

The evolution of the scientific poster: From eye-sore to eye-catcher

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Abstract

Despite the rise of social media, high-speed internet, and teleconference software, conferences seem to be here to stay. But what is their purpose? Networking. So why then do we design conference posters in a way that makes people run away from us?

In this article you will learn why a scientific poster should be an eye-catcher and a conversation starter and how to design effective posters with the reader in mind. A poster should be a visual abstract of your research, not a wall-of-text. Beyond the conference, graphical abstracts can be effective tools for broadening the reach of research and are becoming more commonplace in scientific publishing. When it comes to effectively engaging with your audience, it is time to break the status quo. Let us bury the wall-of-text posters and embrace graphical abstracts.

Conferences. Despite the rise of social media, high-speed internet, and teleconference software, they seem to be here to stay.

Have you ever asked yourself why? There is one thing that technology cannot replace –

human interactions.

Shaking hands, smiling, bonding over shared interests and struggles, and of course, the late nights out eating and drinking with fellow researchers, that's where the best networking happens, and long-lasting collaborations are forged!

So if conferences are all about connecting with new people, why do we design conference posters in a way that makes people run away from us? Traditionally, the academic poster has looked something like depicted in Figure 1.

Let's reflect for a moment on the user experience that this format of poster creates. First, this is a poster that is hard to notice in the crowd because it is not eye-catching. Second, it overwhelms the reader with a wall of text, which ensures that the take-home message is well-concealed deep within a long paragraph. Third, it is hard to navigate because the structure is unclear, and there is simply stuff everywhere. The result? People will pretend that the researcher and the poster are not even there.

Why did the "wall-of-text" poster become the status quo?

WHY and HOW has this become the norm? Where is it written that conference posters need to be designed in a way that goes against every principle of effective communication?

Unfortunately, we don't have the gift of travelling back in time to find the evolutionary origin of the conference poster. But *somehow* the "wall-of-text" poster became the generally accepted norm, just like it became the norm to write our research papers in a stale and impenetrable way.¹

The fundamental problem is that we are not designing posters with the reader in mind. We are preparing posters to show-off all



of the data and text because they give the presenter a sense of comfort and security. We are selfishly designing our posters without even considering that most people at conferences might not be interested in all of those eight plots

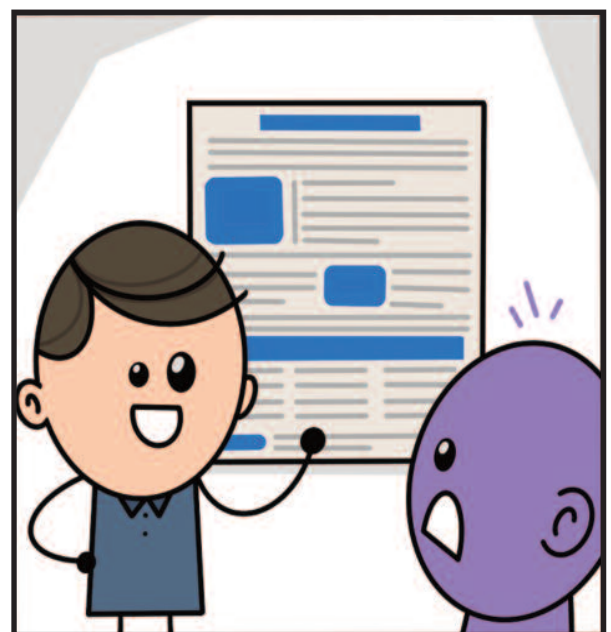


Figure 1. The wall-of-text poster – the dark ages of networking



and tables full of highly significant p-values. People at a poster session just want to have a chat! They don't want to read and they want the scientist to tell the story of their research.

Back to the basics – why do we design conference posters?

Now please put all of your pre-existing ideas about conference posters into a mental box, seal it with double-strength duct tape, and throw it away.

We need to start afresh.

If we go to conferences to meet people and network, then posters should be networking tools above all. How? Simple, we need to make sure that posters work as an eye-catcher and conversation starter.

Here is where things get interesting. Our brain can process images in about 150 milliseconds,² and you can use this to your advantage making sure that your poster acts as an eye-grabber. All you need is a large and easily recognisable graphic, which can relate to the research even loosely. Its role is to get noticed and trigger people's curiosity so that they walk towards the poster and start an interaction with the presenter. This is how to get the attention of that superstar professor!

