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WEEKLY 16 March 2024

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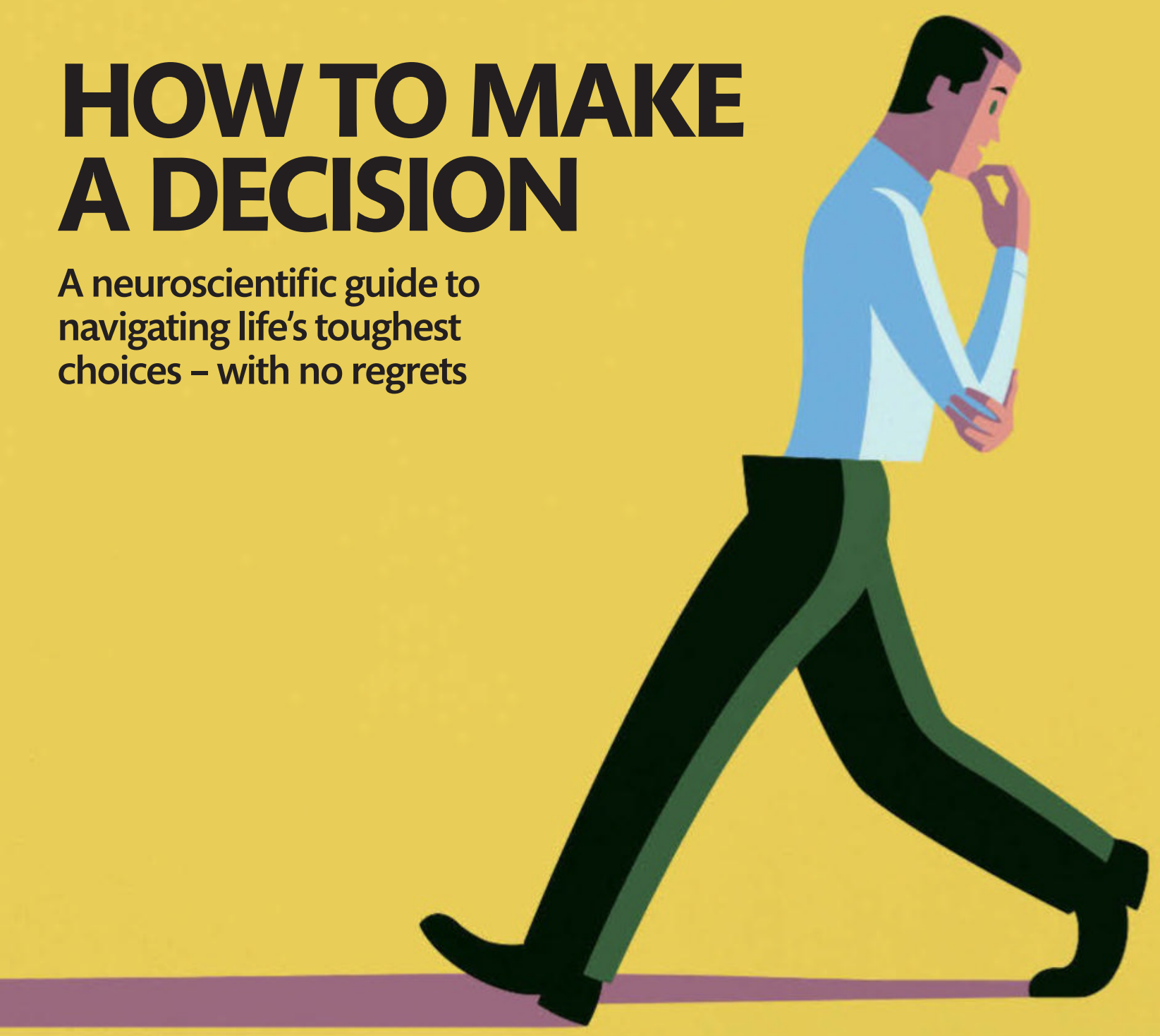

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Geology

Anthropocene Epoch rejected

Scientists surprised by refusal of a proposal for a geological epoch defined by human activity

Chen Ly

EFFORTS to put the Anthropocene on the geological timescale have fallen at the first hurdle, shocking members of the consulting scientific body, who only learned of the official decision when it was publicised. A panel voted down the proposal 12 to 4, declining to define a new epoch based on the planetary changes brought about by humans.

