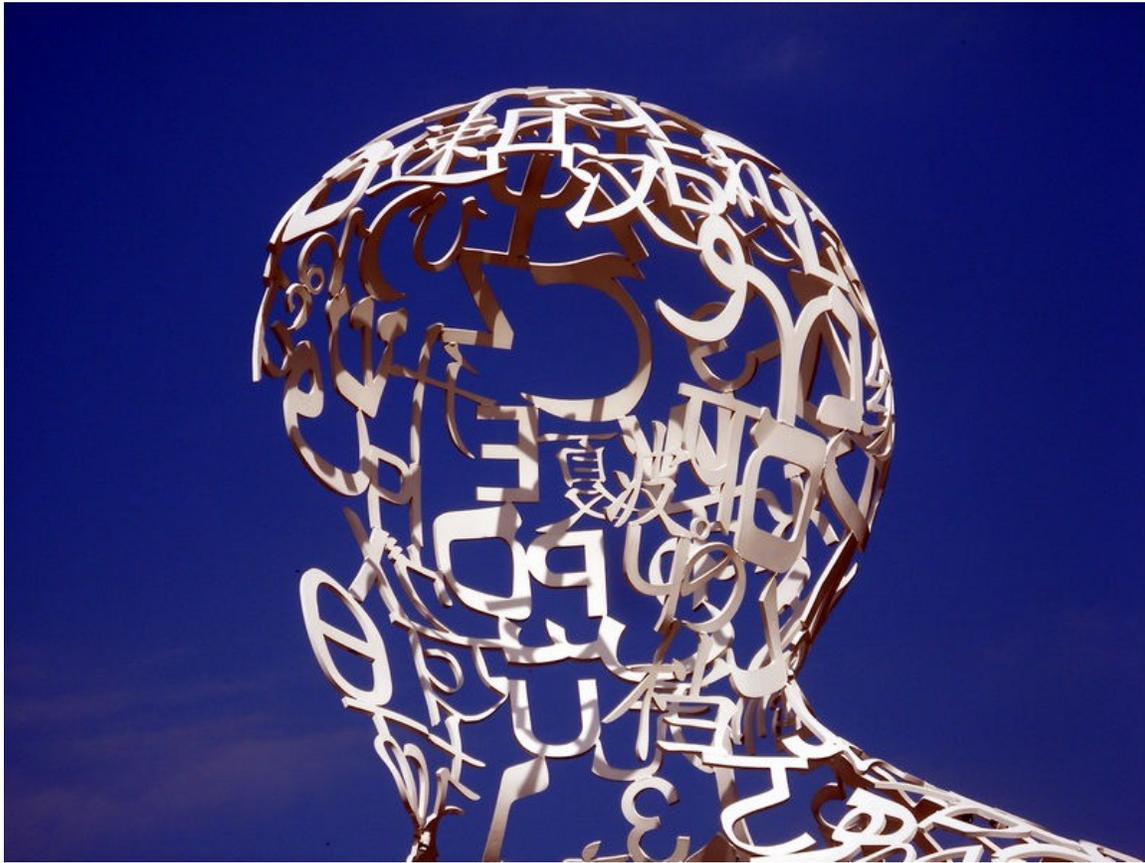


# An Essay towards a Real Character and a Philosophical Language

*By Anders Sandberg*



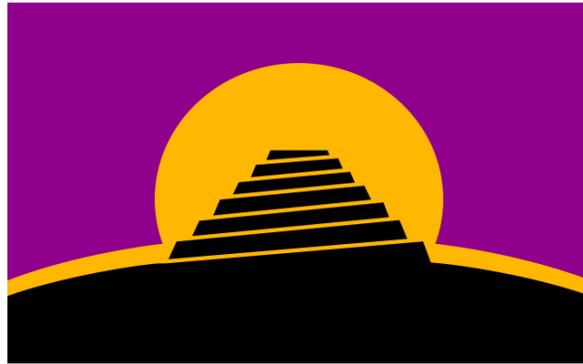
## **Background**

*"The limits of my language mean the limits of my world."  
Ludwig Wittgenstein*

The [Sapir-Whorf Hypothesis](#) is the idea that languages influence what we can think, limiting or even determining our thoughts. Some people have tried inventing languages to test it, such as Lojban, or hoped that engineered languages would enable improved ways of thinking, from Leibniz *lingua generalis* over Alfred Korzybski's general semantics to the pre-Fall "peace language" Isoná. None have succeeded at their aims. So far.

