gold films and showed that the metal can reach more than 14 times its melting point without changing state. This exceeds the theoretical limit for superheating predicted by previous studies.

Superheating is generally achieved in one of two ways. The first is to use a sample that has few defects or impurities, which is why water must be distilled to be superheated in a microwave. The second is to change the temperature very quickly; this prevents the nucleation of liquid or vapour bubbles, which would trigger a phase change. A landmark study by Hans Fecht and William Johnson[2]