Invented languages may seem like something that belongs in fantasy novels, science-fiction films or childhood games. Yet the impulse to reshape language is surprisingly universal. Children do it for fun, communities do it when they need to communicate across linguistic boundaries, writers do it to make imaginary worlds believable, and scientists do it to understand how the human brain learns.

Even a playground language such as Pig Latin illustrates something important about the mind. Its rules are simple: move the opening consonant sound of a word to the end and add “ay”, while words beginning with vowels receive a different ending. Once those rules are understood, speakers can begin transforming sentences almost automatically.

That ability points to a much larger human talent. We do not merely memorise words. We recognise patterns, absorb systems and rapidly learn how sounds and symbols can be reorganised to carry meaning.

Languages born at cultural crossroads

Some new languages emerge not from imagination but from necessity.

When groups speaking different languages come into sustained contact — through trade, migration, colonisation or shared workplaces — they often need a practical means of communication before either side has learnt the other’s language. One possible result is a pidgin.

Pidgins typically borrow much of their vocabulary from a socially or economically dominant language while simplifying or restructuring grammar. Their purpose is immediate communication rather than linguistic elegance.

The term “pidgin” itself is widely believed to have developed from a Chinese pronunciation of

the English word “business”, reflecting the commercial settings in which some such contact languages emerged.

What begins as a practical linguistic compromise, however, can develop considerably over time. In some societies, contact languages acquire large communities of speakers and become important markers of culture and identity.

When language is deliberately designed

Other languages are created with painstaking attention to grammar, sound and vocabulary.

JRR Tolkien provides perhaps the best-known literary example. A scholar of languages as well as the author of *The Hobbit* and *The Lord of the Rings*, Tolkien did not simply invent a handful of exotic words for his fictional characters. He developed elaborate linguistic systems, complete with histories, sound changes and grammatical rules.

For Tolkien, language was not decoration added to a fictional world. It was part of the architecture of that world.

A very different ambition lay behind Esperanto. Created by LL Zamenhof in 1887, Esperanto was intended as an accessible international second language. Its grammar was deliberately regular and relatively free of the exceptions that make many natural languages difficult for learners. More than a century later, it continues to have speakers around the world.

Then there is Klingon.

Developed by linguist Marc Okrand for *Star Trek* during the 1980s, Klingon was designed to do almost the opposite of Esperanto. Rather than feel familiar and easy, it needed to sound convincingly alien. Its unusual sounds and uncommon sentence structure helped make it

distinctive enough to belong to an extraterrestrial civilisation.

The contrast reveals how varied the purposes of constructed languages can be. One may be designed to bring people together; another to make an invented universe feel more real.

Does the brain know the difference?

For neuroscientists, constructed languages raise an intriguing question: does the human brain treat an invented language differently from one that evolved naturally over centuries?

Research published in 2025 by scientists at the Massachusetts Institute of Technology examined brain activity in fluent speakers of constructed languages including Esperanto, Klingon, Na'vi from *Avatar*, and Dothraki and High Valyrian from *Game of Thrones*.

Using functional magnetic resonance imaging, the researchers found that these languages engaged the same core language network that people use when processing natural languages.

To the brain, in other words, a language does not become linguistically meaningful simply because it is ancient, culturally established or spoken by millions. An invented system can be processed as language too, provided speakers have learnt to use it to communicate meaning.

There is, however, an important distinction between human languages and other rule-based systems.

Computer programming languages may have elaborate structures and precise syntax, but they are not used in the same way to express the ordinary range of human experience — thoughts, intentions, relationships, perceptions and emotions. Consequently, programming

code does not recruit the brain's language system in quite the same manner.

Tiny languages built for the laboratory

Researchers also deliberately create miniature languages to investigate how linguistic learning happens.

These experimental systems may contain only a small vocabulary and a limited set of grammatical rules. Precisely because they are unfamiliar, they give researchers greater control than established languages such as English, Hindi or French.

Participants can be exposed to a completely new grammatical pattern, for example, and researchers can observe how quickly they discover the underlying rule.

Such studies strip away some of the complications created by previous linguistic knowledge. They allow scientists to watch the mind search for regularities almost from the beginning of the learning process.

Intriguingly, performance on artificial-language learning tasks can also provide clues about how successfully people are likely to learn natural languages.

The mind is a pattern-finding machine

Across playground codes, trade languages, literary creations and laboratory experiments, the same capacity repeatedly appears: human beings are remarkably good at turning patterns into communication.

Language does not have to arrive with centuries of history behind it. Give people a sufficiently coherent system of sounds or symbols, rules for combining them, meanings to

communicate and other people with whom to communicate them, and the brain can begin treating that system as language.

That may be the most revealing thing about invented languages.

The thousands of languages spoken around the world differ dramatically in their vocabulary, sounds and grammar. Yet beneath that diversity lies a shared human capacity to recognise structure, attach meaning to it and use it socially.

From a child whispering in Pig Latin to a *Star Trek* enthusiast speaking Klingon, the underlying mental achievement is remarkably similar. We learn a set of conventions, discover what they allow us to say and, almost without noticing, turn an invented system into a new way of thinking with one another.