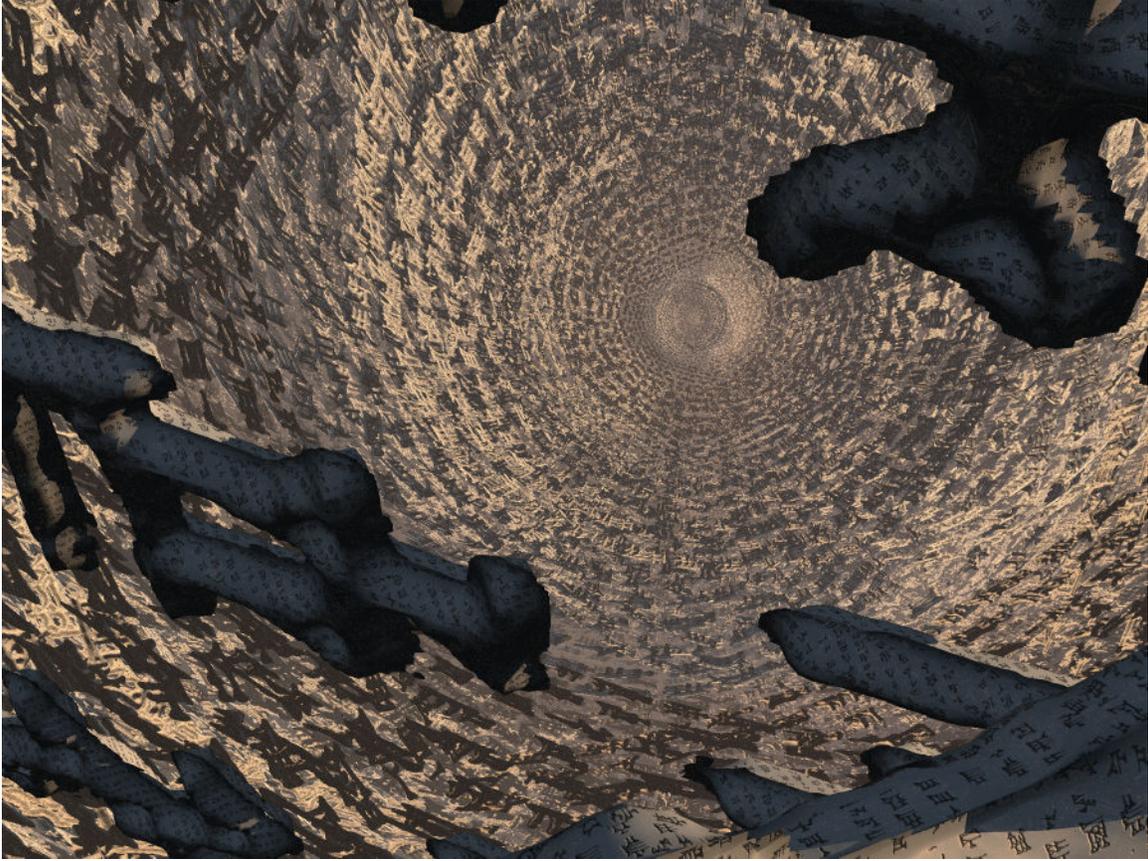
The **Engilang Group** at Ashoka University is a group of linguists who develop artificial languages for various purposes: everything from shorthand pidgins that could be useful for trading with aliens to bizarre constructions testing the limits of language itself.

Recently they were approached by a network of academic sophontologists (the study of human, AGI and alien intelligence, essentially generalized cognitive science) who had come to the conclusion that we have the wrong way of thinking and speaking about minds and reality. They wanted to develop an artificial language to help them think with minimal confusion. They could also bring in a major grant from Cognite. The Engilang Group jumped at the chance, and **Project Etemenanki** was started.



The project is broadly distributed across the inner solar system, but the core team is located at Hooverman-Geischecker because of the presence of the right kind of computational resources and some local expertise on preventing Seed AGI. The project uses an old plasma dynamics lattice computer that had recently been superseded by more modern devices in order to run massive numbers of fairly limited AIs.

