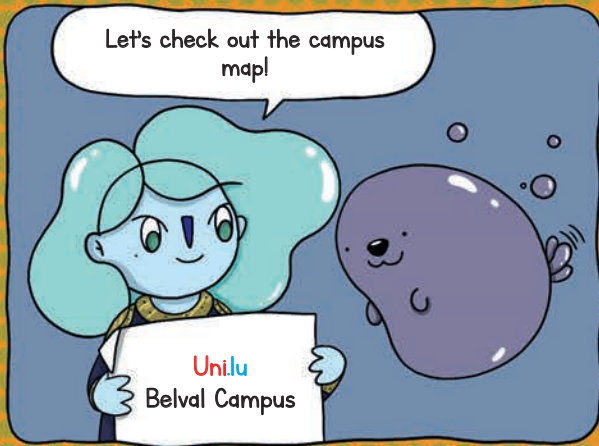


# LUX:PLORATIONS

A UNIVERSE OF RESEARCH





- ① Maison du Savoir
- ② Food House
- ②.1 Food Lab
- ③ Luxembourg Learning Center
- ④ Maison des Sciences Humaines
- ⑤ Maison du Nombre
- ⑥ Maison des Matériaux I
- ⑦ Maison des Matériaux II
- ⑧ Maison de la Biomédecine I
- ⑨ Maison de la Biomédecine II
- ⑩ Maison de l'Innovation
- ⑪ Halles d'Essais Ingénieurs
- ⑫ Maison des Arts et des Etudiants
- ⑬ student accommodation "Uni-Val I"
- ⑭ student accommodation "Uni-Val II"

# Treasure Hunt at Campus Belval





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## Science meets art



The third volume of LUXplorations is a game changer! It still brings together Luxembourg researchers and artists to tell thrilling stories of science and adventure, but this time the individual stories also fit together as part of a wider narrative.

Delve into episodes in the life of our protagonist Najma – whose creation shows the great possibilities of collaboration. From choosing her name (which means “star” in Somalian and evokes the word for “astronomy” in Arabic), to designing her look, the team worked together to bring her to life. We hope you love her and the stories as much as we have enjoyed working on them. And don't forget to play our campus map search game in this volume!

**Jessica Burton**

Mentor

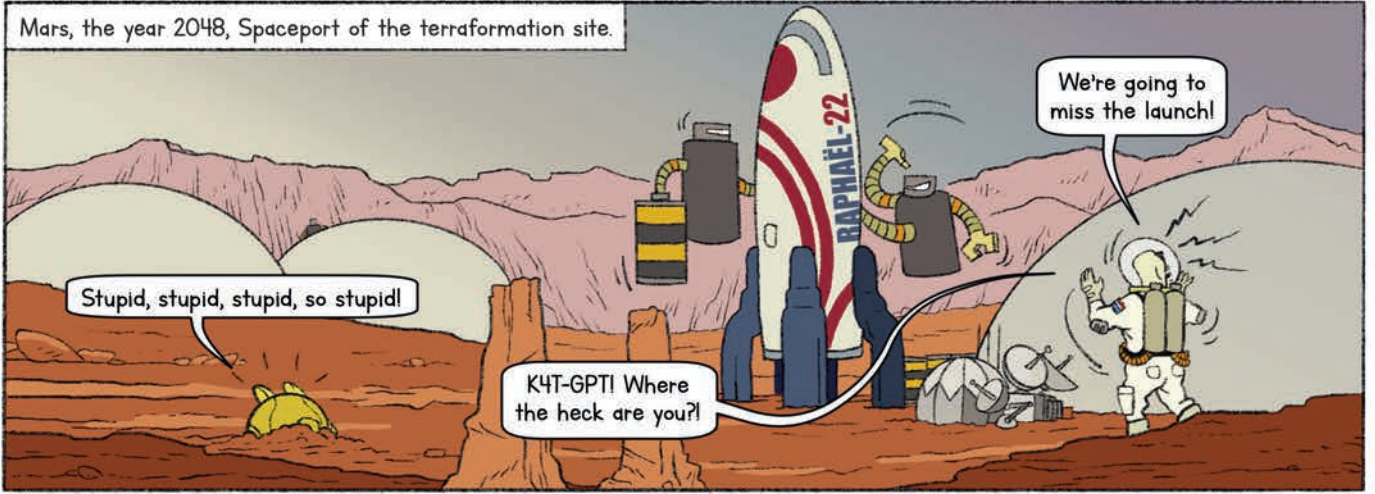


**Zamara** is a planetary exchange student (think Erasmus, but further away) from Liquria. She is also the first Liqurian to leave the planet for an exchange! Earth is so different from her planet – she had never heard of such strange concepts as “war” and “gender” but she is slowly learning how humans work. Zamara learned that on Earth there are several gender identities like female, male, non-binary, trans, genderfluid and agender. Although Liqurians do not distinguish different genders, Zamara has decided to identify as female during her stay on planet Earth. She is bursting with curiosity to understand everything she possibly can about her human friends in Luxembourg. Sometimes she can even get into trouble, for example when chasing her best dog friend Yso.

**Yso** (pronounced why-so?), Zamara's faithful companion, is as adventurous as our dogs on Earth – but when he eats (Yso has decided to identify as male) something he shouldn't, we see his inner workings! He can also change shape and turn to liquid when he wants! Cool, right? It would be, if he didn't keep running off all the time and slipping through cracks – causing Zamara to chase him all around the University!



Mars, the year 2048, Spaceport of the terraformation site.



Stupid, stupid, stupid, so stupid!

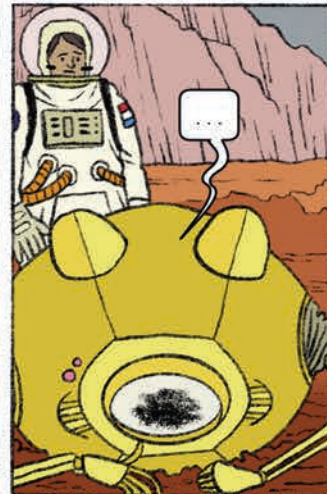
K4T-GPT! Where the heck are you?!

We're going to miss the launch!



There you are!

Come on, let's go! The Earth shuttle is waiting for us!



...



Sorry, boss. I didn't see you.

K4T-GPT, are you ok?



I'm fine. I'm fine...



Actually, I'm not fine.

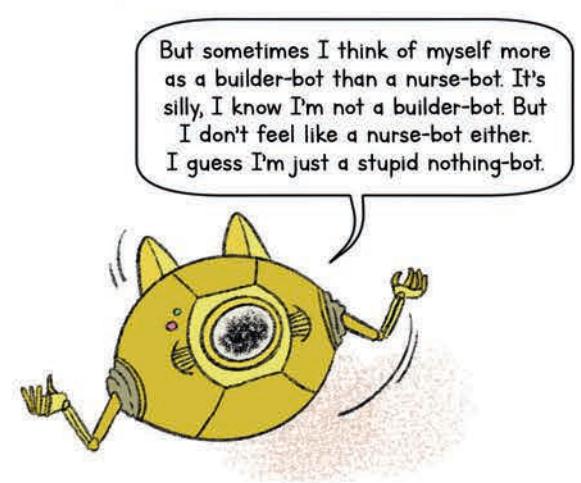


I've been asking the builder-bots if they could use my help.

Go put your cute little hands to work in the kitchen...

Haha, you silly nurse-bot!

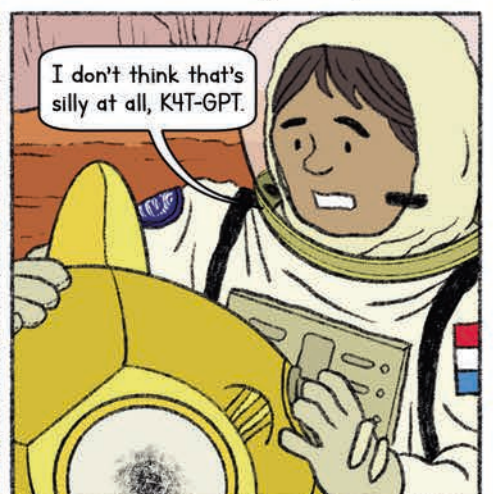
They just laughed at me..



But sometimes I think of myself more as a builder-bot than a nurse-bot. It's silly, I know I'm not a builder-bot. But I don't feel like a nurse-bot either. I guess I'm just a stupid nothing-bot.



Never mind, Najma. Let's just go!



I don't think that's silly at all, K4T-GPT.

It actually reminds me of a section about psychology and fashion in my dissertation...



There was this psychoanalyst called John Carl Flügel.



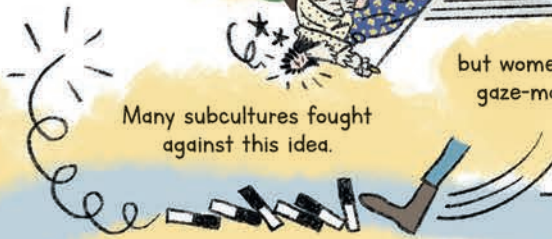
He studied the psychology behind clothes and came up with a concept known as the "Great Renunciation".



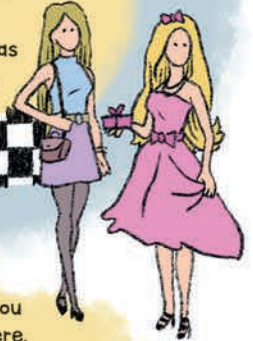
This is the idea that men have renounced to visibility...

They believed in the performativity of clothes: when you dress like what you want to be, you become what you dress as!

Many subcultures fought against this idea.



but women have to dress up as gaze-magnets to look good...



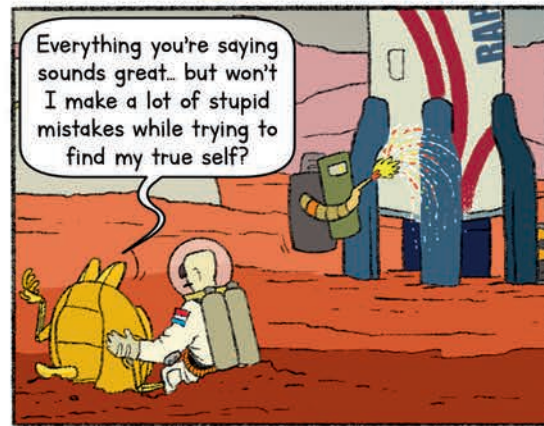
It shows that fashion has always worked within these opposing ideologies. Conforming to others while finding your true self.

Finding the point where you are no longer what you were, but not yet what you will be.

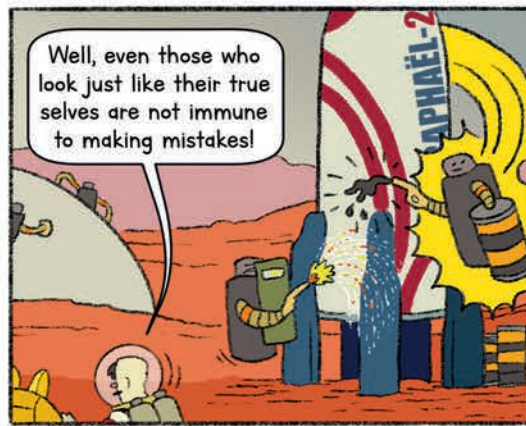
It's about making your invisible self visible.



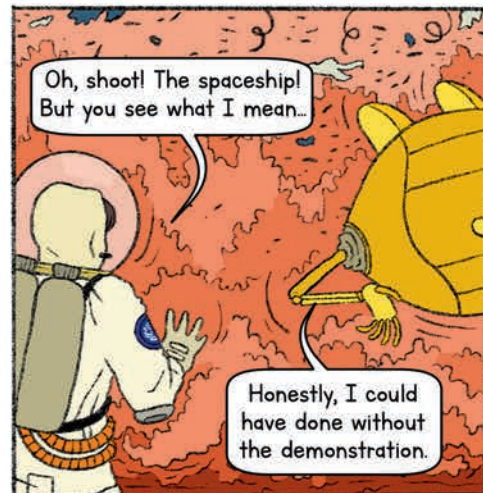
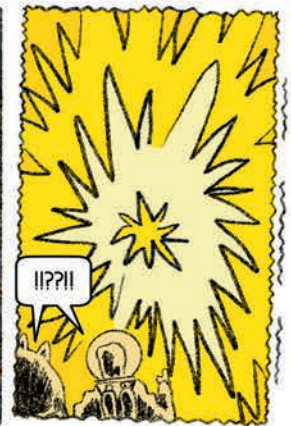
It's about building your appearance, about becoming who you really are!



