

# Matteo Farinella: Illustrated Science Communication & Visual Science Storytelling

A conversation with [Anna-Sophie JÃ¼rgens](#) and [Crystal-Leigh Clitheroe](#) | Section: [Interviews](#) | [Illustrated SciComm](#)

*Abstract: Professional visual artists and cartoonists can produce detailed graphic narratives that deliver scientific insights, messages and meanings in a relatable way to a wide range of audiences. Nowhere is this more evident than the increasing use of comics material in science communication in every field. In our first interview of this series, we â€pick the brainâ€ of visual artist, passionate neuroscientist and science communicator, Dr Matteo Farinella. Matteoâ€™s career as a sciencertisan and cartoonist began when he connected the visual study notes and diagrams he created to help him understand his studies with his passion for drawing, and points out how comics he read as a child likely influenced his approach to both. He emphasises that science communication is the core of the creation of his educational comics and information-rich visuals, but he also completely embraces the undefined, informal nature of the comics medium to do this effectively. Exquisitely-detailed illustrations and warm visual narratives throughout this interview are testament to his extraordinary technical skill.*

**Dr Matteo Farinella, it is wonderful to welcome you to the online journal w/k! You are a visual artist with a PhD in Neuroscience â€ a visual storyteller and author, multimedia producer and art editor. You have collaborated and/or created commissioned work for [Columbia University](#) (in your role as Science Multimedia Producer), [Harvard University](#) (for a course on neuroscience), [Brock University](#) (for the BAsC in Earth and Planetary Science Communication ), [New York University](#) (for the conference *What Can You Be With a PhD?*) and [MedMaster](#) (many covers), just to name a few university and research outlets. Your work was included in [Scientific American's best science graphics of 2023](#). All of this is extremely interesting to w/k, and in this article, we invite you to reflect on the power of visual art and illustration â€ comics in particular â€ to communicate science and to excite the public imagination about science. The aim is to better understand the artistic concept behind your visual science stories and *neurocomics*.**

Great to be here!



Matteo Farinella: Matteo's Book Covers (2024). Photo: Matteo Farinella.

## Graphic Science, Science Illustration and Cartoon Science

Matteo, on your [website](#) you write that you are combining your "scientific expertise with a life-long passion for drawing, producing educational comics, illustrations and animations". Let's start this conversation with a few definitions. What is the difference between *educational comics* and *comics*?

That's a great starting point. Comics have been notoriously difficult to define. Are comics just a combination of words + pictures? Is a *picture book* a comic? Does the text have to be inside balloons? What about a completely "silent" comic? In his book [Understanding Comics](#) Scott McCloud famously came up with the convoluted definition of "juxtaposed pictorial and other images in deliberate

sequence, intended to convey information and/or to produce an aesthetic response in the viewerâ (page 9). This was intended to capture the fact there is a broad spectrum of things that comics can do â just like writing or video they are containers that can be filled with any kind of content: fiction, history, science or poetry.

The challenge is that many readers still associate comics with certain genres that popularized the format (i.e. superheroes, fantasy, or science fiction), so when we talk about anything else we feel the need to add a specifier. Many people today use the term non-fiction comics but I prefer educational because itâs slightly more generic and better describes my work. If you read one of my books there is certainly a lot of fiction but the main goal is usually to educate rather than entertain â although I do hope that education can also be entertaining!

**How do you define *graphic science* and *cartoon science* (two other terms that you use in relation to your work on social media, e.g. on your X page @matteofarinella)?**

They are all terms I use to talk about my work. *Graphic science* was inspired by the more established term [Graphic Medicine](#) (which I guess was, in turn, a reaction to Will Eisner's [Graphic Storytelling](#)) â an exciting field in which patients, doctors and other medical practitioners use comics to capture their experience. However, I always resisted the terms *Graphic Storytelling* or *Graphic Novel* to describe what I do. I feel like it has a very âadultâ connotation and itâs often an attempt to distance comics from their humble origins.

*Cartoon Science* is my favourite term. Most comic artists I know call themselves *cartoonists* and the term better captures that element of playfulness that comics can bring to Science Communication. My goal is to make science more approachable, not more elitist!

**Could you explain to our readers what the difference is between *science graphics*, *science illustrations* and *scientific illustrations*?**

Well, answering that may require an entire book. On that note, Jen Christiansen just published an excellent guide on [Science Graphics](#). In a nutshell, I would say that a *science graphic* is any kind of visual that aims to convey some scientific information (this covers a broad spectrum: from detailed anatomy illustrations, to completely abstract data visualisation).

