

Imagine dining in a European capital where you do not know the local language. The waiter speaks little English, but by hook or by crook you manage to order something on the menu that you recognise, eat and pay for. Now picture instead that, after a hike goes wrong, you emerge, starving, in an Amazonian village. The people there have no idea what to make of you. You mime chewing sounds, which they mistake for your primitive tongue. When you raise your hands to signify surrender, they think you are launching an attack.

Communicating without a shared context is hard. For example, radioactive sites must be left undisturbed for tens of thousands of years; yet, given that the English of just 1,000 years ago is now unintelligible to most of its modern speakers, agencies have struggled to create warnings to accompany nuclear waste. Committees responsible for doing so have come up with everything from towering concrete spikes, to Edvard Munch's "The Scream", to plants genetically modified to turn an alarming blue. None is guaranteed to be future-proof.

Some of the same people who worked on these waste-site messages have also been part of an even bigger challenge: communicating with extraterrestrial life. This is the subject of "Extraterrestrial Languages", a new book by Daniel Oberhaus, a journalist at Wired.

Nothing is known about how extraterrestrials might take in information. A pair of plaques sent in the early 1970s with Pioneer 10 and 11, two spacecraft, show nude human beings and a rough map to find Earth—rudimentary stuff, but even that assumes aliens can see. Since such craft have no more than an infinitesimal chance of being found, radio broadcasts from Earth, travelling at the speed of light, are more likely to make contact. But just as a terrestrial radio must be tuned to the right frequency, so must the interstellar kind. How would aliens happen upon the correct one? The Pioneer plaque gives a hint in the form of a basic diagram of a hydrogen atom, the magnetic polarity of which flips at regular intervals, with a frequency of 1,420MHz. Since hydrogen is the most abundant element in the universe, the hope is that this sketch might act as a sort of telephone number.