Everything you're saying sounds great... but won't I make a lot of stupid mistakes while trying to find my true self?

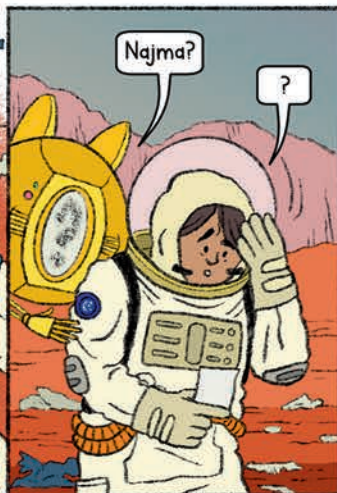


Well, even those who look just like their true selves are not immune to making mistakes!



Oh, shoot! The spaceship! But you see what I mean...

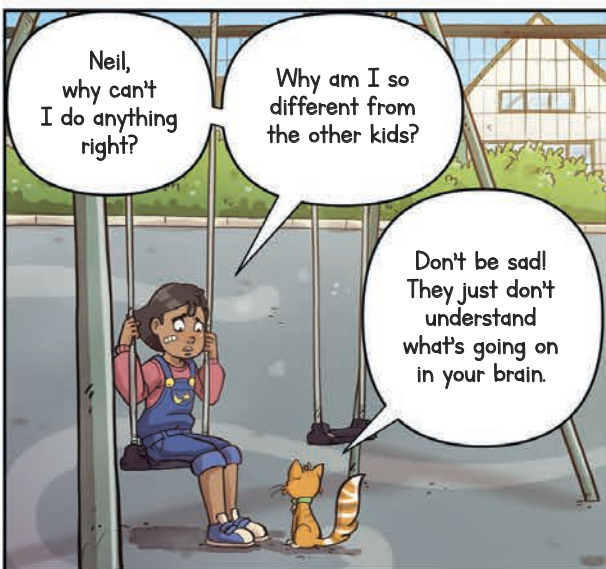
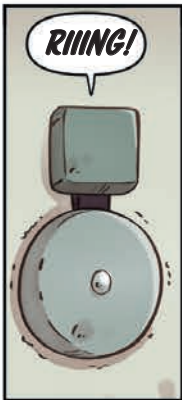
Honestly, I could have done without the demonstration.



Najma?

?





ADHD\* is a multifactorial disorder. Symptoms include trouble concentrating, hyperactivity and impulsivity.

Some explanations relate to the size of certain parts of the brain.

Others put it down to the modification of brain networks.

\*Attention deficit hyperactivity disorder

One of the main explanations is low levels of some neurotransmitters.

We are chemical messengers in your brain. We are responsible for maintaining concentration and for regulating emotions and impulsivity.

Dopamine

Noradrenaline

All these together can affect Behaviour (B) and Attention (A).

Ughhh! There's too much going on. I can't concentrate!

Stop moving, please!

Can't... stop...

We need more neurotransmitters!

There's nothing here!

I bet there's something wrong between the neurons!

Let's take a look!

Senders

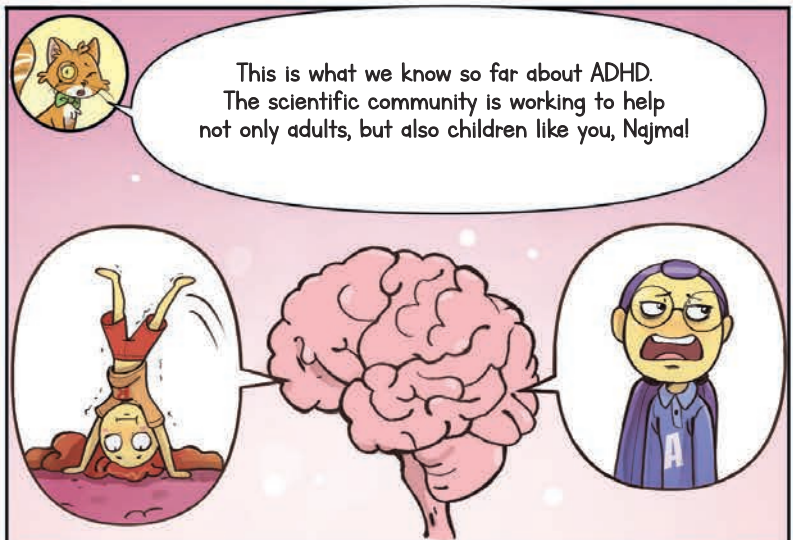
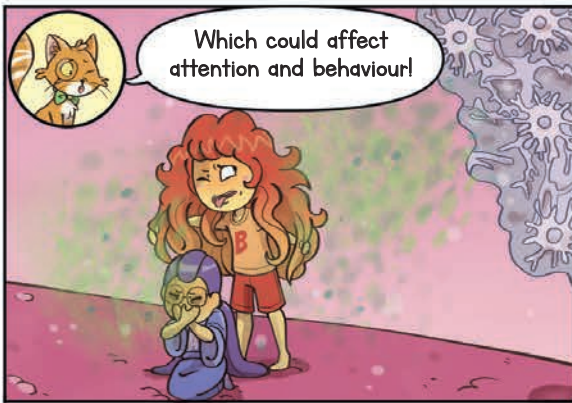
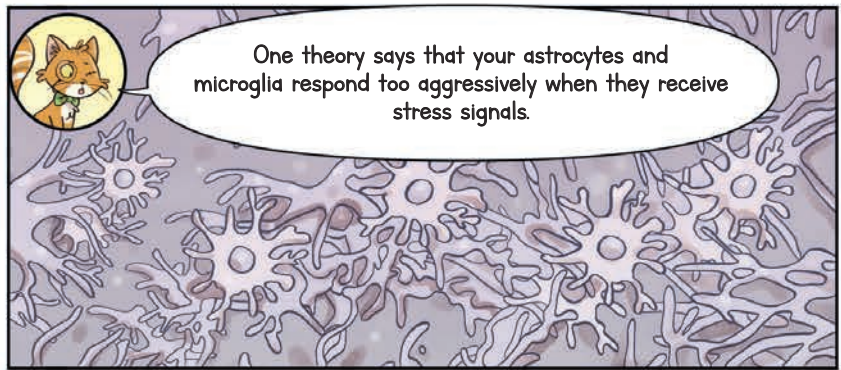
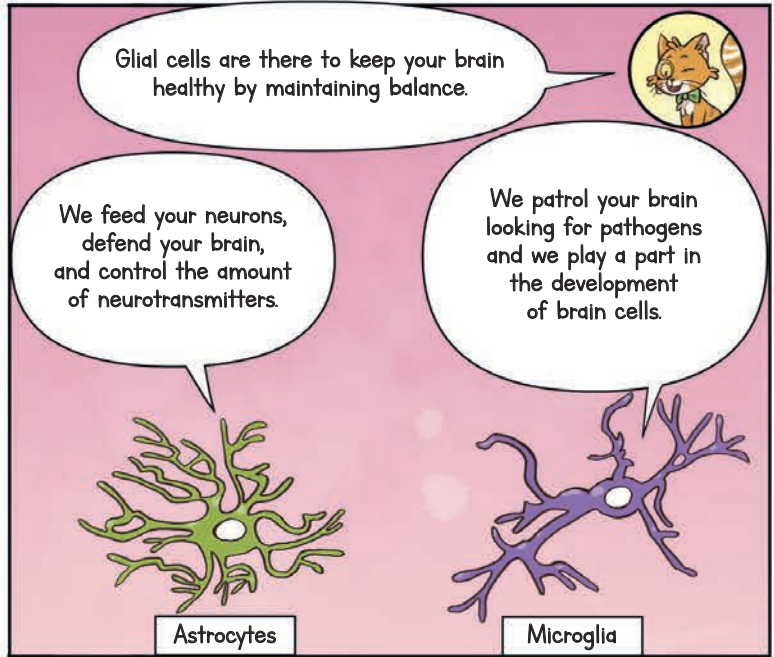
What are they doing???

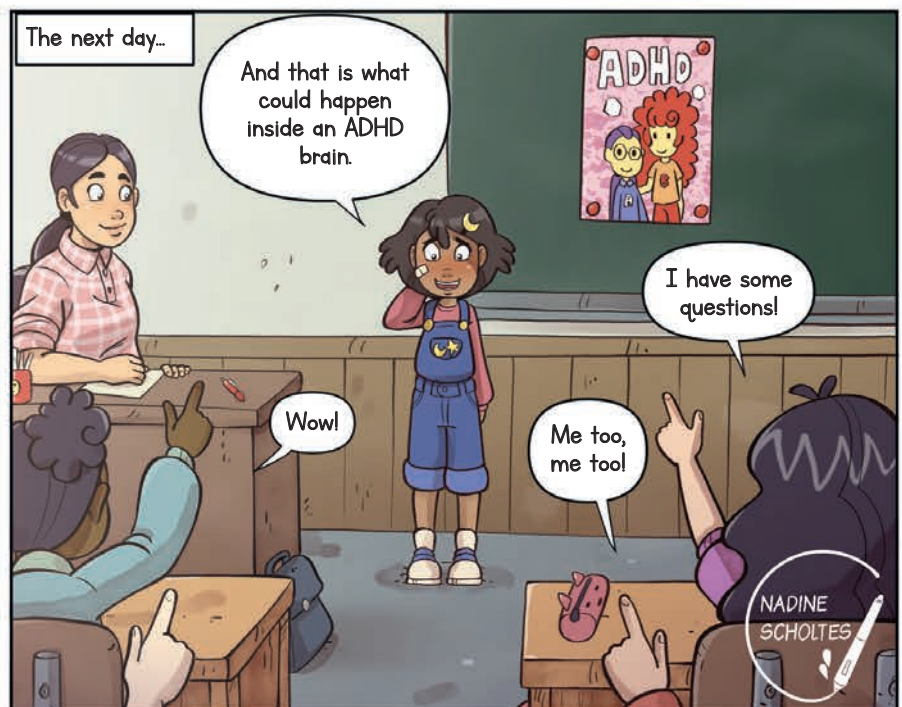
Receivers

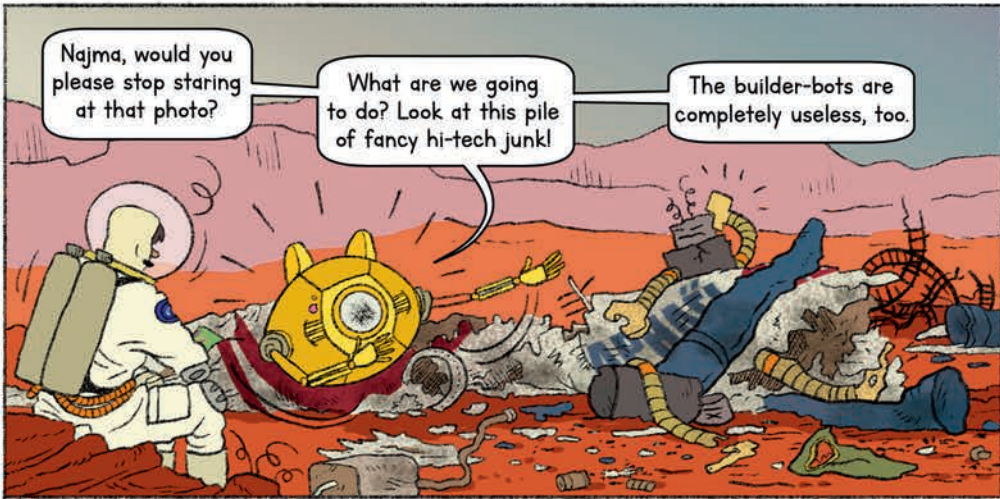
The senders aren't supposed to take back that many neurotransmitters.







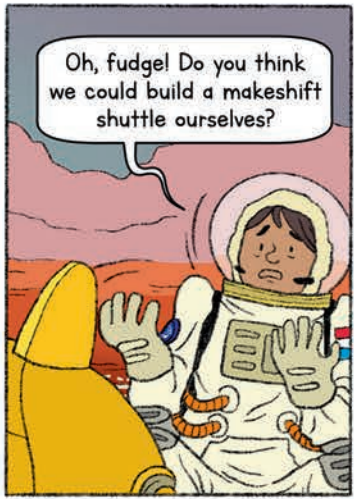




Najma, would you please stop staring at that photo?

What are we going to do? Look at this pile of fancy hi-tech junk!