*Science illustration* and *scientific illustrations* are subtypes of science graphics. Honestly, I don't know if they are all that different, but I would say that a *science illustration* can be more or less *scientific*. For example, take a [very detailed diagram of a neuron](#). This is still an illustration â not a ârealâ neuron â b its goal is to show an exemplary neuron and does not take too much creative license. On the other end of the spectrum, I can draw a [neuron as a character](#) with human features. This may not be *scientific* but I still consider it a *science illustration* if the goal is to convey a scientific concept to the reader. In this case, I was trying to explain to children that neurons communicate with each other.

**Where does art begin in your work and where does science end: What does (your) art bring to science? And is there a specific type of knowledge that emerges from the science-art interface?**

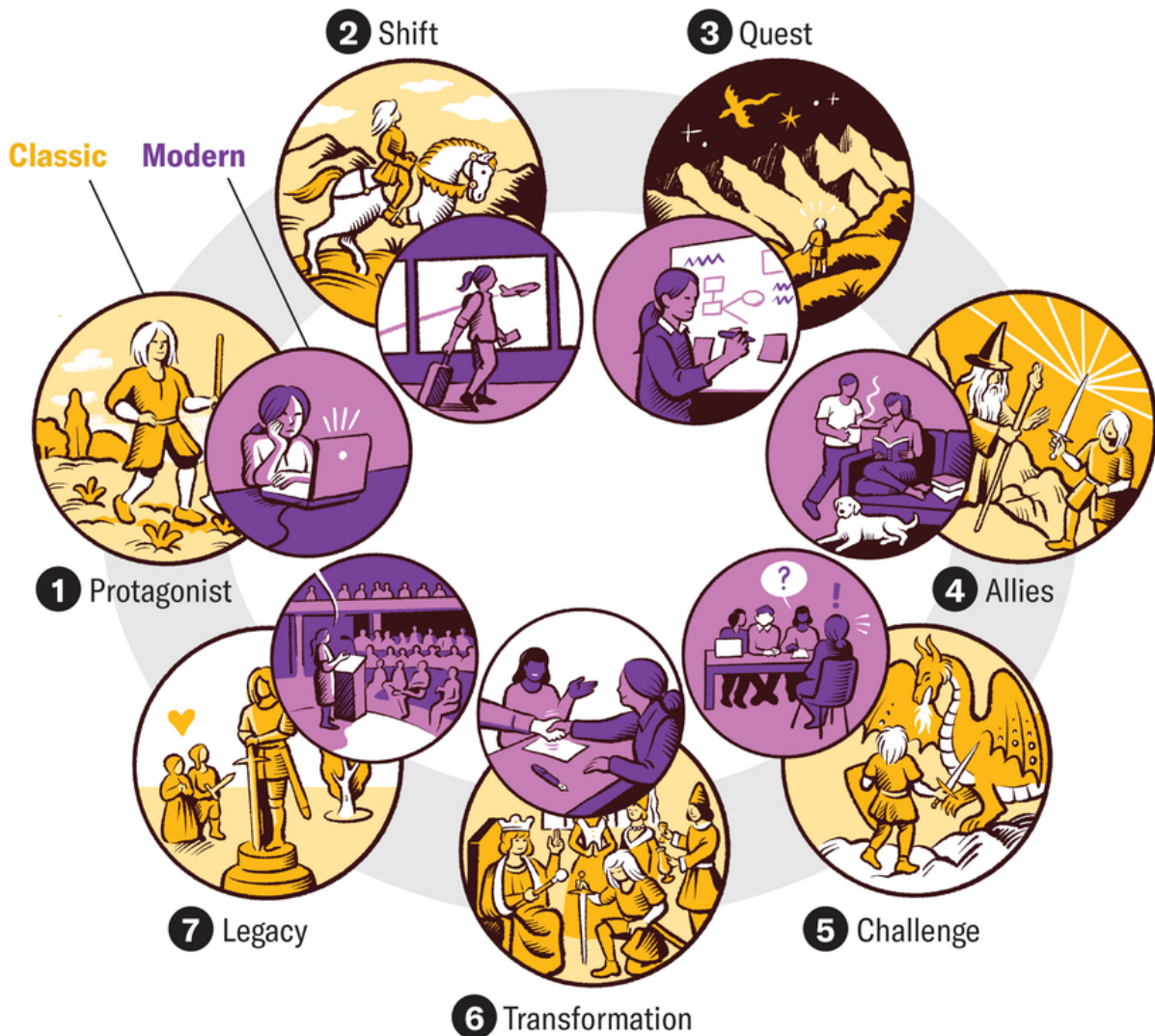
For me, science always comes first. Of course, I love getting lost in an intricate drawing, but I don't want my enjoyment to get in the way of clarity. If I can convey the same idea with *less* visual information, then I should try to simplify. My âartâ is more in coming up with the most effective visual,