The current epoch is the Holocene, which began about 11,700 years ago and is marked by the progress of humans. However, some academics argue that more recent changes to the planet due to our activity, such as from nuclear weapons, are enough to herald a new epoch: the Anthropocene.

Last July, the Anthropocene Working Group (AWG) decided that Crawford Lake in Canada was the site that presented the best geological evidence for the new potential epoch. Radioactive isotopes dated to the 1950s have been preserved in the lake bed. In October, the AWG submitted a formal proposal to its parent body, the Subcommission on Quaternary Stratigraphy (SQS),

CORBIS HISTORICAL VIA GETTY IMAGES

Nuclear weapons, like the 1957 Priscilla explosion in Nevada, leave a lasting effect

for the first round of voting.

Now, the results are in. According to a report in *The New York Times*, published on 5 March, 12 of the SQS voting members opposed the proposal, four supported it and two abstained.

"The [*New York Times*] article was unexpected coming out this morning, as we had not received official confirmation directly from the Secretary of SQS," said AWG members Simon Turner at University College London and Colin Waters at the University of Leicester, UK, in an email to *New Scientist* on 5 March. On the result, Turner and Waters said: "Clearly this is very disappointing given the huge contribution by AWG to develop our case."

On 6 March, the SQS released a statement saying that the details reported by *The New York Times* were "unverified" and that the vote took place in breach of the official processes set by its parent body, the International Commission on Stratigraphy.

As a result, the chair of the SQS, Jan Zalasiewicz at the University of Leicester, UK, has requested an inquiry to begin the procedure to annul the "putative" vote.

There are a few reasons why the proposal was rejected, says Mike Walker at the University of Wales, Lampeter, in the UK, who is a voting member of the SQS. Human impacts extend far back beyond the proposed start data of the Anthropocene, including the colonisation of the Americas and the industrial revolution.

"The time span of the proposed Anthropocene is no more than 75 years – a single human lifetime," says Walker. "This does not fit comfortably into the geological timescale, where units typically span thousands, tens of thousands or millions of years."

"The time span of the proposed Anthropocene is no more than 75 years – a single human lifetime"

Turner and Waters disagree with the decision, saying the evidence indicates that the Anthropocene, though short for now, is "of sufficient scale and importance to be represented on the Geological Time Scale".

"It was a shock to some," says Kim Cohen at Utrecht University in the Netherlands, also on the SQS voting committee. But even though the Anthropocene won't be on geological charts, it will still be a useful, significant concept, he says. ▮

Marine biology

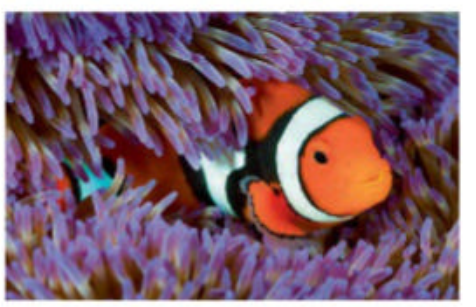
Clownfish have a sugary way to avoid anemone stings

THE secret is in the snot. Chemical changes in the mucus that coats a clownfish's body seem to blunt the sting of anemones.

How exactly clownfish, also known as anemonefish, are protected from the stings of the anemones they form a symbiotic relationship with has long been a mystery, says Karen Burke da Silva at Flinders University in Australia.

To investigate, she and her colleagues raised orange clownfish (*Amphiprion percula*) and bubble-tip anemones (*Entacmaea quadricolor*) in the lab. Some of the fish and anemones were paired together, while others lived separately. The team took mucus samples from the fish at various times before and after they acclimatised to their anemones, then put the mucus on microscope slides and pressed it onto an anemone's tentacle.

Anemones sting by explosively firing microscopic, venomous harpoons from stinging cells called nematocytes. The researchers counted how many nematocytes fired after mucus treatments and found that mucus from anemones' clownfish partners – but not from unacquainted fish – reduced firing.



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Clownfish form a mutually advantageous relationship with anemones

To figure out why, the team looked at how the mucus changed over time. Three weeks into a symbiotic partnership, the mucus's chemical profile had shifted substantially. In particular, the concentrations of seven types of glycans – chains of sugars that attach to proteins – had changed (bioRxiv, doi.org/mkmg). Getting rid of glycans or tweaking them may suppress the firing of nematocytes, says Burke da Silva.

Other strategies could also be at play. The glycan change is slow and reverts within a day of partners being split up. So the fish may use an unknown chemical strategy to get initial access to an anemone. ▮

Jake Buehler