The builder-bots are completely useless, too.



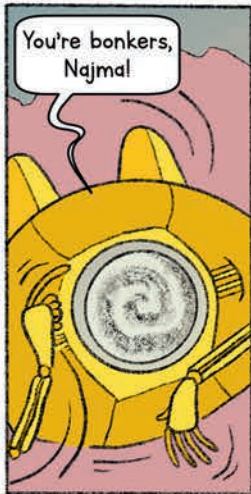
Oh, fudgel! Do you think we could build a makeshift shuttle ourselves?



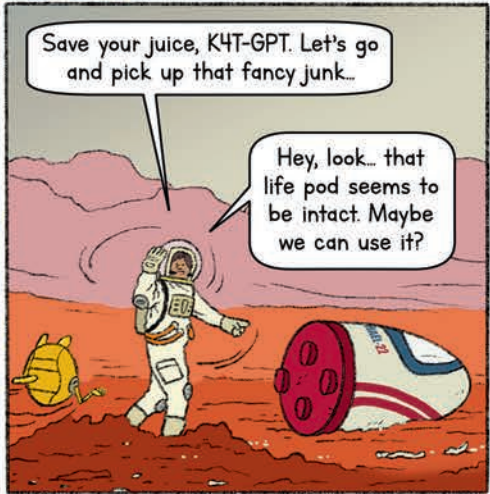
You mean could YOU build a makeshift shuttle yourself? I'm just a nurse-bot.



No! You know what? YOU are going to help me!



You're bonkers, Najma!



Save your juice, K4T-GPT. Let's go and pick up that fancy junk...

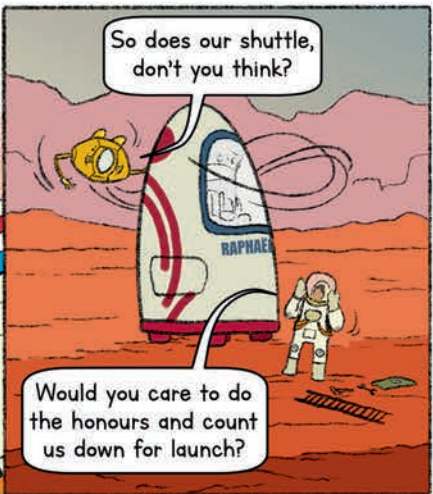
Hey, look... that life pod seems to be intact. Maybe we can use it?



See, you're not doing so bad, are you?

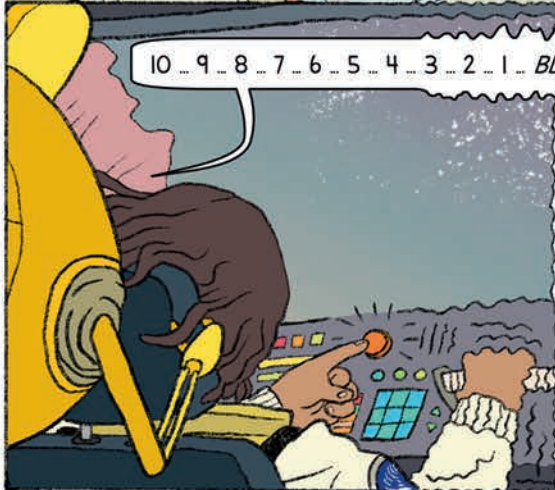
Yeah! These human tools fit me like a glove.

You're one of a kind, K4T-GPT. And you look the part, too. Trust me!



So does our shuttle, don't you think?

Would you care to do the honours and count us down for launch?



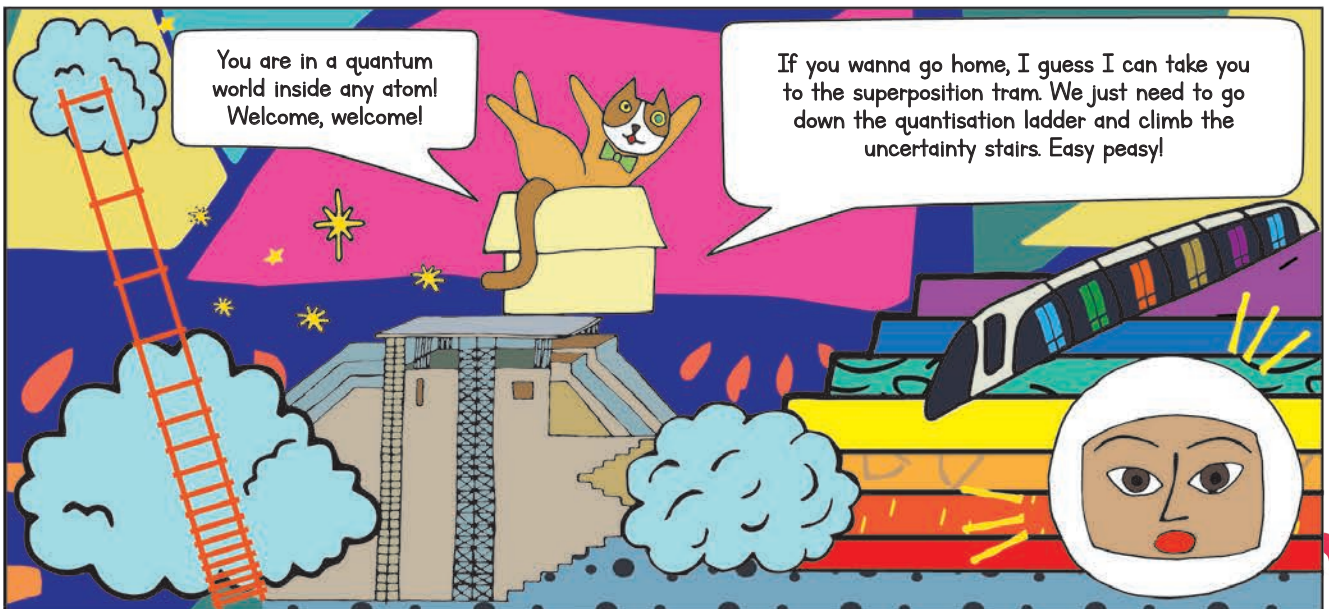
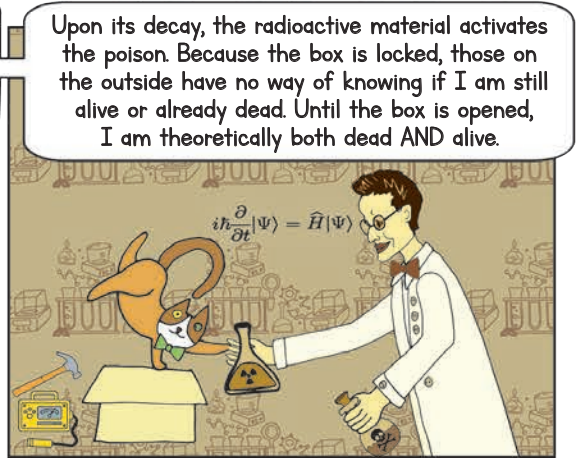
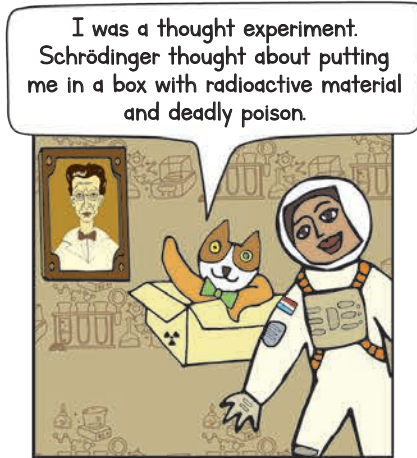
10...9...8...7...6...5...4...3...2...1...BLAST OFF!

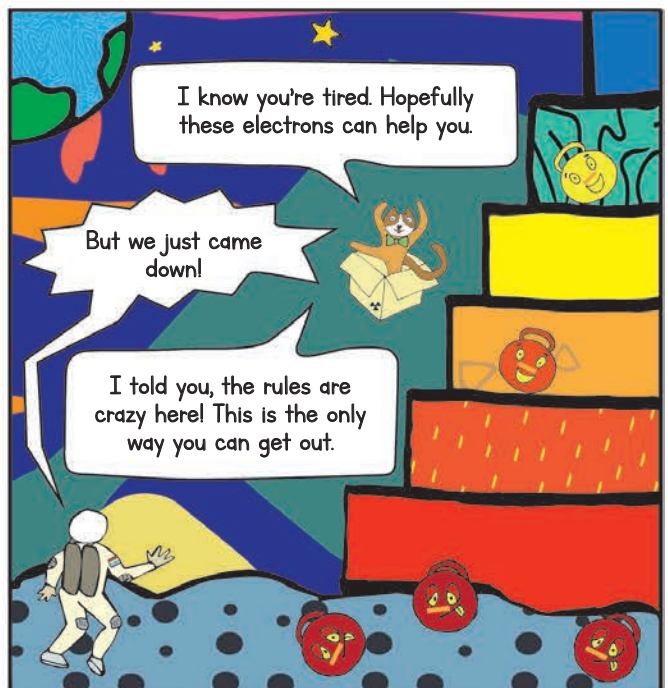
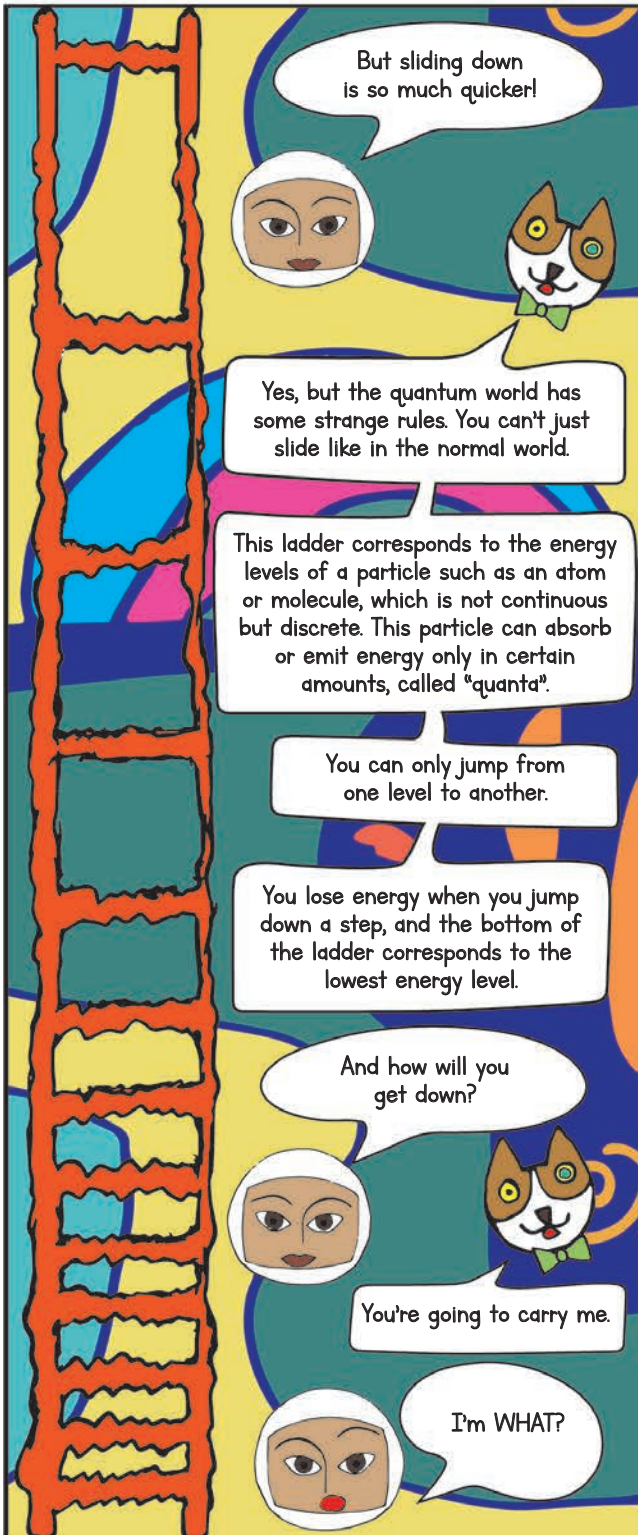
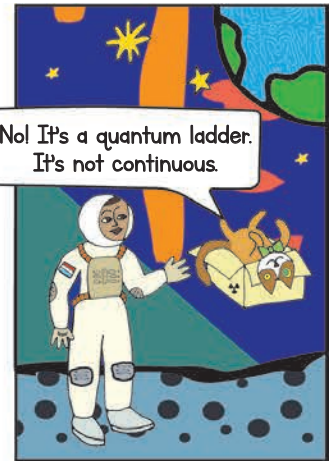