or the best visual metaphor, rather than in the execution itself.

That said, drawing is also a way to [generate new ideas](#)! Especially while sketching, I find my brain is in a more playful and more associative mode. Putting ideas down on paper allows you to see them from different perspectives. For example, when making comics I usually start with a script â€ the basic science concepts Iâ€™m trying to cover â€ but itâ€™s only when drawing a storyboard that I come up with new metaphors and connections that would never occur to me in the writing stage.

## The Hero's Journey

The many steps of a "hero's journey," a narrative blueprint described by mythologist Joseph Campbell, can be abridged to seven key elements.



Matteo Farinella: The Hero's Journey. Featured in â€See the Best Science Graphics of 2023â€ (2023).

## Art & Information-rich Visuals for Education & Communication

### How would you describe the educational function of your art â your artistic concept?

Honestly, Iâ€™m still not entirely comfortable with the *artist* label. I prefer to think of myself as an *artisan* and scientific/educational illustration as a *functional art*. Just like artisans may find different solutions to a practical problem, each illustrator will inevitably bring their own âstyleâ to the science. But at the end of the day, a science illustration is trying to communicate something. If itâ€™s not clear (or worse, misleading) itâ€™s not doing its job.

That said, I think scientific illustration doesnâ€™t need to be as anonymous as it often is. I would like to see more artists getting creative with science. In my work, youâ€™ll notice that I take a lot of artistic license (i.e. I use visual metaphors, introduce characters and [mix completely different scales](#)). I feel thatâ€™s OK, as long as it says something about the science. Most of the time my concept is simply âScience is a wonderland, full of things to discover, donâ€™t be intimidated!â.



Matteo Farinella: Mushroom Empire (2022).

**You have worked with scientific institutions from many different countries to make science â€more clear and accessibleâ€ (your own words). Could you unpack this a little more? What do you mean by clear and accessible?**

Well, I believe some concepts simply become *clearer* when visualised. For example, I could write a whole essay describing the structures of a cell, and I could even show pictures of real cells under the microscope, but nothing would be as effective as a textbook diagram of a cell, with the nucleus and all the other organelles labelled and highlighted in different colours. This is not what *real* cells look like (for one thing, the colours are completely made up). They clarify by stripping away unnecessary details. They try to get to the essence of things â€ I think itâ€™s what [Daston and Gallison](#) would define as â€true to

natureâ€.

*Accessibility* is a more nuanced concept because it all depends on *WHO* we want to make it accessible for. Rarely is there one solution that works for everybody. A common refrain amongst science communicators is to â€think about your audienceâ€. People come to science with all kinds of different backgrounds, preconceptions and expectations. For a science-literate reader, who knows how to read common data visualisations, a detailed infographic (as you may find in *National Geographic* or *Scientific American*) may be the best way to learn about a new subject. On the other hand, for a younger reader who may have had bad experiences with science in the classroom, even a cell diagram may be intimidating or off-putting. In that case, turning a cell into a character may be a useful approach. In this case, the art doesnâ€t add much information (in fact it may even distort the science) but hopefully, it gets our audience more excited about science. Sometimes making science more *accessible* may mean simply making it less pedantic, so people are willing to engage with it in the first place.



Matteo Farinella: What can you be with a PhD? (2023).

**At Columbia University, you studied the role of visual narratives in science communication. How would you define the role of visual narratives in/for your art and what artistic strategies do you explore and use in these narratives to communicate science?**

I was looking for a framework to study comics in science communication but *comics* turned out to be hard to define (see above). So for my project, I decided to take a broader view of *visual narratives* instead. This includes comics but also animations, infographics and other related formats. The *visual* aspect is certainly not new. Illustrations have been used throughout history in medical and scientific communication, and their benefits have been extensively documented in fields such as information design and visual communication. Very often *to see* is synonymous with *to understand*. Comics are just an extension of this long tradition. Similarly, *narratives* are a universal form of knowledge transmission. Stories are easier to remember and more persuasive, compared to expository texts. Most of my project was essentially trying to connect these different strands of research into a coherent theory of how

comics can be used in science communication.