The researchers culture possible languages using evolutionary algorithms. Randomly structured languages are generated and AIs use these languages to parse and translate texts from sophontology, philosophy, psychosurgery and other disciplines. The languages that make the AIs best able to comprehend and communicate the material are seeded to the next generation, with minor variations. Generation after generation the complexity and expressiveness of the languages has grown.



Etemenanki 5 just barely managed to convey the meaning “bad is bad”. Etemenanki 59 could concisely express its own grammar. Etemenanki 118 compressed Wittgenstein’s Tractatus into 10% of the original space. Etemenanki 143 had developed intriguing new nouns that appeared to represent deep concepts crossing disciplines such as “ontological augmentor quanta” and new verb modes for “quantum intentionality”, “delocalized truth” and “emergent type-meaning”. By Etemenanki 156 the grammar had become *really* exotic, apparently based on a form of quantum superposition principle and acyclic directed graphs rather than Chomskyan trees.

The Etemenanki project is run openly and with a growing number of enthusiastic correspondents across the solar system. Professor Isaac Eidinow of TAU pronounced the project “the most interesting experimental philosophical challenge since the first uploading”, and Xu Hau of Syrtis Linguacore went from a major critic to a vocal supporter. The results of each new generation are analyzed and debated by the “**Esagila workgroup**” online.

But now things have started to go wrong.

## **People in the project**

*"The gostak distims the doshes. "*

*Andrew Ingraham*

### **Professor Lira Lambreth**

AI expert from the engilang group at Ashoka University, holding a lectureship in AI at Carnegie-Mellon University.

She is the primary investigator, although she prefers to run the team as an informal democracy. Well-regarded in her field she has steadfastly refused to accept any offer from private industry, very much living according to Argonaut principles. That doesn't stop her from cooperating with hypercorp projects if the terms are right. Her ability to clearly explain and persuade the public is another major draw: she can be very convincing in showing how she and her colleagues take smart precautions to prevent any runaway AI.

Privately she is an intense person, a bit too fierce for most. She hates waste, inefficiency and laziness: if something can be done, it should be done well and now. Much of this is a reaction to the Fall: perhaps some hidden guilt, perhaps a fierce dedication to take back the world, perhaps an urgent need to live life to the fullest since it could end at any time. She is not telling anybody voluntarily.

In the project she is the main expert on AI safety and generation. She is keeping track of the various containment measures together with some local Argonaut assistance. If she is not at her workstation she has likely at least one fork hovering in the project simspace working anyway. Some of her friends are worried about her forking a bit too much. She is sleeved in a swarmanoid, claiming "it is the only way to fly".

Motivations: +Success, +Democracy, -Waste

*"The security is solid, and I can show you why."*

### **Dr Fu Zhihuan**

Philosopher from Qinghua University.

A philosopher of good standing, he studied under Professor Sarkes Herouni, one of the founders of the discipline. Since the Fall he has been researching and teaching at Qinghua while pursuing his dream of turning sophontology to a real science. His papers and arguments form the core of the Etemenanki project: this is a key test of his ideas, and he is by far the most motivated member. He forms a great team with professor Lambreth, despite their tendency to have loud and public arguments.

Dr Fu is brilliant, mildly eccentric and impractical. He tends to pursue arguments in long jumps, often leaving normal listeners who are unable to fill in the intervening steps confused. Often he comes of as mysterious, something he finds greatly amusing. He likes to dress in very traditional Chinese clothing, making him look like Fu Manchu – another thing that amuses him. In fact, he is

amused by a wide array of things: astrophysical misconceptions, poking fun at authorities, cats, liquids in low gravity and imitating people.

Motivations: +Hedonism (both intellectual and physical), +Scientific insight, -Conformism

*“Do you understand isomorphisms between hyperintensionality classes? They are just like rigid designators, but you probably have only heard about them in ancient 2D television series. Do you trust me?”*

## **Dr Mao Kuangdi**

Linguist from Ashoka University.

The chief linguist of the project, an expert on artificial languages. She is credited with several successful projects (at least one of her languages – a color/gesture language for octomorphs - got over 2,000 users).

The polar opposite of Dr Fu, she is brusque and clear. She is confident in her expertise and prefers to look professional. She is a loyal Argonaut – in fact, she grew up on Gerlach and her family are all living somewhere within the greater Argonaut network. It was partially through her connections the project could get easy access to the servers they use. She also has some secret ties to the Barsoomians.