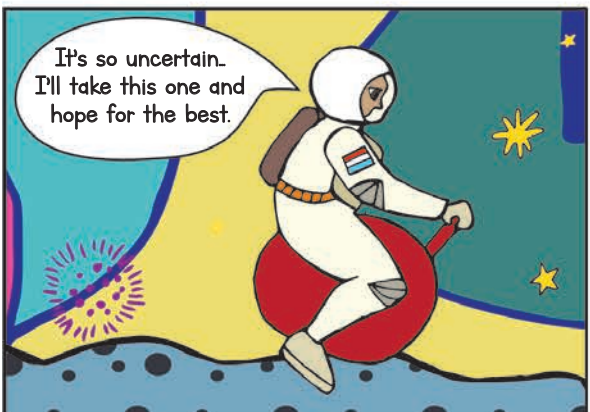
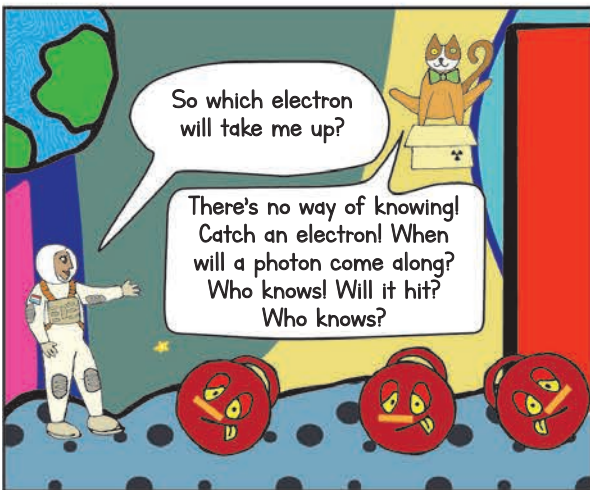
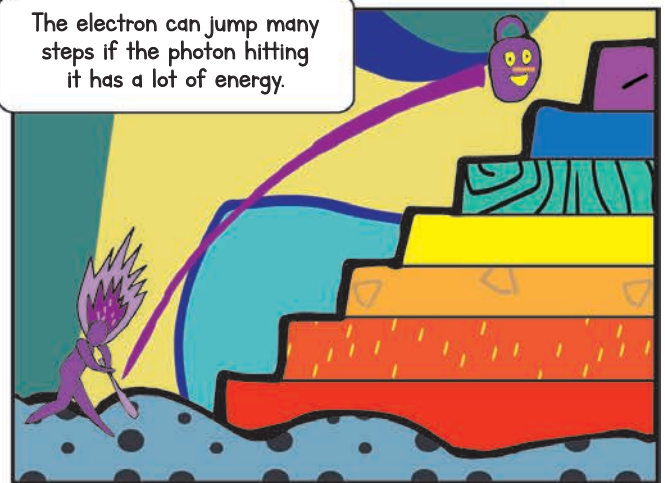
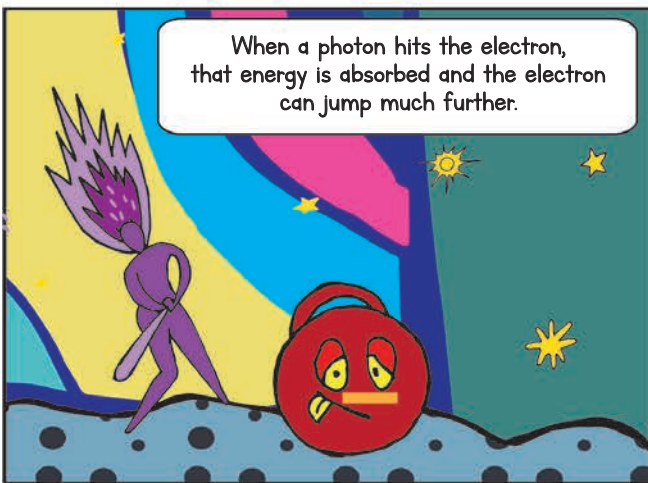
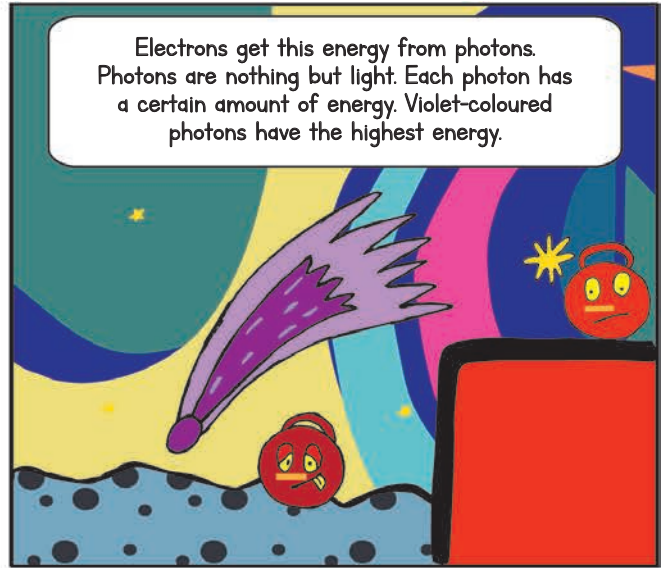
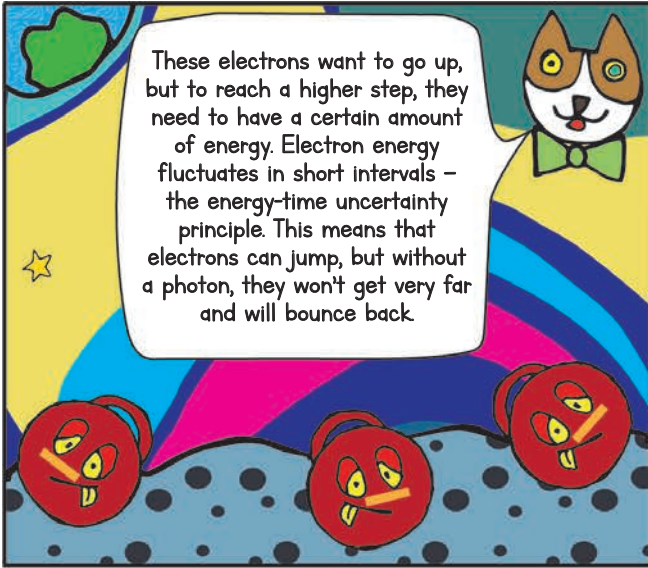
Najma, Najma, we made it!



Najma?



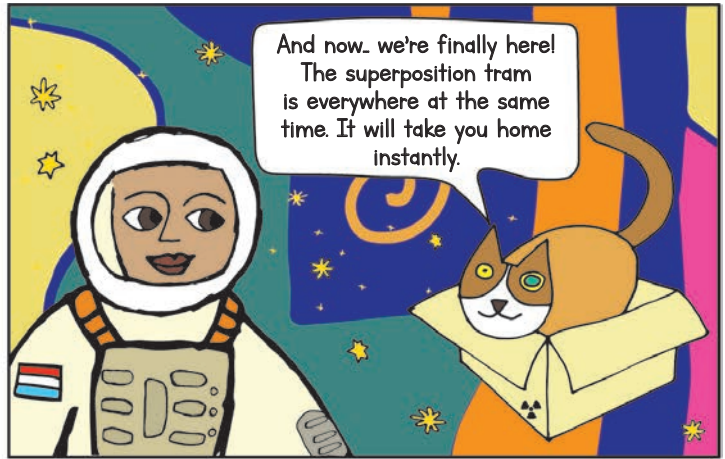




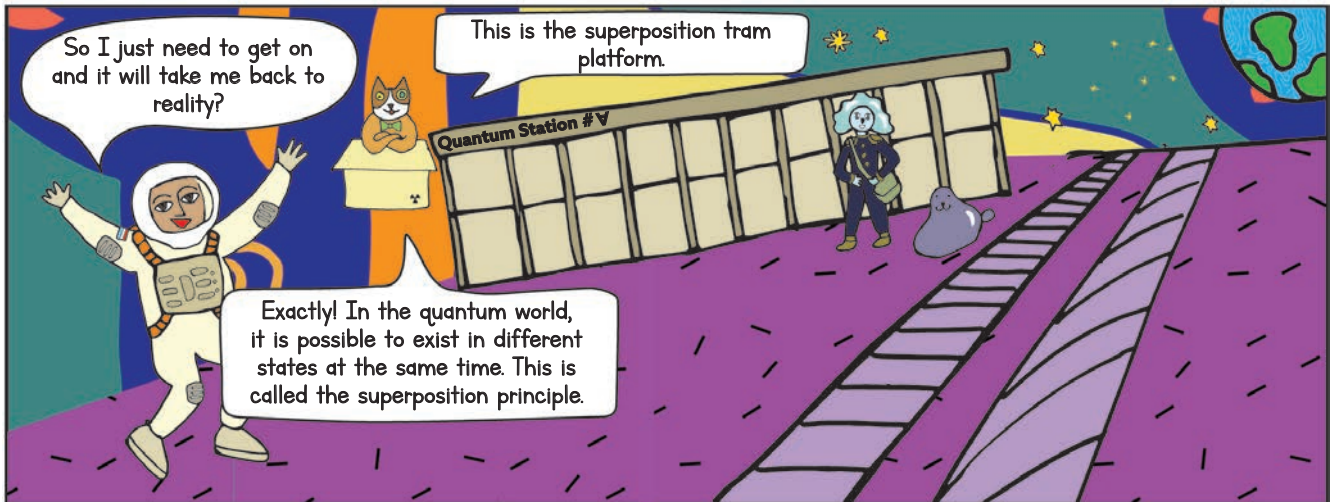


That was fun!

I feel so lucky to have got the right electron up.



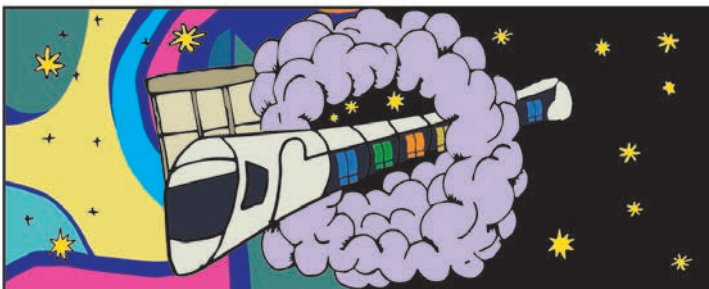
And now, we're finally here!  
The superposition tram  
is everywhere at the same  
time. It will take you home  
instantly.



So I just need to get on  
and it will take me back to  
reality?

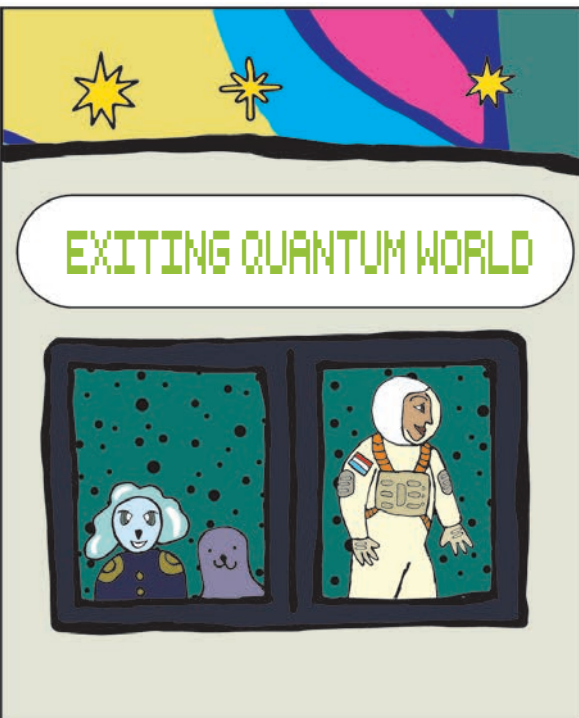
This is the superposition tram  
platform.