### **Comics for Science (Communication)**

#### **How did your visual style develop? How did you discover comics as a medium for your artistic expression, but also for communicating science?**

I grew up reading comics. In Italy (like in France) we have a strong tradition of periodicals â like American superheroes â but also authorâs comics, both fictional and autobiographic. Bologna (my hometown) also has a thriving community of *underground* comics and over the years I started to draw and publish some of my comics in local zines. I think my style developed organically, incorporating everything I read growing up. Later I studied science and I started looking at scientific illustrations. My notes were almost entirely visual â I love how much information you can pack in a well-crafted diagram. In a way, they werenât that different from the comics I was drawing in my free time, but for some reason, I didnât fully connect the two until much later.

In 2012, toward the end of my PhD, my friend (and later co-author) Hana RoÅi convinced me to make a comic about neuroscience. Thatâs how [Neurocomic](#) was born. The response to the book was very positive and it made me realise that comics were not just good at telling personal stories, but could be an incredibly powerful tool to talk about science.

#### **What is the role of comics for the communication of science and knowledge?**

I spent three years reading and thinking about this, so itâs difficult for me to give a concise answer, but I would say there are two main things that comics can bring to this field:

1. Most people perceive comics as *easy*. For historical reasons, many people â especially in the US â think of comics as something they read as children, so they are not intimidated by the format. This is frustrating for many cartoonists who want to make serious graphic literature, but when it comes to science communication it is a blessing in disguise! Comics can help us reach readers who would not otherwise be interested in science and may not engage with traditional science communication.
2. Despite these stereotypes, I believe comics are very well suited to convey complex information. They can exploit all the same visual strategies that diagrams and infographics have developed, but they can also break up information into panels, which makes them easier to decode. On top of that, comics are great at telling stories, introducing characters, and building visual metaphors â all things we already appreciate in scientific writing. Comics combine the best of both worlds! They can go from gripping personal narratives to a completely nonlinear visual explanation, seamlessly within a few pages. What more can you ask for?

#### **You work a lot in the medium of *non-fictional* comics. What do you think of science in *fictional* comics (e.g. DC or Marvel comics)? What contribution do they make to conveying the meanings of science?**