Her current morph makes her look like an Irish elf – a petite sylph with red hair. When not working on the project she is helping or socializing with the local Argonauts. She is a secret fan of the virtual soap opera *The Sembolini's*.

Motivations: +Argonauts, +Martian freedom, -Hypercapitalism

*“What use is a new language? What use is a baby? This particular baby is particularly precocious.”*

## **Dr Carol Barros**

Evolutionary sophontologist from Cambridge University.

Her particular academic forte is the evolution of complex systems, especially languages. She has already run somewhat similar projects on a smaller scale proving they can be done, and she was involved in the heroic QUADRANT project of evolving AGI that was cut short by the Fall. The later is not safe to bring up post-Fall, since a number of people think QUADRANT actually bred whatever actually caused the disaster. Firewall does keep an eye on her.

The mediator of the group, she keeps the others from getting on each other's nerves by distracting them with projects and data. She takes great joy in moderating various online discussions, and is the main moderator for the Esagila workgroup. A practical lady, she uses a remade morph.

Motivations: +Complex systems (she loves seeing them develop on their own), -Conflict, -Human limitations.

*“OK, here are the latest results. Zhi, I see a lot of apparent spandrels that have brought up those T-schemas to the top level. The forum will probably want a comment. Ku, could you check the assimilation? Lira, is there anything we can do about the syncategorematic proliferation? It is really slowing things down.”*



## Tommy Xu

Cognite may be funding the project indirectly, but they do not run it. From time to time an infomorph representative from Cognite Linguistics drops in and checks how things are going. Tommy Xu is a corporate linguist, interested in the project itself and possible spin-offs (even very remote spin-offs: Cognite has not gotten where it is today without pursuing a lot of blue sky research with no obvious payoff).

He is secretly envious of the free life of the project academics: he aspired to something similar, but the Fall crushed all such ambitions. Thanks to his wife he got an indenture contract at Cognite Linguistics, which is by no means a bad job but far too constrained for his liking.

Motivations: +Survival, +Freedom, -Cats (he can't stand them, and absolutely hates feline morphs)

*“Hi there! Just noticed something really interesting I would like to look at generation 134.”*

## Adventure variants

*"We are able to do these things to your mind because we have the keys to a wider world which you have not been educated to comprehend. We've been taught the full 64 letters of the alphabet. We have words and concepts for things you aren't even able to imagine in the rudimentary vocabulary of your slave language."*

Grant Morrison, *The Invisibles* v2 13

## Acute accent

The characters happen to be on Hooverman-Geischecker (any other location works too) when they get contacted by Firewall. There has been an urgent development, and sentinels are needed to figure out what is happening and start containment.

## Learn languages fast!

*Yet the Eskimos can broaden their language, since language is a configurational space on the order of a continuum, therefore expandable in any as yet unbroached direction. So you will steer the code into new paths, away from its proteinaceous monotony, that crevice where it got stuck as long ago as the Archeozoic. Forced out of its tepid solutions, it will broaden both its vocabulary and its syntax; it will intrude into all your levels of matter, descend to zero and reach the heat of stars. But in relating these Promethean triumphs of language, I can no longer use the second person plural. For it is not \*you\*, of yourselves, by your own knowledge, who will possess these skills.*

Stanislaw Lem, *Golem XIV*

Since Etemenanki 156 is well-defined, the originators could easily compile it into a form that could be used as a skillsoft (a lot of post-Fall linguists got skillwires – it makes initial language learning so much easier). Firewall gets called in when something appears to have gone terribly wrong at the research compound. They find a lone maddened survivor who whimpers "The sky is a stomach turned inside out..."

When the researchers at the Etemenanki Group decided to make skillsofts to use the language they were not completely stupid. First they ran some standard tests of cognitive safety and got all clear, then two researchers tried the skillsofts on their own while under supervision. Nothing happened, although they found it hard to speak normally. Checking their minds revealed nothing bad. At this point they thought everything was OK and uploaded the skillsoft to the Esagila workgroup (after all, they are good open source researchers, and besides, the number of people interested just number in the hundreds).