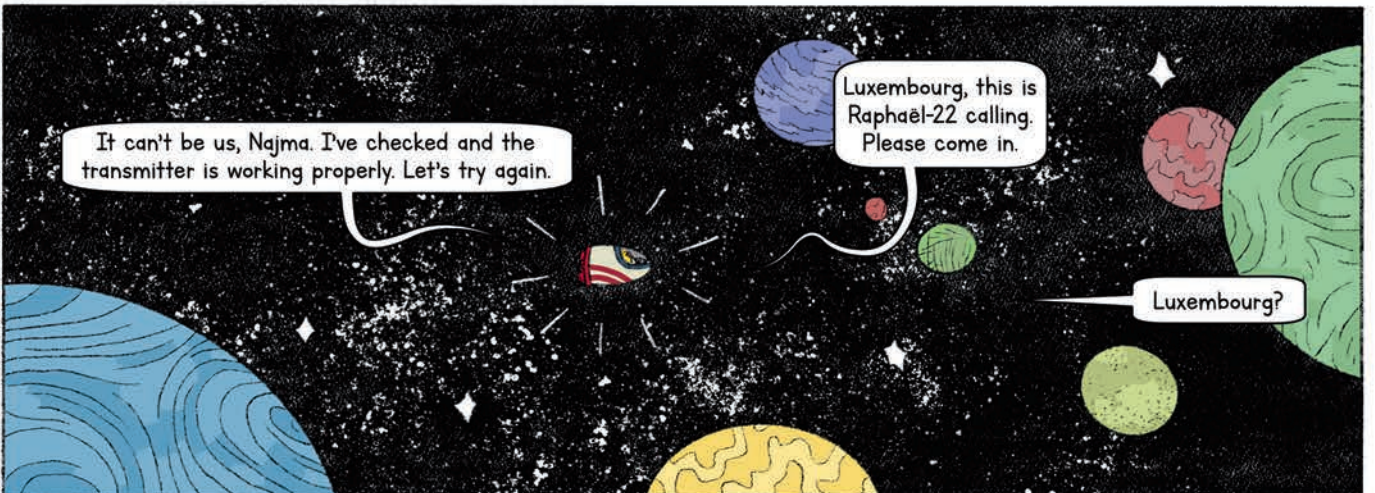
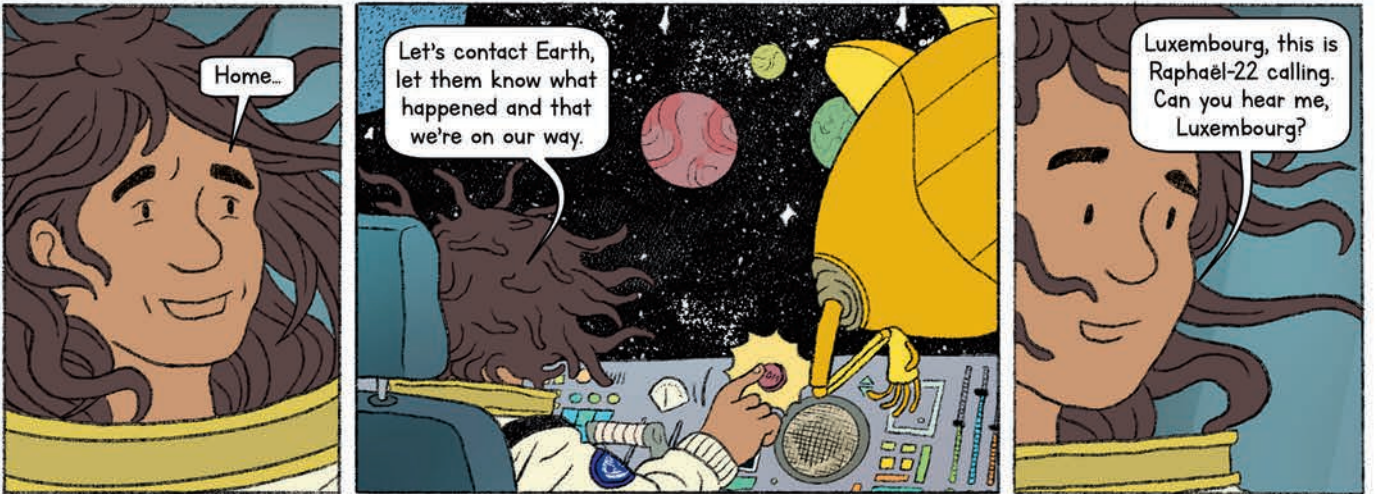
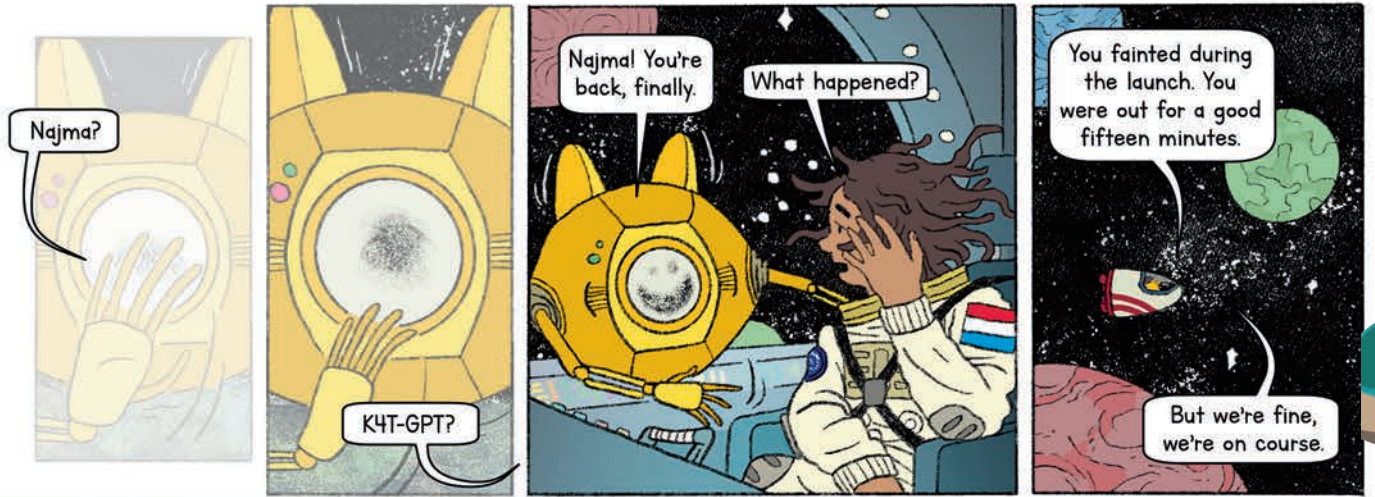
Exactly! In the quantum world,  
it is possible to exist in different  
states at the same time. This is  
called the superposition principle.



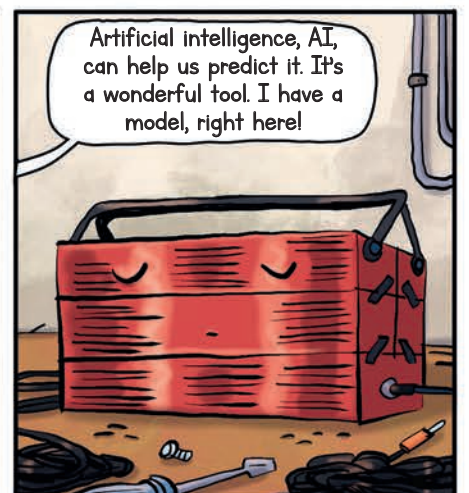
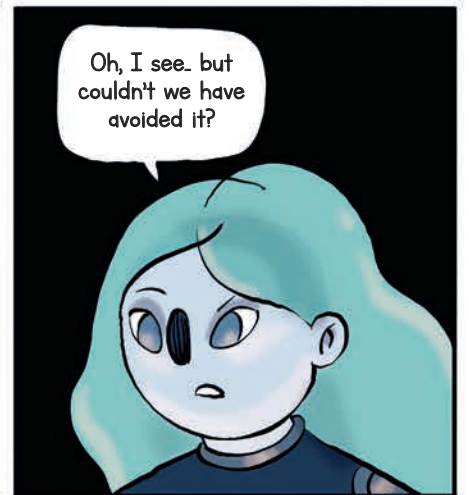
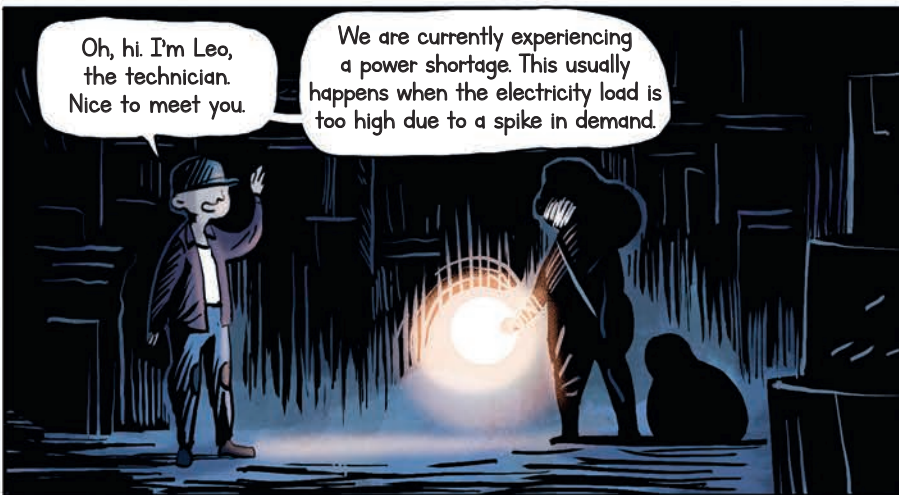
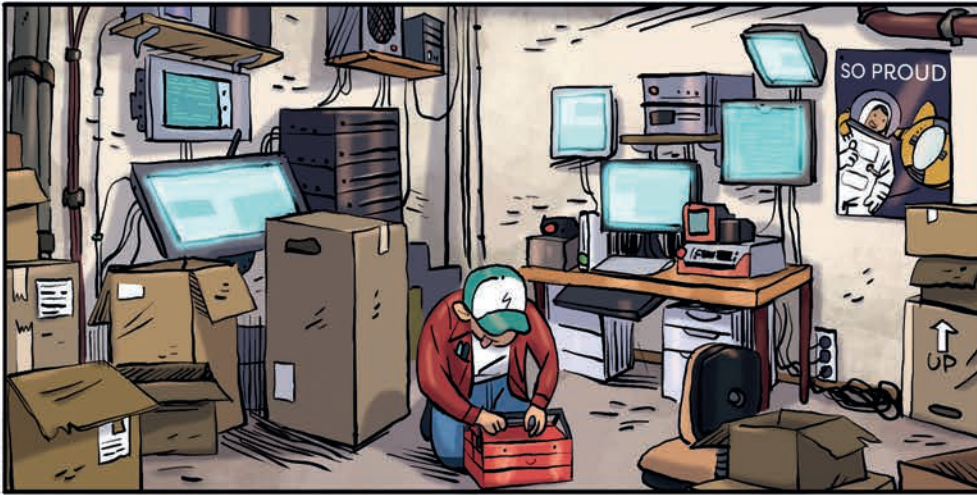
I guess it's time  
for me to go back, then.  
Thank you for guiding  
me here.

