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An Interview with Vyvyan Evans, author of *The Babel Apocalypse*

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[Vyvyan Evans](#) is an expert on language and digital communication. He holds a PhD in linguistics from Georgetown University, and has taught linguistics in Asia, Europe, and North America.

His popular science essays and articles have been featured in *The Guardian*, *Psychology Today*, the *New York Post*, *New Scientist*, *Newsweek* and *The New Republic*, and he is the author of *The Emoji Code: The Linguistics behind Smiley Faces and Scaredy Cats*, *The Language Myth: Why Language Is Not an Instinct*, *The Crucible of Language: How Language and Mind Create Meaning*, *The Structure of Time: Language, Meaning and Temporal Cognition*, and other books.

The Babel Apocalypse, published by Nephilim Publishing is his science fiction debut. For further details, the book website is [here](#).



Ed Battistella: You set *The Babel Apocalypse* in the twenty second century. What's happened to language?

Vyvyan Evans: *The Babel Apocalypse* imagines a future in which we stream language directly to neural implants in our heads.

Today, we stream anything from movies, to books, to music, to our ‘smart’ devices, and consume that content. Smart devices use streaming signals—data encoded in IP data packets—encoded and distributed via wi-fi internet. Language streaming would work, in principle, in the same way. With a ‘language chip’ implanted in our brains, we will be able to ‘stream’ language from internet-in-space on demand, 24/7.

Moreover, based on an individual’s level of subscription to a language streaming provider, they would be able to stream any language they chose, with any level of lexical complexity. This means that someone could, potentially, apply for a job in any country in the world, without needing to be concerned about knowing the local language. Rather, the individual would just draw upon the words and grammar they need, to function in the language, by syncing to a language database, stored on a server in space. And call it up, over the internet, in real time, as they think and talk. It means that everything someone needs to know, to be able to use a language, is streamed over the internet, rather than being stored in someone’s head. Language learning, thus, becomes obsolete.

Science fiction has a long and illustrious habit of predicting the future. In 1940, with his first in the *Robot* series of stories, Isaac Asimov predicted some of the ethical issues that would arise as artificial intelligence comes to have a more pervasive influence in our daily lives.

Today in the twentieth first century, we are on the brink of a Fourth Industrial Revolution, sometimes dubbed 4IR. This is where automation and connectivity, via the internet, will dramatically alter the way in which we interact with each other, as well as everything around us, in our increasingly joined-up technological environment. And I predict, in less than one hundred years from now, this new technology will transform many aspects of our daily lives that we currently take for granted, including language itself.

Indeed, in 2015, many of the world's leading scientists, warned, in an [Open Letter](#) and accompanying report, against the new dangers of AI, as a consequence of 4IR. This Open Letter was issued in response to new breakthroughs in AI that, without adequate control, might pose short and long-term existential threats to humans.

But potential dangers come not just from the use of AI, in the sense of, for instance, *The Terminator* series of movies, in which AI seeks to wage war and destroy the human race. New implantable devices, that will enhance how we as humans can interact with our new tech-landscape, will also give rise to potential dangers. Language is, arguably, the single trait that is the hallmark of what it is to be human. And yet, in the near-future, language-chipped humans, or 'transhumans', will have enhanced abilities that bring new opportunities, as well as ethical challenges and even threats.

Of course, for a new ecosystem of implantable language chips to gain traction, as predicted in *The Babel Apocalypse*, big tech would need to lead with the initial investment, once the value of the product has been established. And there are significant initial costs, in terms of implanting the body-borne hardware.

The Babel Apocalypse imagines the process beginning with a public referendum, in California, after which all adults must undergo "chipping". And there would be a transitional generation, as minors also undergo language chipping at the age of eighteen, and newborns at birth, moving forward. And from there, the initial benefits of language streaming would appear to outweigh any ethical or civil liberty concerns.

An ancillary benefit of language streaming would also include a dramatic decrease in crime, due to population registration via continual connectivity of the 'always on' language chip. This would enable the immediate detection of responsibility for crime. Basically, as someone's brain becomes a 'smart' device, an individual's location will always be traceable with a time and date stamp.