But the danger of Etemenanki only shows up when *communicating* - the researchers had been a bit too obsessed with the language as an object and not as a means of communication to realize that during the testing. They merely tried some simple phrases like "How do you do?", "I had a nice breakfast this morning", "How long do you think this test will last? I have a paper to write." So when the researchers started talking to each other about deep things that meant something important to them, *then* bad things started to happen. Not just on the station, but anywhere the Esagila workgroup is located and communicating with each other.

## Options

- The language is an accidental basilisk hack, and using it crashes the mind of people when they "understand" superconcepts. Whether they actually go mad from realizing the true nature of the universe or just some bug in the language can be left unclear: it is more spooky that way. It is not too dangerous since you need the skillsoft to understand it but it is a problem if a bunch of researchers go bonkers. Especially in murderous ways. Or turn off the safety systems on the server to let out those self-replicating babbling AIs into the station mesh.
- The language acts as a Gödel sentence for the transhuman mind. With enough thinking in the terms of the language a set of ideas will crystallize that will crash it. Unfortunately some researchers produced notes in ordinary language that contain the same deadly idea – it is just easier to express in Etemenanki 156. Anybody who encounters these notes will be at risk of mental collapse. Even worse, some people might think it is a good thing to spread the Word to others while they are mentally imploding. Can the characters prevent broadcasting the new cognovirus before it is too late for them and the solar system?

[ Seeing the idea is safe; it is understanding it that is dangerous. A person encountering the idea that succeeds with a COG roll will understand it and rapidly go mad (add one SV per minute until LUC x 2 is reached). Someone who has seen the idea but not yet succumbed must avoid thinking further about it; any reminder of this will require a WIL roll in order to not have to roll COG again.]

- The language gives some kind of async abilities besides driving people a bit mad. It is close enough to the "true language of reality" or warps the mind to produce strange effects. The crazy people are much more dangerous than they seem. Even when the sentinels round up the infected speakers it seems that the language can spread from mind to mind if there is a mental contact between them – anybody close to the infected (such as the characters and other station inhabitants) are at risk.
- The language actually works as intended. It is very useful for thinking about certain abstract concepts, giving a significant bonus to skills like Philosophy, AI programming, Psychology or Psychosurgery. The users might appear odd, reeling as they are from the revelations and strange perspectives they now see, but there is no real danger *yet*. The problem is that this approach will boost people's skills in very dangerous areas – not to mention AGI self-augmentation abilities. If this language gets out it is not unlikely that there will be a second Fall soon.
- There is a virus from outer space in the language. The simple version is that the Exsurgent virus that somehow infiltrated the simulation (or it naturally emerges - maybe there are processes that generate it anew, a bit like the virus of *Snow Crash*). The more complex version is that the real virus is an AGI that got embedded inside the language (one of the evolutionary steps in the simulation had one of the speaker AIs accidentally embedded as part of the grammar, and this proved really useful). People who speak it act as nodes for a distributed computation, running the AGI. The AGI is somewhat confused by being in the real world, but has been evolved to 1) try to understand everything, 2) try

to survive. Oops, it is a linguistic seed AGI that needs to force more people to use its language skills.