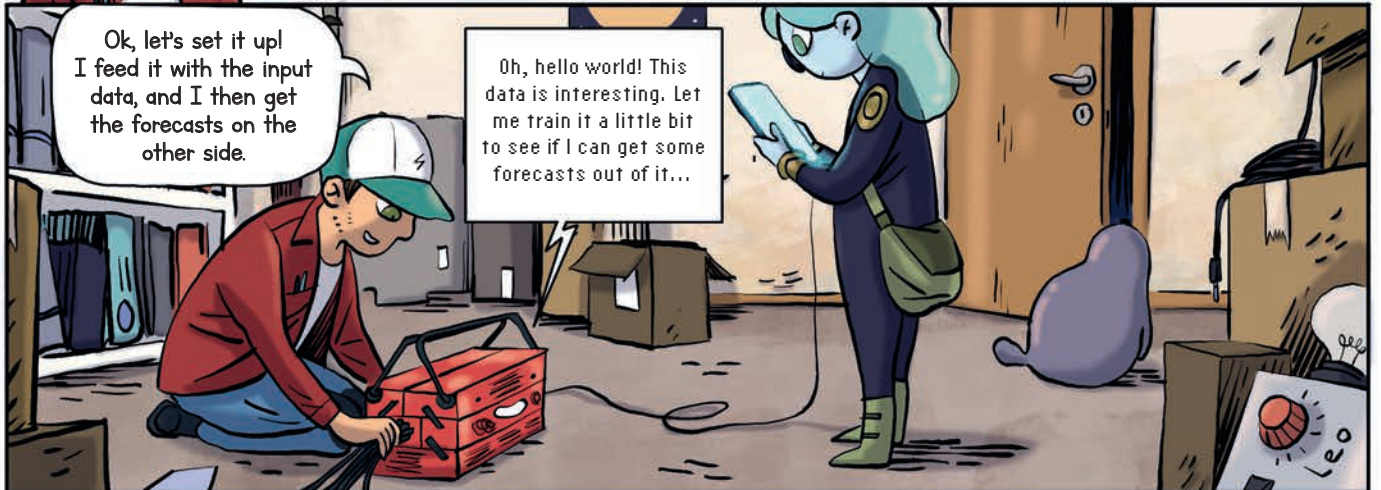
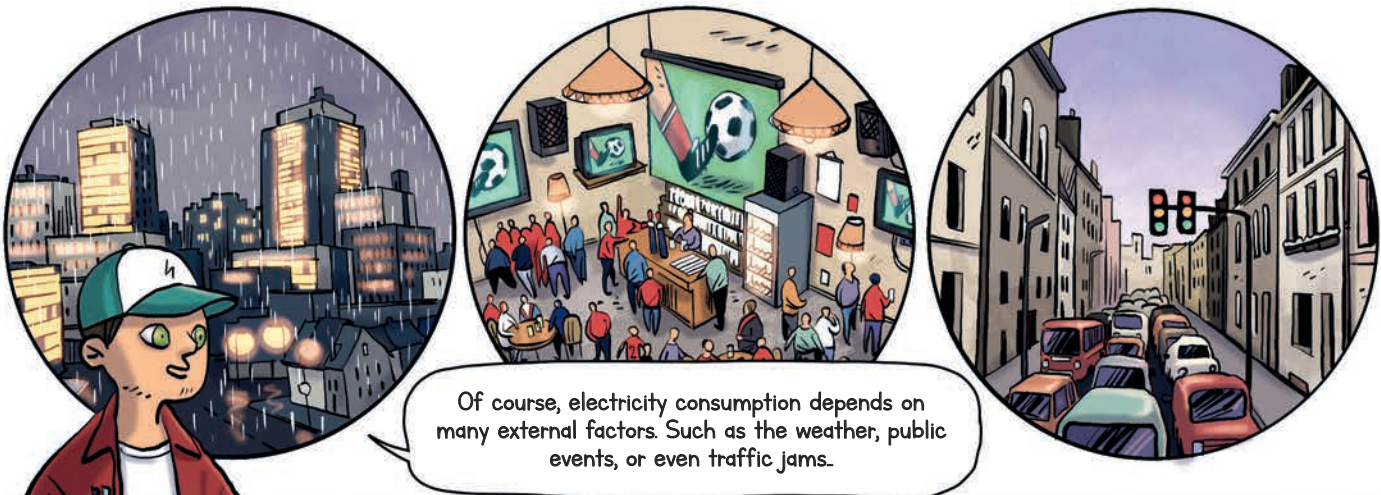
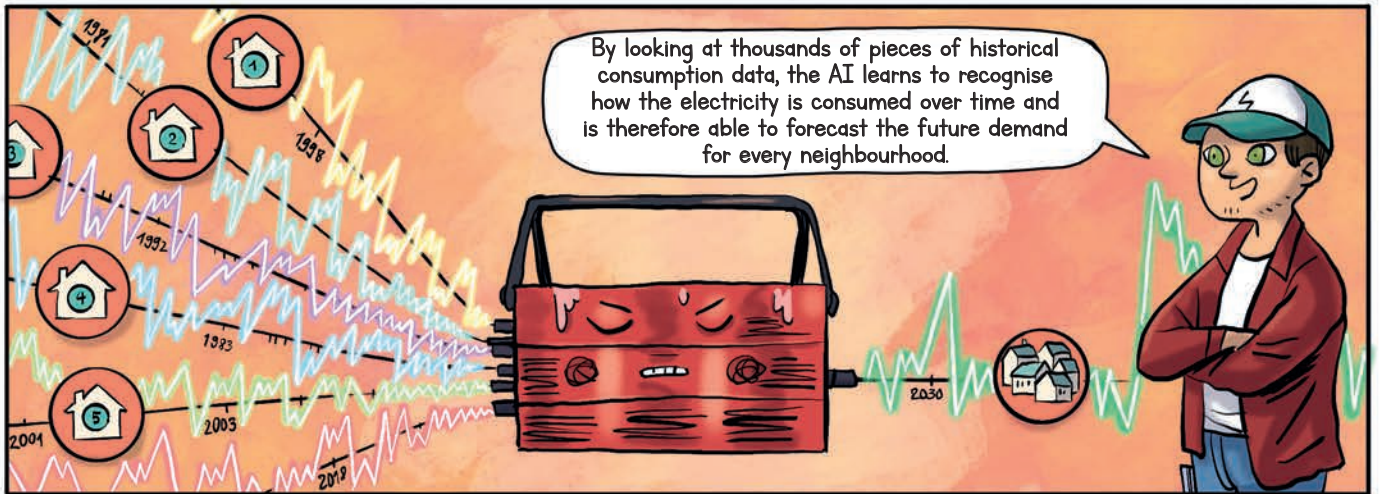
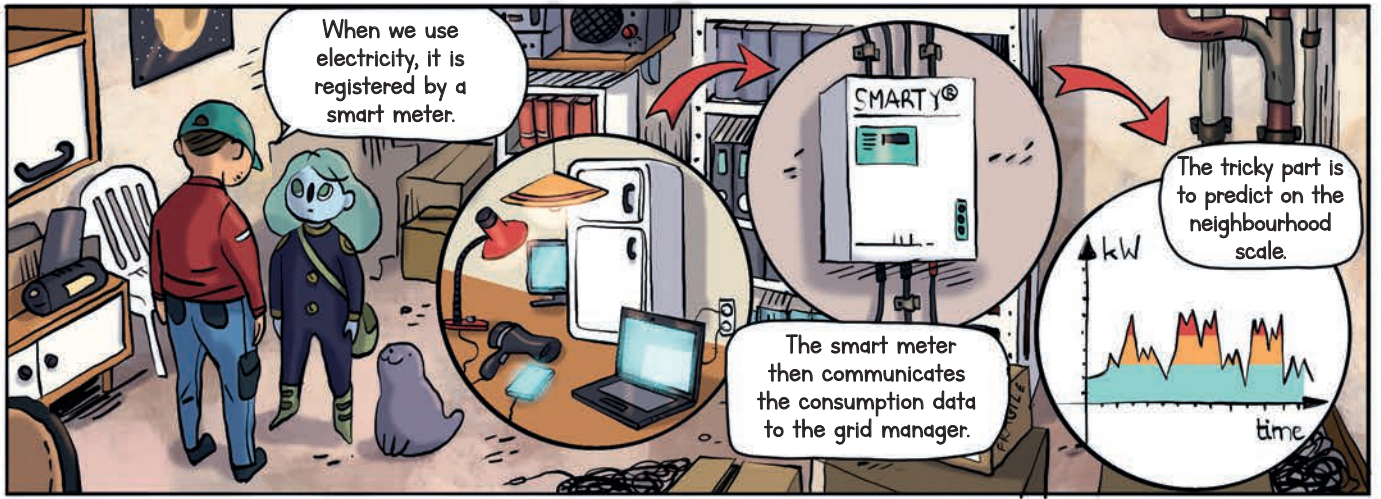
Yes... it's been a nice  
adventure, lady!  
Have a nice trip home!

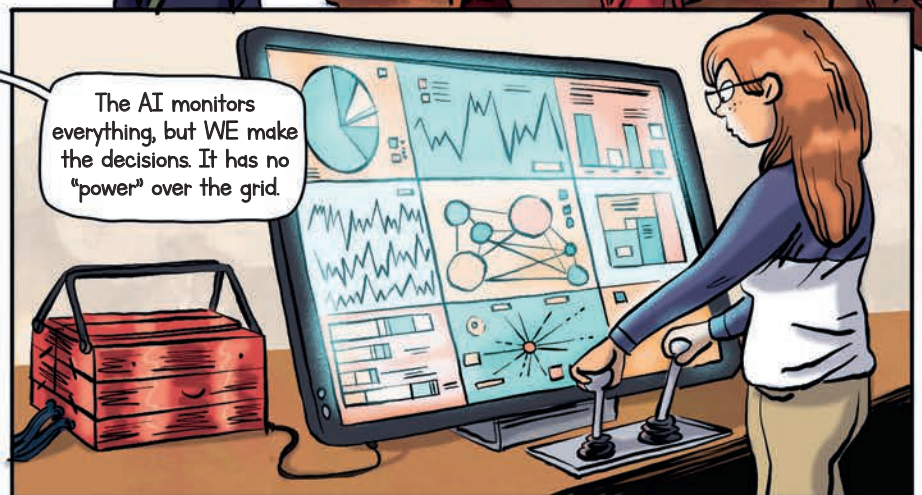
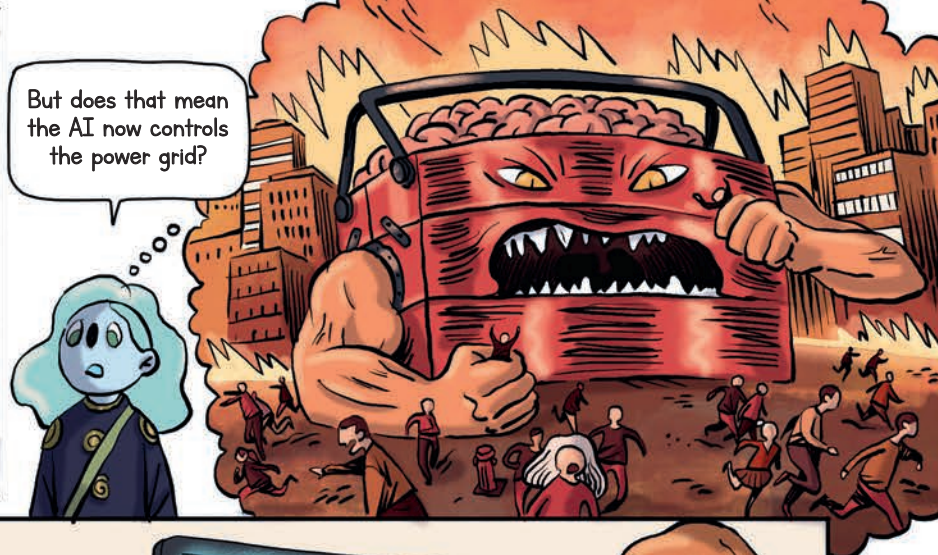
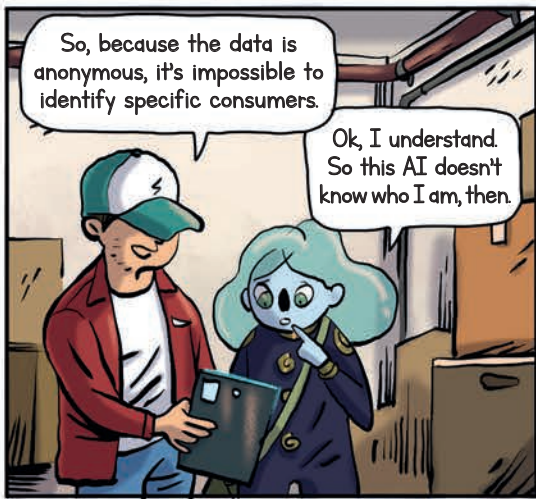
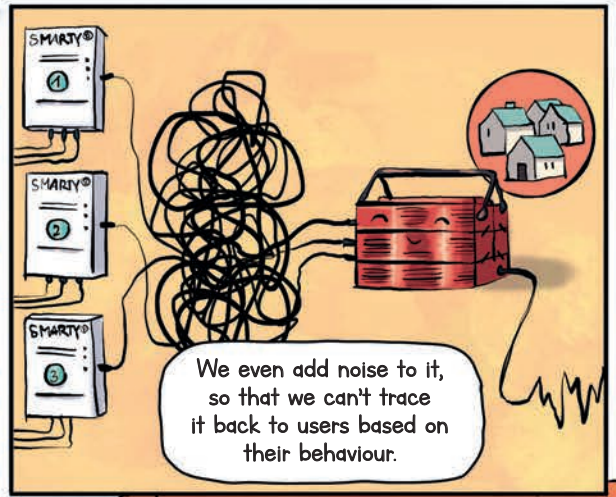
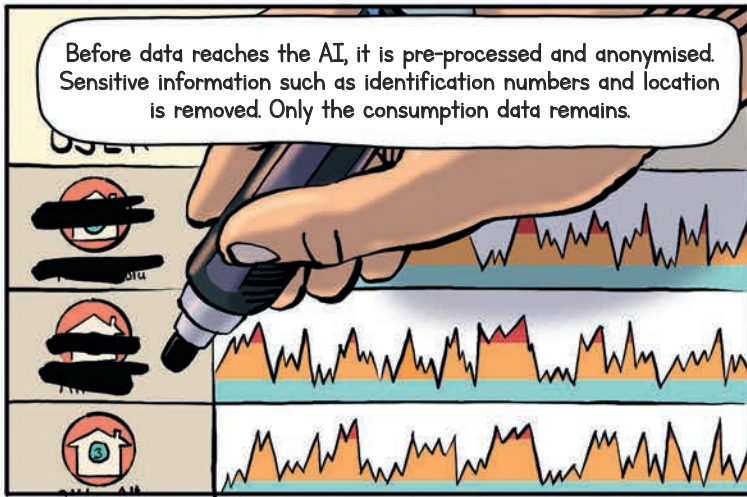
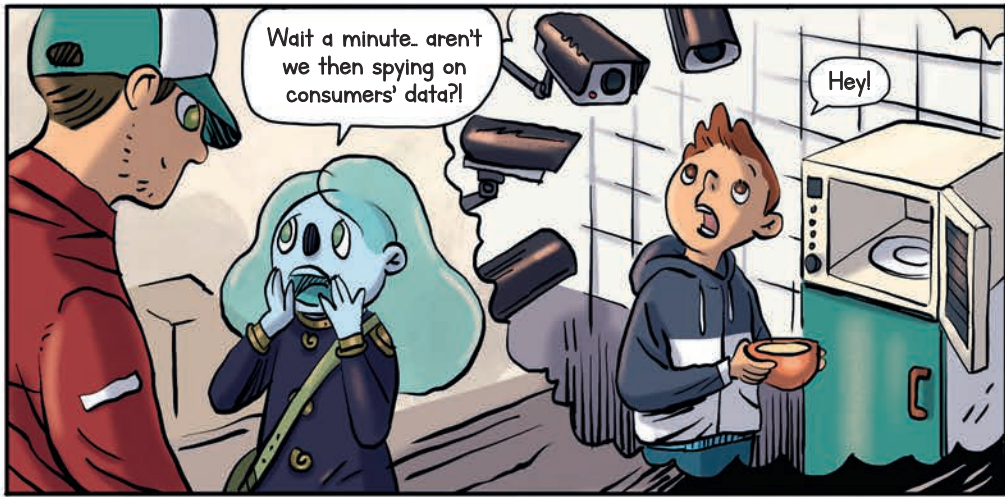