Other benefits would include security improvements—unique ‘voice prints’ due to biometric data unique to an individual, transmitted from the language chip each time someone speaks—would facilitate the unlocking of homes, to accessing bank accounts, without the need for keys, or passcodes. Hence, in the initial stages at least, it will seem that the new technology is a win-win: there are no losers.

In terms of hardware required, *The Babel Apocalypse* envisages an implantable language chip—connected to the major language areas of the brain (Broca’s area—responsible for language production, assembling the neural code that underpins speech, by controlling the motor cortex, and facilitating mouth movements etc., and Wernicke’s area—which is the area responsible for understanding what is being heard).

Second, there would be a wi-fi transceiver, most likely an ear implant—modelled on the technology currently being developed—which would facilitate bi-directional streaming signals, between the brain’s language chip and language servers that encircle the globe, via an internet-from-space system—the very systems that are currently being launched by Starlink, for instance: the world’s first and largest satellite constellation using a low Earth orbit to deliver broadband internet capable of supporting streaming.

The ear implant would communicate with the brain’s language chip. Hence, as thoughts are processed, words in the selected language could be called up, on demand, by the individual’s brain, and produced, potentially in any modality (speech, gesture, graphical representations, such as writing, etc.)

There would also likely need to be a body-borne computing system, for the individual to control their language selections and subscriptions. In *The Babel Apocalypse*, this is conceived as a ‘holotab’: a holographic smart computer, eighteen centimeters wide, that can be projected on demand from an individual’s implanted wrist chip. This allows, via eye-fusion sensor tech, full eye-blink, touch and voice commands to be deployed, to control the ‘holotab’, to have the language chip switch between languages at the blink of an eye.

EB: So language is no longer learned but acquired by neural implants. What could possibly go wrong?

VE: As humans “give up” on language, and offload language learning, allowing AI to take over, language becomes a commodity (like any other, such as movies, music, etc., that we now stream on demand for a fee). In short, language would become a proprietary product, controlled for and by big tech, in service of shareholders and corporate interests.

Such a development leads to a slippery slope of issues ranging from potential censorship, to control of thought, and even, through cyberterrorism, the prospect of an existential crisis for the human race. The latter is manifested in *The Babel Apocalypse* most notably by a global language outage, which prevents large numbers of people from being able to communicate.

Self-evidently, in a world where most people have undergone language chipping, this would soon lead to a situation in which in the automated world there are no native speakers of language left. And with an entire population entirely dependent on language, were that language streaming ecosystem to fail, then the consequences would be catastrophic.

The Babel Apocalypse imagines a situation in which a cyberterrorist attack on language streaming servers in low Earth orbit leads to just such a global language outage. Such an event, with its low probability, would be one for which humans would be completely unprepared. In *The Babel Apocalypse*, entire populations of people, literally at a stroke, lose the ability to use language, becoming feral. And hence, the consequences for civilization become catastrophic.



Hence, the concerns alluded to in the book relate, ultimately, to what it means to be human; and whether implantable AI can and should be allowed to replace previously fundamental aspects of the human experience. Moreover, these concerns highlight the abuse that arises from the commoditization of what we previously assumed to be a human birth-right, namely language.

EB: You've predicted that neuro-prosthetic technology using AI is on the horizon. When do you think this will be a reality? And what will it mean for society? I'd hate to have Chat GPT in my head?

VE: One response to the existential human threat posed by AI, and one championed by Elon Musk (who incidentally was one of the signatories of the 2015 Open Letter, warning of the dangers posed by AI to humans), has been to embrace the research challenge of creating a so-called 'hybrid' human mind. Through his leadership of the neuro-prosthetic tech company, Neuralink, Musk advocates implantable chips as the future: by creating so-called 'transhumans'.

Neuralink is one of several new companies that seeks to develop neuro-prosthetic technology that, ultimately, might allow the human brain to become hybridized with AI. The rationale for Elon Musk, and others, is that by embracing AI, the new "transhuman" can stay one step ahead of non-human AI, and hence avoid existential threats. Yet, this is the very research trajectory that potentially leads to the prospect of language becoming a commodity, thereby posing other existential dangers, as predicted in *The Babel Apocalypse*.