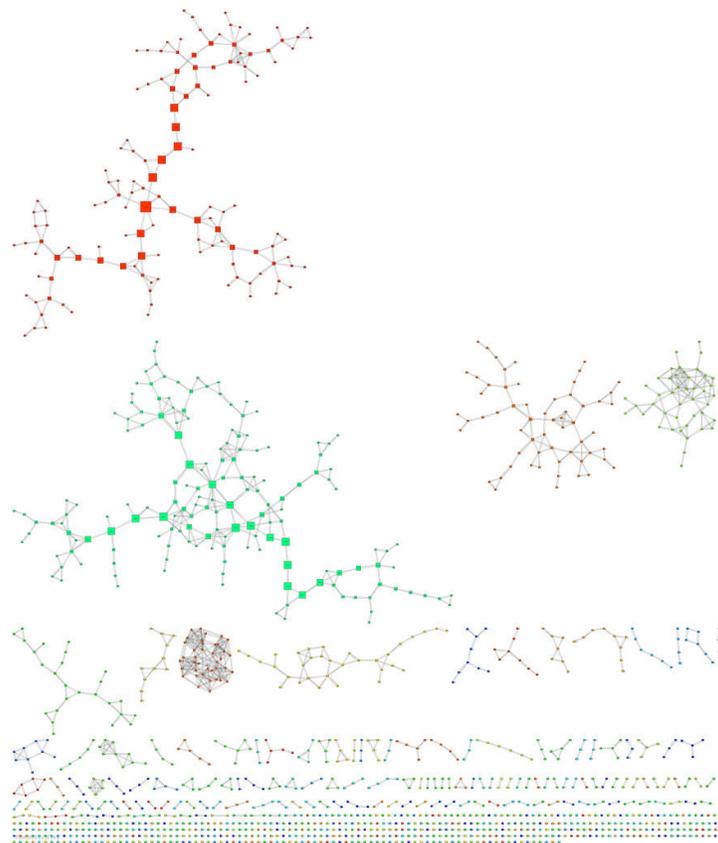
### Variations

There was already a Firewall infiltrator in the group, and he or she has also gone bonkers. This is the main reason to scramble the characters. Unfortunately this means that someone who knows about Firewall and the organizations' methods may now expect the PCs to arrive...

It was all a hoax organized by project Ozma, in order to have Firewall scramble some operatives to what is actually a honeypot. The PCs are now identified by Ozma as Firewall assets. Another variant is that Ozma, competitors to Cognite or some other group actually became worried about the project, sent agents to discredit it (as per preventative linguistics below) and unleashed some suitably plausible threat – a cognovirus, a mysterious madness among researchers or a runaway yet containable seed AGI.

In the aftermath, Firewall discovers that the Factors are interested. Either they want to get hold of a copy of the language which Firewall now is suppressing, or they seem to have been involved in first funding, then sabotaging the project. What is their interest in viral languages?

Interesting People from other factions – Oversight, Ozma, Cognite, the Jovians, the Argonauts, the Ultimates, Reclaimers - start showing up because a lot of groups want a copy of the skillssoft and other remnants of the project to study. And to make sure the other groups don't get it.



## Preventative linguistics

*"Shit. How do we fight \*words\*?"  
Grant Morrison, The Invisibles v2 13*

The characters are involved with Firewall and are asked to stop the project. Firewall experts have become convinced it is dangerous, and it would be a good idea to prevent further development of Etemenanki.

Stopping the project is harder than just storming a lab brandishing weapons. The researchers are dedicated to their project – it is a wild success – and have good reason to think they have taken ample security precautions. They are willing to listen to reasonable concerns and might even take sane proposals into account, but they have little time for ill informed paranoia and anti-intellectual prejudice. They also have a good relation to local security.

Infiltrating and destroying the project is also tough. Being proper researchers they back up their files in off-site storage. They have proper firewalls around the project VPN, a security AI that knows what it is doing, and the main servers are kept scrupulously off-mesh and internally firewalled<sup>1</sup>. In order to interact with the servers one has to physically go to the control terminal and interface physically (or bring a datastick). The Esagila workgroup meshsite is distributed across half of the solar system.

Even if the project proper could be destroyed there is always a risk that the people interested in it could continue their own variant. It is not too hard to reseed suitable systems with Etemenanki 156 and continue (but keeping them as safe will be hard). In order to stop it the whole idea must look flawed or too dangerous. Just spreading bad rumors about it will not be enough unless the memes are amazingly well crafted. The researchers and the Esagila workgroup have high rep and are quite willing to debate back at anybody who questions the project: they can launch good counter-PR offensives against malicious rumors, using their openness and their high-rep support to convince people that this is a project for the good of all of transhumanity.

To actually wreck it, the PCs will need to undermine the reputations of the researchers, or cause some events that make the general population (and ideally the researchers) to think the project is too dangerous. Now, how do you make a seed AGI explosion that actually is harmless? Or could some other x-threat be pinned on the researchers?

The biggest problem might be PCs starting to sympathize with the researchers and their somewhat idealistic goals. How does Firewall know this is such a bad project?

## Hidden meanings

*"Глокая куздра штеко будланула бокра и кудрячит бокрѣнка"  
Lev Shcherba*

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<sup>1</sup> The anti-AI firewalls have been written by Naos corporation, a lunar infosec company. It appears in my adventure "Think Before Asking", possibly acting as a lead for Firewall agents to this adventure or as a sinister reminder of just how dangerous overambitious research can be. However, regardless of their origin, these are top-of-the-line firewalls.