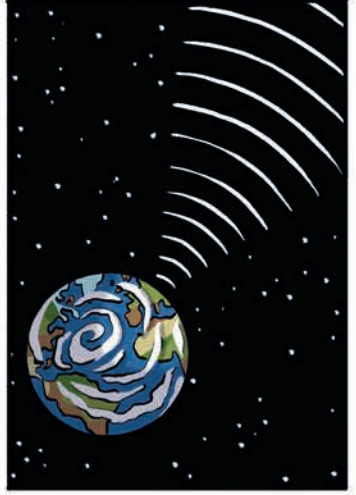
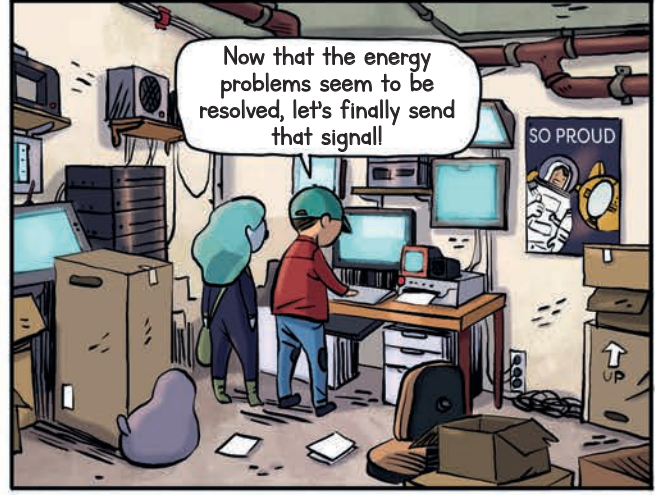
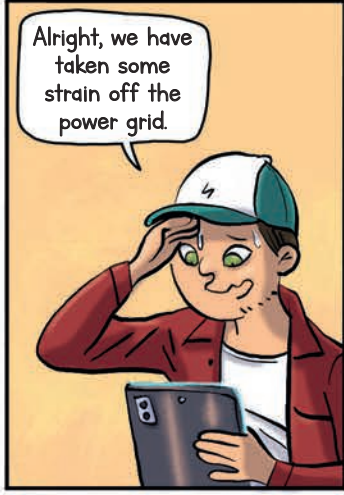
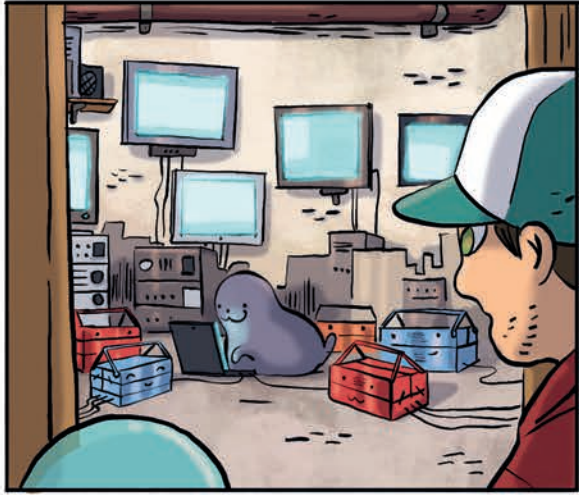
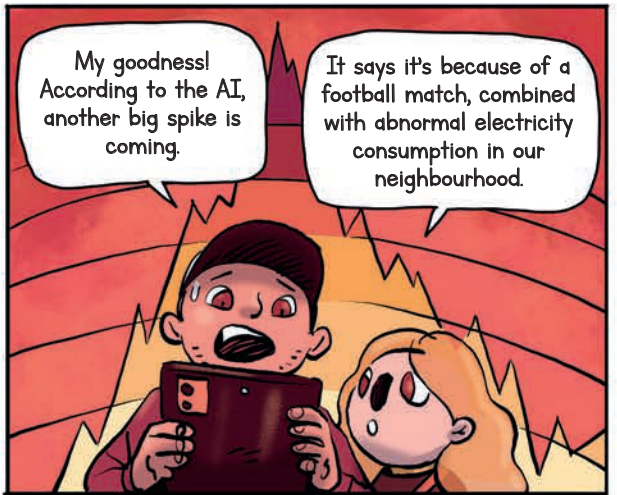


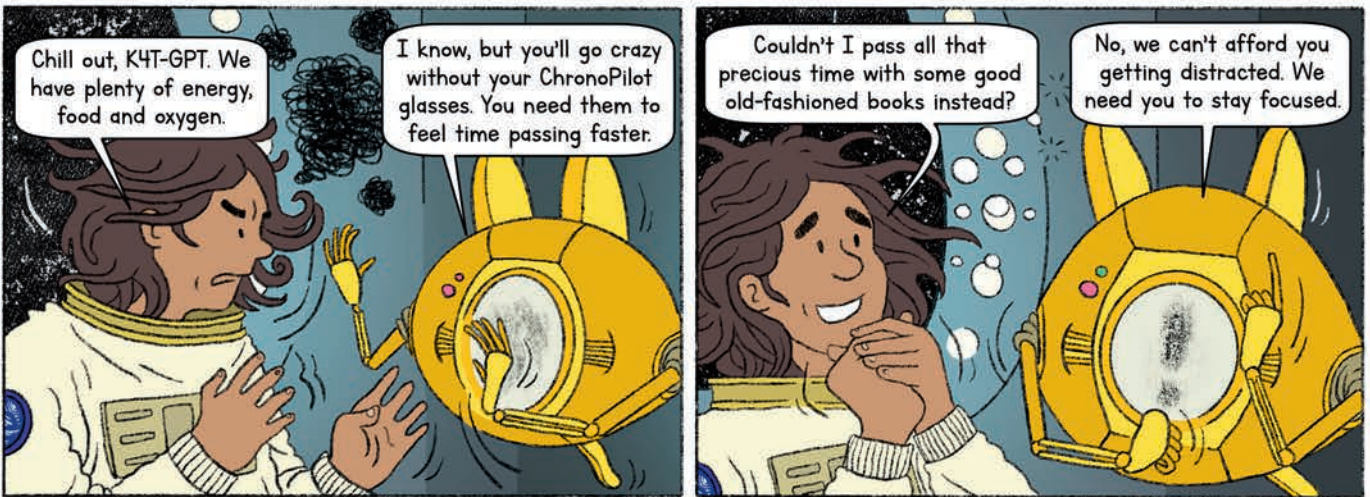












Imagine your brain is a spaceship navigating through space, and that this spaceship is operated by a whole team of tiny Najmas.

The captain is at the front. Her main job is to navigate the spaceship through space.

Meanwhile, the crew is in the backroom, processing any so-called peripheral information.

There's also a pacemaker, who keeps track of time.

If the pacemaker is too focused, she will pay too much attention to the time and will feel that it's passing more slowly. The captain will then get bored and stop concentrating on her tasks.

This would be very dangerous!

Are we there yet?

Booooring.

I'm going insane.

Ugh, time feels endless...

Easy job, this is almost too dull. I'll just start double-counting seconds to make it more interesting. Oh yeah, groovy!

One Mississippi, two Mississippi, three Mississippi!

Look!

Look!

Look!

Look!

Lovely day!

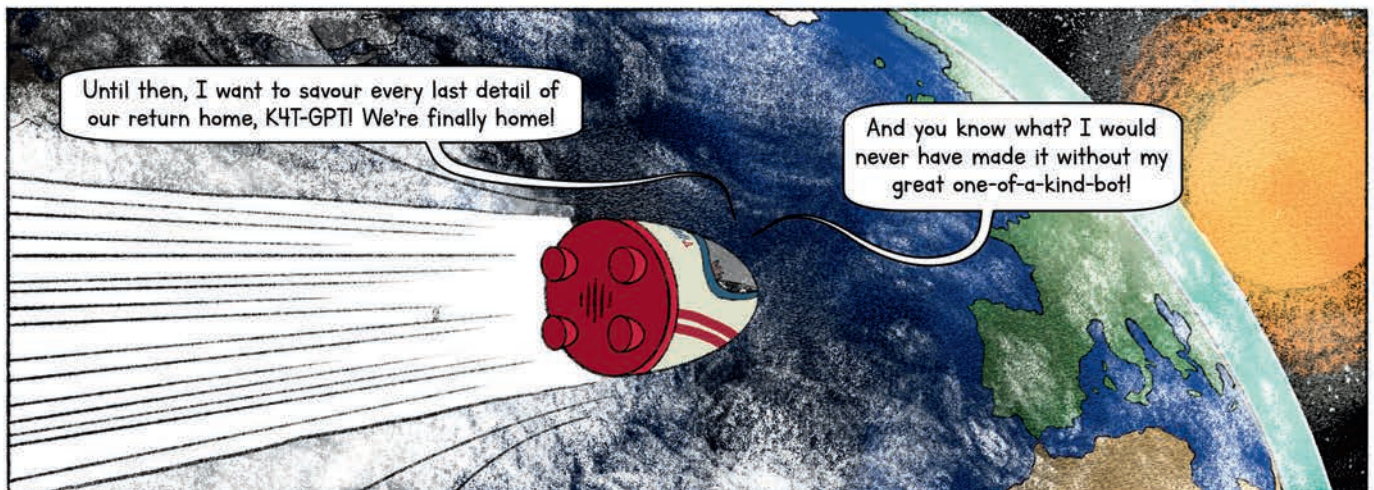
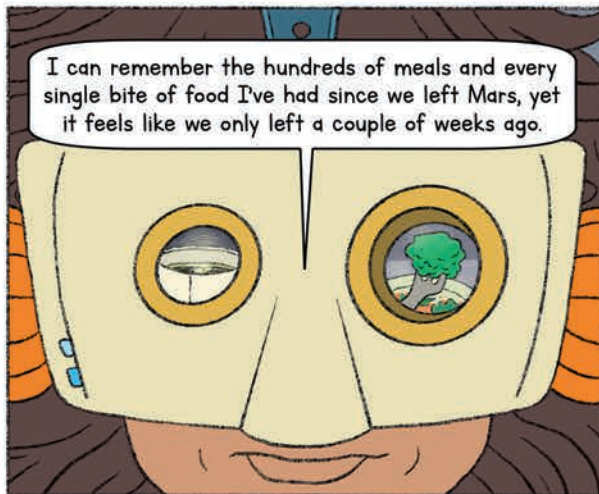
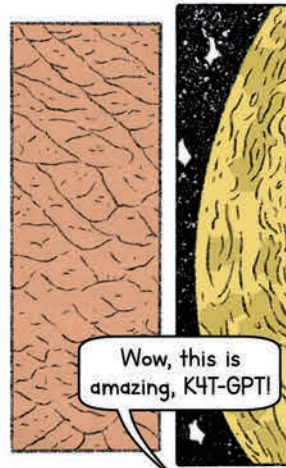
Raaaah, shut up! I'm losing track!