Back in 2020, Elon Musk predicted that neural implants would make the need to learn language obsolete within five to ten years. Yet, as with many of his predictions, this one is wide of the mark. There are considerable challenges to be overcome, beyond the immediate surgical challenge of safely and accurately inserting a neural implant in someone's brain. And to date, human testing has not yet even begun.

Current research is focusing solely on medical uses of such technology, in order to enable patients to make use of neural code from the brain to communicate with external devices. The medical goal is that such technology will improve the quality of life of patients who suffer from motor and other neurological disabilities, as well as improving diagnostic abilities of their conditions.

In terms of the ultimate goal, of making language learning obsolete, one challenge is that the concepts upon which vocabulary and grammar systems depend are not neatly located in a small number of specific areas of the brain. An individual's inventory of concepts (aka thoughts), the ideas that we use language to encode and externalize, are widely distributed. This means that a language chip would need to be connected to many different brain areas, even assuming it becomes possible to provide an accurate means of mapping the neural code that all these different regions of the brain use to communicate with one another.

Another challenge is the huge cost involved. Neural implant technology, while in its relative infancy, comes with a huge price tag. But just as the early computers and mobile phones were bulky and expensive, and hence exclusive, today they are ubiquitous. And so will it be with language streaming technology.

My guess, based on the current research trajectory, is that the technology that forms the basis for language streaming will already exist by early in the twenty-second century, which is to say, in less than one hundred years from now—perhaps even sooner.

EB: Elon Musk has said that neural implant will make language learning obsolete. What would be lost if languages are treated as simply data?

VE: In a future era of language-as-commodity, it is inevitable that whether a language lives or dies would be based on economics. In other words, those languages with little demand on streaming services would cease to

exist.

As language would be stored entirely on servers, language would, in effect, be controlled by the big tech companies that lease it back to human populations that have undergone language chipping.

The Babel Apocalypse imagines a system where language is controlled by a body based in California, called Unilanguage. This is modelled on the very system in place for vetting new emojis, which are controlled and approved by Unicode (also based in California, controlled by just a few of the world's leading tech firms).

One consequence would be that as languages fall out of demand, there would be little incentive for big tech firms to continue to store them, tying up valuable server space. And as populations undergo language chipping, native speakers would cease to exist. Hence, lesser-used languages would simply die out—a consequence of lack of demand, which is simple economics at work. If there is no demand, it doesn't pay. Hence, providers stop offering it.

The Babel Apocalypse imagines a future in which there are just 250 surviving languages (compared to around 7,000 today).

National governments would, inevitably, try to preserve cultural unity, while ensuring subscriptions are affordable for the poorest citizens. Hence, *The Babel Apocalypse* posits a situation in which (most) states require all public security systems (referred to as VirDas—short for Virtual Digital Assistants) to run on a single state language. For context, VirDas are the mechanisms for processing voice commands, and hence the main security portals for accessing everything from grocery stores to offices, from vehicles to homes.

As an example, the national state language in France, on which all public VirDas would run, would be French. In the US, it would likely be English. In practice, this would mean that in France, say, it would be sufficient to only need to pay for a single language streaming package. And to gain entry to a supermarket, for instance, the language user would identify at the store entrance, using voice commands, by speaking into the VirDa. Incidentally, this technology would also mean that stores and supermarkets are fully automated (no need for human clerks or cashiers). Label sensor fusion tech, already being trialed, would mean that a shopper's groceries can be located with each individual shopper, who would use their voice command authorization to pay for their purchase at self-checkout, prior to being "allowed" to leave the store.

Of course, there are multiple consequences of all this for language. Regional accents and dialects, being non-standard, would require more expensive streaming subscriptions—this entails that regional accents would become status symbols. The working classes would be, in effect, priced out of their own local language varieties.