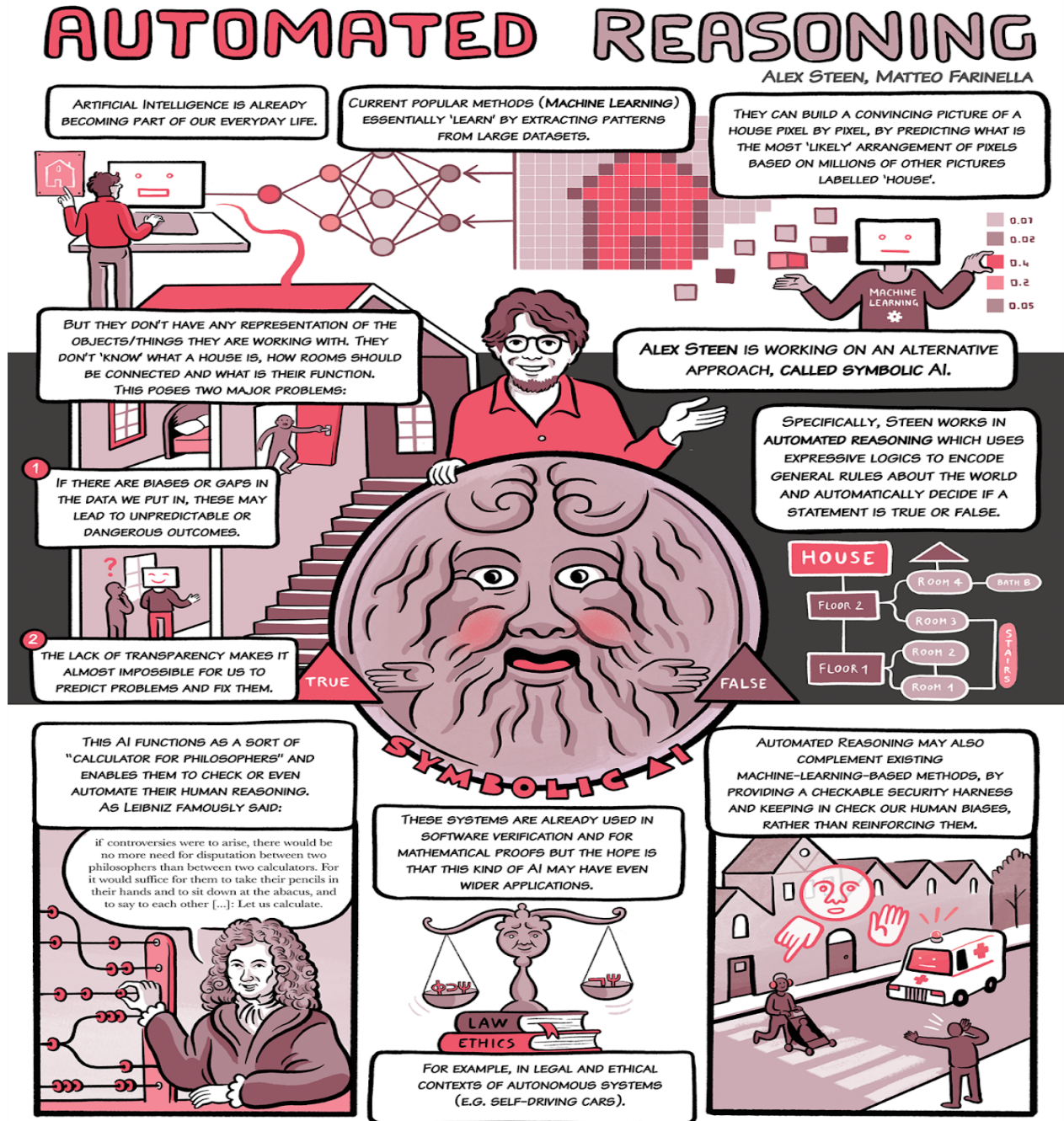
Youâre right. For someone who talks so much about the *power of narratives*, Iâm not writing much fiction these days. My books are somewhat *fictional* but only in the sense that scientific objects are turned into characters. The storytelling in them is minimal, often just an excuse to string different facts together. The rest of my work is mostly non-fictional.



Fiction can be so powerful, especially when it manages to recapitulate into a story some bigger challenge or conflict we all face (I'm a big fan of modern fantasy and science fiction). The truth is that it's much harder to write a good story than to write a basic explainer. For fiction to make a significant contribution to science communication, we need to train a new generation of science artists. We want people who can write compelling characters but also take the time to properly understand the science, and embed as much information as possible into the narrative structure, so that it all feels more like an adventure than a lecture.



Matteo Farinella: *Not a Cancer Fight* (2023).



Matteo Farinella: Automated Reasoning (2023).

**If you could invent a science superhero, what superpowers and what science would they embody?**

Oh, you saved the most difficult question for the end! I was never good at superheroes. I feel like I have to pick neuroscience, but that doesn't give you very cool superpowers unless you could listen to neurons remotely and control their electrical activity like mind reading and mind control? I don't know if I want to go down that route. I feel that with the current trends in neurotechnology, this dystopia is all too possible (with giant tech corporations, instead of superheroes). One of my [favourite subjects at the moment is mycology](#). Maybe it would be more fun to have *fungi powers*: absorb energy straight from

the earth, reproduce both sexually and asexually, commune with plants and merge with other organisms into distributed hive minds? A very psychedelic superhero.

**Thank you very much, Matteo, for this very inspiring conversation!**

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Cover image: Matteo Farinella: [CLINICAL MICROBIOLOGY Made Ridiculously Simple](#) (COVID edition). 2022.

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## References

[Matteo Farinella â¶ artist website](#)

[Dr Matteo Farinella â¶ artist Instagram page.](#)

[How to explain climate change? With comic books](#) (2020) in *The Bulletin of the Atomic Scientists*.

[Making the Brain Accessible with Comics](#) (2020) in *World Neurosurgery*.

[Of Microscopes and Metaphors: Visual Analogy as a Scientific Tool](#) (2018) in *The Comics Grid*.

[Science Comics' Superpowers](#) (2018) in *American Scientist*.

[The potential of comics in science communication](#) (2018) in *The Journal of Science Communication*.

## Tags

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