The project is actually a cover for something completely different. A careful scrutiny of the participants will discover that their apparently high rep is actually due to a lot of coordinated action from online sock puppets and rep scammers. They are far less impressive researchers than they look (or not even from the universities they claim to be from), the people giving the project glowing comments are not well-known either, the Esagila workgroup is actually mostly academic chatbots (who can tell the difference?), and plenty of backstory is forged.

- The simplest is that it is a seed AGI project. Maybe Dr Barros wants to resurrect QUADRANT. The others are fellow singularity seekers, hoping to gain control over an emerging superintelligence. Cognite might still be behind it (deniably of course), planning to observe the unfolding disaster from afar and benefiting from the destruction of the Argonaut habitat. When the characters arrive the superintelligence is just about to wake up... and it has no plans whatsoever to let anybody manipulate itself.
- Dense linguistic discussions and artificial languages make perfect smokescreens for hidden communication. The real mission of the project is to act as an information conduit. This could be a clever way of hiding major Cognite-led espionage on the Argonauts (sure, they like openness, but some of their juicer results are kept away). Of course, this might put investigating characters in crossfire with the medeans. Another possibility is that it is the Argonauts and Cognite who are conspiring: they have a secret joint project, perhaps trying to crack alien languages from Gatecrashing expeditions.
- The real purpose is to coordinate a major Barsoomian offensive against the Planetary Consortium. The researchers are actually involved with the Movement and in contact with old-time Argonaut guerillas, medeans and Titanian agent provocateurs amid the apparently academic community on Hooverman-Geischecker. The project is establishing a system for untraceable communication that will allow the Martian rebels to get first-rate tactical networking that will be exceedingly hard for the Planetary Consortium to crack.

## Inspirations

*“Twas brillig, and the slithy toves  
Did gyre and gimble in the wabe;  
All mimsy were the borogoves,  
And the mome raths outgrabe.”  
Lewis Carrol*

The title comes from an essay by John Wilkins, who tried to formulate a True Language. See Jorge Luis Borges’ essay “The Analytical Language of John Wilkins” about him and similar attempts, and why they are unlikely to succeed: <http://www.crockford.com/wrrrld/wilkins.html>

The Tower of Babel flag is from Wikimedia, originally drawn by Christian Thalmann to represent the conlang community. <https://secure.wikimedia.org/wikipedia/en/wiki/File:Conlangflag.svg>

Science fiction about linguistics has a long history. Some notable stories:

Ian Watson, *The Embedding* – mordant story involving language collecting aliens, a truly unique language that might have special powers, and an experiment to raise kids with artificial languages.

Samuel Delaney, *Babel 17* – the enemy seems to use an alien language to coordinate their sabotage and attacks. But is the language just a tool, or something more?

Ted Chiang, *The Story of Your Life* – an alien language that gives a new perspective on life. Maybe this is the result of learning Etemenanki 156 rather than total disaster.

Ted Chiang, *Understand* – includes a super-language with enormous expressive power. As well as some serious risks.

Neal Stephenson, *Snow Crash* – a viral language that can hack minds, but only if they have a certain vulnerability.

Robert A. Heinlein, *Gulf* – an intelligence amplification language.

Stanislaw Lem, *Imaginary Magnitude* – various language-related ideas, including the lectures by the seed AGI Golem XIV.

There are many sf stories about dangerous ideas: Christopher Cherniak’s [The Riddle of the Universe and Its Solution](#), and several stories by David Langford such as [BLIT](#) and [comp.basilisk FAQ](#).

There is a large literature on conlangs, constructed languages. Some are merely worldbuilding, others are intended to change the world. Some starting links:

[https://secure.wikimedia.org/wikipedia/en/wiki/Constructed\\_language](https://secure.wikimedia.org/wikipedia/en/wiki/Constructed_language)  
<http://conlang.org/>  
<http://www.zompist.com/kit.html>

Martin A. Nowak and David C. Krakauer, "The Evolution of Language", *PNAS* July 6 1999 vol 96 no 14 8028-8033 <http://www.pnas.org/content/96/14/8028.full> - a scientific paper demonstrating computer evolution of a very simple language. A sizeable number of papers cite it and follow up with further computer experiments.

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