The range and variety of human language would be erased at a stroke. This, self-evidently, has implications for identity, ethnicity, and so on. It also has consequences for who controls language, and how new words are coined, or come to fall out of use. These would become decisions for big tech and government, not individual speakers of languages.

EB: I know your work primarily from your career as a linguist. Was writing fiction a new challenge? Which type of writing comes most naturally?

VE: I think that whatever the genre of writing, there are specific challenges, as well as some broad similarities. I have written and published technical books on language and mind, works of reference such as glossaries and textbooks, as well popular science books. Each of these genres requires a different style of presentation. But the commonality is that the writing style is expository: the message is key, and that must be explained clearly in an

audience-specific way, whether writing for students, interested lay-readers of language and science, or seasoned academic experts.

In terms of writing genre fiction (such as science fiction), the key difference is that the message emerges through the story. Hence, the exposition (of a more academic style) takes a backseat. In genre fiction, as the messages derive from (and through) the story, which is the central driver of fiction, the aphorism ‘show, don’t tell’ becomes key.

This was the essential challenge for me, at least, in early versions of what eventually became *The Babel Apocalypse*. I learned and honed creative writing techniques for revealing ideas and details through the story, making the story itself the central driver from which messages could be gleaned.

That said, I find science fiction to be appealing as a genre, as it really is an advantage to be a subject matter expert. To write convincingly, especially in so-called ‘hard’ science fiction, such as *The Babel Apocalypse*, which strives for scientific accuracy, it is important to have relevant background in the story and the ideas being conveyed. And it seems to me that this cannot be adequately replicated without some meaningful level of expertise.

Isaac Asimov, whom I mentioned earlier, for instance, was a Professor of Biochemistry at Boston University, also possessing a background in physics and mathematics. In short, it’s important to write what you know. And from that perspective, it was a relatively easy step to move from writing about language for a technical audience to writing about the future of language for a speculative fiction audience.

What has always drawn me to science fiction is the fact that it is the literature of ideas. And in that regard, it is arguably the genre that is closest to the other genres I have spent an academic career operating in.

EB: Sometime life imitates fiction. Are you at all worried that you are giving corporations and governments a road map to dystopia?

VE: I very much hope that *The Babel Apocalypse* is received as a warning, rather than as a roadmap. When we lose language, we all lose.

The mouthpiece for the warning, in the novel, comes in the form of Professor Ebba Black, the last native speaker of language in the automated world. In her words: “They who control language control everything.” And within a landscape where entire populations have given up on language learning, for reasons of convenience, and hence must lease it back for monthly streaming subs, then these populations really are entirely dependent on big tech.

The book’s warning comes in several forms, given language streaming technology would have significant societal, ethical and civil liberty implications.

The first warning relates to the consequences for language itself. And that is, in just one generation there would no longer be any native speakers of language left; hence, there could be no going back to how it was before.

This entails that individuals become constrained by decisions made by big tech and governments, in terms of words and lexical choice. As one example, imagine a particular state that outlaws abortion under all circumstances. Such a government might then proscribe the word “abortion” itself. Hence, say in the US, someone might stream English and not be able to describe the concept, using the word. This, in effect, also outlaws the very concept itself.

There would then be the Kafkaesque situation whereby in another English-speaking territory, where abortion remains legal, language streaming providers censor the word in one state, but not in another.

But this kind of potential for censorship of thought, by permanently canceling words, might also lead to a situation where autocratic regimes can abuse the technology for their own ends. The concerns are perhaps obvious, and even worse than imagined in George Orwell's *Nineteen Eighty-Four*. Thought itself can be controlled at a stroke, for entire populations, by limiting freedom of expression in language.

In terms of population registration, this would become a de facto consequence of language streaming technology. A language chip would be assigned a unique serial number, encoded in metadata every few seconds as the individual's language chip connects and communicates with the language streaming servers (via the ear implant transceiver). This means that every individual is instantly identifiable 24/7, by virtue of being linked to internet-in-space language servers.

What this means, in practical terms, is that the concept of privacy is gone forever. Everyone's location, whom they interact with, is identifiable; and with permanent records stored on file, this ensures that everyone's lives are being recorded in real time, providing a 'forever record' of where they have ever been.