This is where the ChronoPilot comes in. It carefully augments your reality with some additional details for the crew to pick up.

You see, your brain is very good at prioritising. The key is to feed the crew with just enough peripheral information to put some pressure on the pacemaker, without distracting the captain.

This process will make it feel like time is passing faster, while allowing the captain to concentrate fully on steering the spaceship.

Note: Attention localisation is simplified for clarity and is not scientifically accurate.



# ANTOINE GRIMÉE

Antoine “Tunn” Grimée completed a master’s in narration at the École de Recherche Graphique in Brussels in 2017. After his studies, he started working in comics and illustration. Apart from publications like *De Coyote am Schofspelz* and *D’Geheimnis vum verschwonnene Sall*, Tunn produces various illustrations for the Luxembourg cultural scene, and regularly publishes one-page comic strips devoted to historical characters in *Warte-Perspectives*.



Daniela



Fabien

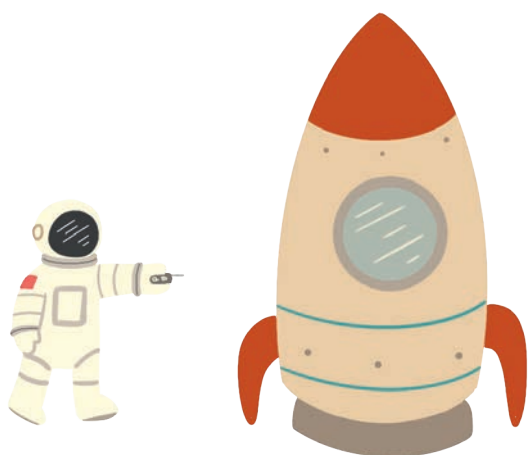
## Watt’s Up? The Smart Grid Chronicles

In a world where energy demand is soaring and environmental concerns are paramount, merging artificial intelligence (AI) with the power grid will be immensely important. AI could bring an unprecedented level of adaptability to the energy distribution system by optimising efficiency, predicting demand patterns and facilitating the effective management of renewable resources. While integrating AI into the power grid offers many benefits, it also raises concerns about the substantial energy consumption of AI systems. With this comic, we want to increase awareness of the benefits and limitations of AI in our daily lives and highlight some basic principles of this revolutionary technology using the example of energy consumption and distribution.

**Daniela Hau’s** research within the Faculty of Humanities, Education and Social Sciences (FHSE) focuses on factors that influence the acceptance of AI by teachers in educational settings.

Teachers play a key role in deciding whether “new technologies” will be used in the classroom. Understanding how they see and accept AI is therefore an important basis for future educational research and policymaking.

**Fabien Bernier** is a second-year doctoral student at the Interdisciplinary Centre for Security, Reliability and Trust (SnT, University of Luxembourg) and part of the SerVal team. The passionate computer science engineer from Nancy (France) completed his studies in 2021. He has a keen interest in both AI and art.



# NADINE SCHOLTES

Nadine Scholtes (born 1992) is an illustrator and comic book artist based in Luxembourg. She has been drawing her whole life. At the age of 16, she started studying art at Lycée des Arts et Métiers, and several years later obtained a bachelor's degree in Communication Design from Hochschule Trier.

She became an official freelance illustrator in 2019 and has since taken on all kinds of assignments. One of these is a comic book called *Northstars Yule Be Sorry*. She has also created her own comic book series called *Cool Uncle*.



Nadine



Angélica



Félícia



## Why so Distracted?

Attention deficit hyperactivity disorder (ADHD) affects 5.3% to 5.9% of children and adolescents worldwide. Children are particularly affected in the school environment, where they are expected to be attentive and control their behaviour. With this comic, we hope to teach people more about what ADHD is.

**Angélica Mendes** is investigating children's approach-avoidance motivation and executive functions at the Department of Behavioral and Cognitive Science of the Faculty of Humanities, Education and Social Sciences (FHSE).

**Félícia Jeannelle** is investigating at the Laboratoire National de Santé (LNS) the signatures and the responses of astrocytes to noradrenaline using primary cell culture. The aim is to understand the changes to the noradrenergic system and its impact on astrocytes in Alzheimer's brain.

# SNEJANA GRANATKINA

Snejana is a multidisciplinary visual artist, illustrator and graphic designer based in Luxembourg.

Curious and versatile, she switches between digital work, painting on canvas and illustration. She finds inspiration in the content and idea of the project. That's why her style can vary between different techniques and approaches.

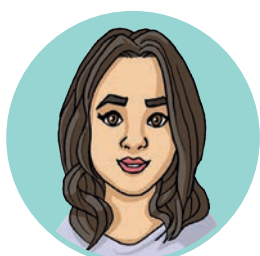


Snejana





Byjesh



Flaviene

## Quantastic Journey

How does an atom or a molecule behave? Do you know how crazy the rules are that govern nanoscale particles like electrons? The exciting answer to this question is provided by quantum physics and is fundamental to materials research. This comic tells the story of a journey through an imaginary landscape while exploring some of the basic ideas of quantum physics.

**Byjesh Nalini Radhakrishnan** is a researcher at the Department of Physics and Materials Science at the University of Luxembourg. His research focuses on theoretical condensed-matter physics, particularly quantum many-body systems.

**Flaviene Scheidt de Cristo** is a doctoral candidate at the SnT at the University of Luxembourg. Her research focuses on improving message dissemination in unstructured peer-to-peer networks.

## JEFF HEMMER

Jeff Hemmer (born 1982) is a freelance comic artist and illustrator from Wormeldange, who currently lives and works in Bremen. He loves cats and particularly enjoys working at the intersection between comics and education. When he isn't busy drawing, he is also a passionate workshop trainer.



Jeff



Sahar



Alexis

## Through Mind and Space

We are avid fans of all forms of science fiction literature, and the idea of “flying a crewed rocket to Mars” and “establishing a settlement on Mars” was relevant for both of our research topics in terms of the long duration of such a journey and the potential to develop a new civilisation on Mars with its own cultural characteristics such as fashion and religion.

As a member of the EU-funded project ChronoPilot, **Sahar Niknam** is investigating time perception modulation in mediated reality at the VR/AR Lab (Department of Computer Science) at the University of Luxembourg's Faculty of Science, Technology and Medicine (FSTM).

**Alexis Vandeweerd** is a research assistant at the Luxembourg School of Religion & Society and a doctoral candidate at the Institut d'Études Romanes, Médias et Arts (IRMA) at the University of Luxembourg. He is currently working on the iconology of Martin Margiela's fashion through a visual lens, in search of a concept of profane mysticism.



**Céline Lecarpentier** is the project manager for the third volume of LUXplorations. She studied translation to become a literature translator, but then discovered project management and studied literature project coordination. She is interested in all kinds of science and loves learning new subjects and languages.

**Serge Haan** is a professor of biological chemistry in the Department of Life Sciences and Medicine (DLSM) at the University of Luxembourg. His research focusses on molecular disease mechanisms associated with the development and metastasis of colon cancer: how do cancer cells develop resistance to treatment and how do they interact with their microenvironment? His strong interest in communicating science to the public led him to found the DESCOM project.



**Oliver Glassl** is an educational management professional with long-term experience in academic teaching and curriculum development. His education includes degrees in speech and language therapy and business administration. His research in the field of neurorehabilitation has resulted in various publications. Currently working as a project manager at the Faculty of Science, Technology and Medicine at the University of Luxembourg, he is member of the DESCOM team.

**Bruno Teheux** is assistant professor in the Department of Mathematics (DMATH) at the University of Luxembourg. He also likes to organise activities that allow as many people as possible to experience the multiple aspects of mathematical research and to become aware of the incredible modernity of this discipline. Where there is no fun, there is no math!



**Veronika Mischitz (Véro)** is a former biologist, turned visual storyteller. For over a decade, she has been creating (science) comics for various clients as well as teaching the magic of her craft to kids and adults. Driven by curiosity and a sense of wonder, she loves to explore unknown territory, learn new things along the way and turn them into compelling stories. She is a mentor for LUXplorations.

**Jessica Burton** gained her PhD at the Luxembourg Centre for Contemporary and Digital History (C2DH), working on the relationship between European comic transfers in the 1960s within the Popkult60 project. She previously worked as a comic editor for Titan Comics, on titles such as Doctor Who, before embarking on her PhD. She is a mentor for LUXplorations and teaches classes on comics history at the University.



**Valérie Minelli** is a comics creator from Luxembourg, living in Germany. She writes and draws the international web comic *MrsFrollein* to induce love and happiness. She studied art and communication design in Saarbrücken, focusing on comics. Since 2021, she has been teaching "Comics and Graphic Novels" at the evening school of the University of Fine Arts Saar, in hope to get people of all ages to draw comics. Whenever she isn't producing comics, Valérie likes to draw illustrations for children's books or fangirls her current favorite band.

Ever since he was a kid, **Andy Genen** (born in 1979) has always loved all kinds of comics. After finishing his studies at the Institut St-Luc in Brussels, where he actually studied "creating comics", he started working as a freelance illustrator / comic book artist and has since illustrated numerous very varied projects. His best known comic work includes *De Ieschte Ritter* trilogy, which he created with Lucien Czuga, and several collaborations with John Rech (*Dream Catcher* and *Alex & Tun*). *De Roude Puma* and his latest series *Tow & Tank* are among his solo works.



**THANK YOU** to everyone else involved in the production of the science comics, especially the academic supervisors who made sure the comics are scientifically correct, namely Jean Botev (Unilu), Alberto Fabio Ambrosio (LSRS), David Bouvier (LNS), Thomas Schmidt (Unilu) and Matthieu Jimenez (Unilu). Furthermore, we would like to thank Aliénor Gandanger, Chantal Englert, Sabine Schmitz, Berta Rato and the Luxembourg Learning Centre (LLC) for the support.

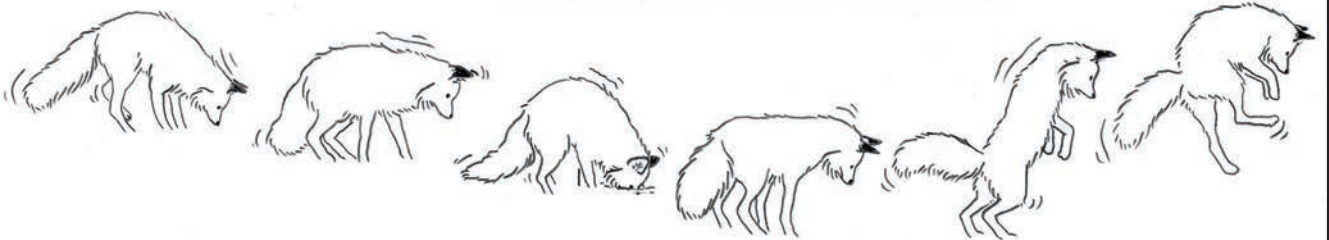


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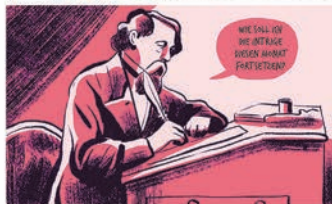
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Contributing artists: Valérie Minelli (p. 1), Jeff Hemmer (p. 3-4, 9, 14, 19-20), Nadine Scholtes (p. 5-8), Snejana Granatkina (p. 10-13), Antoine Grimee (p. 15-18), Andy Genen (cover, portraits)

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