While such technology would inevitably reduce crime, it would come at a huge cost in terms of civil liberties. And it obviously means that overreach by the state is a significant danger, given how easy it would be for governments to spy on all its citizens all the time.

And of course, technology that makes most people in the world wholly dependent on big tech is at risk of exactly the global disaster predicted in *The Babel Apocalypse*. A global language outage, in such a future, should be viewed very much as a warning, and certainly not a roadmap for overreach by big tech and a big state.

EB: *The Babel Apocalypse* is the first in a planned series. What can readers expect next?

VE: There are six projected books in the series which, in increasing turns, examine the role and nature of language, and communication. The thematic premise is that, in the wrong hands, language can serve as a weapon of mass destruction. This overarching motif is explored, across the six books, both from Earth-bound and galaxies-wide bases.

As language involves symbol use and processing, the book series, perhaps naturally, also dwells on other aspects of human imagination and symbolic behaviour, including religious experience and belief systems, themselves made possible by language.

The second book in the series, *The Dark Court*, is set five years after the events of the great language outage depicted in *The Babel Apocalypse*. It explores how the language chips in people's heads can themselves be hacked, leading to a global insomnia pandemic. *The Dark Court* will be published in 2024, as book 2 in the series.

EB: Language and linguistics plays a big role in science fiction. Do you have some favorites?

VE: There are two books that stand out for me, in terms of ingeniously exploring the impact of language on how we think and experience (illustrated through the conceit of a protagonist learning an entirely new, and alien, language).

The first, *Babel-17* is by Samuel R. Delany. It was first published in 1966 and was joint winner of the Nebula Award for best novel in 1967.



The eponymous Babel-17 is a language that alters the perceptions and world-view of any who speak it. This is a conceit that draws upon the principle of linguistic relativity.

Linguistic Relativity holds that divergence in the grammatical organization and lexical structure of the language we speak alters the habitual perception of the world around us, even dramatically changing how we think. As an example, we now know that the brains of Greek speakers perceive certain colours differently from speakers of English because of how Greek labels for colour divide up the colour spectrum. This is an unconscious consequence of speaking Greek versus English.

In the novel, Babel-17 is the language spoken by Invaders, as they wage an interstellar war against the Alliance. The novel's protagonist, Rydra Wong, is a linguist and cryptographer who possesses a rare ability to learn languages. She is recruited by the Alliance to try and decode the language of the invaders, Babel-17, to uncover clues for attack vectors.

Babel-17 is an exemplar of a very high-concept conceit. When Delany was writing the novel, linguistic relativity was still only a hypothesis, first dubbed the Sapir-Whorf hypothesis in 1954.

Delany asks a classic 'what if' question: What if the language we speak fundamentally changes the way we see the world, the way we feel, our belief systems, the way we act? Babel-17 then explores the logical, and extreme consequences of this proposition.

In the novel, as Rydra Wong learns the strange, alien tongue, she starts to see the world, and think as the invaders do. And the consequence is that she starts to become one of them. She ultimately betrays her own command and her government, acting as an agent of the Invaders.

And in this way, Delany shows that in the context of warfare, when the notion of linguistic relativity is taken to its logical extreme, language can serve as the most powerful weapon of all.

The second is the novella, *Story of Your Life*, written by Ted Chiang and first published in 1998. This story was subsequently adapted as the major motion picture *Arrival*.

Again, this story features a linguist as its main protagonist, Dr. Louise Banks. The story involves Banks narrating the events that led to the arrival of her new-born daughter. In so doing, she explains how her work, translating the language of the alien Heptapod species, led her to understanding time in a new way, where she could perceive her past and future simultaneously.

The consequence is that as learning a new (alien) language transforms thought, the novella explores issues relating to linguistic relativity, determinism and freewill.

EB: Thanks for talking with us. Good luck with the [Songs of the Sage](#) series.

VE: Thank you!



About Ed Battistella

Edwin Battistella's latest book *Dangerous Crooked Scoundrels* was released by Oxford University Press in March of 2020.

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