Now imagine being the researcher. You dressed up to look professional, you even ironed your clothes, and you feel ready to perform at the conference poster session. Thanks to the eye-catching visuals you've made people curious, so they come to you saying something like "cool poster, can you tell me about your research?" Bingo! Now you want to give your one-minute spiel about your research, while pointing to graphs and images on the poster as needed. You MUST contain your excitement and speak for only one minute because at this point you still don't know who you are talking to and you cannot assume that they want to know about all the little details. Your objective is to understand your audience, their interest and needs, and start a two-way conversation. Ask them open questions like: "What is your field of work?" Let them do the talking and try to understand how your work relates to theirs. Once you know that, your next objective is to give value: basically, try to help them in some way. Do you know someone they should meet? Make the

introduction. Do you master a statistical analysis that would interest them? Offer them help. Do you have samples this person would be interested in studying? Offer them your samples. The important thing is that before you even think about what you might *take* from this person, try to *give* value in some way. Giving is the best possible foundation to a great relationship.³ This is how you use a poster as a networking tool.

A poster should be a graphical abstract

We have clarified that a conference poster should be an eye-catcher and a conversation starter. So how much should be put on it?

Unfortunately, most conference posters are overloaded with far too much content. But some conference organising committees understand that such posters don't work.

In the past few years, we have observed various conferences abandoning posters all together and replacing them with graphical abstracts in printed or digital form (example 1: Natural Resource Management Science Conference 2018,

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<https://www.environment.sa.gov.au/the-weekly/articles/nrm-science-conference>, example 2: Australian Society for Fish Biology Conference 2019, <http://asfbconference.org/abstracts/graphical-abstracts/>).

As science communication specialists, we welcome this change. Although we think that posters can be a very efficient communication tool, the problem is HOW we design posters. If we followed a few basic principles of graphic design and communication, posters could give researchers the visibility and attention they always desired.

And what about e-posters? E-posters are essentially a slideshow of posters that are displayed on a screen without the author being present. Therefore, as each poster is visible for only a short time it is even more crucial to be succinct and visually appealing.

So let's do it. As a general principle, you should think about a poster as something closer to the abstract of your paper than the actual paper. It should be a visual abstract (Figure 2).

A poster should not tell the whole story of the research in detail; that is what papers are for. We understand that, after many years of conditioning, it is hard to let go, but it is crucial to realise: less is more for poster design. As a rule of thumb: limit your word count to 250, possibly 150; limit your graphs to a maximum of 2 or 3; and definitely do not use tables. Just extract the key numbers and highlight them by placing them in a shape (see Figure 3 for an example). Good



Figure 3. The essential elements to an effective conference poster

See <https://www.animateyour.science/post/how-to-design-an-award-winning-conference-poster>

communication is all about simplicity and clarity, and so your poster should reflect that.

Once you've successfully limited the amount of content in the poster, something amazing will happen. You will have unused space! Most people think about unused space as wasted space, designers instead call it negative space and appreciate its power. You can see negative space as a superpower that enables you to control what people look at on your poster. With negative space you can guide the viewer's eyes to the key message you want them to take home. Without it, they will get lost, feel overwhelmed, and lose

interest. For an excellent example of negative space simply go to www.google.com and admire how clean the interface is. It is all negative space except what matters – the search bar.

The rise of social media for science communication

For better or worse, social media has become a key vehicle of science communication: either within the scientific community, or to the broader public.

However, social media is a noisy ecosystem, and for something to be seen, it needs to be *seen*. This means simply posting the URL link to a published paper may not be sufficient to capture attention. Here is where a well-designed graphic can help. It is akin to standing out to passers-by in a conference poster hall and there is emerging evidence of its benefits in improving the reach of new scientific publications. One study used Twitter to quantify the effect of including a graphical abstract in the promotion of new publications.⁴ The researchers compared Twitter posts with and without graphical abstracts over one year, using each post as its own control. They found that the reach of posts with graphical abstracts were substantially greater than those without. Tweets with graphical abstracts received a 7.7-fold increase in Twitter impressions, a 8.4-fold increase in retweets, and a 2.7-fold increase in article visits.



Figure 2. A poster is not a manuscript but rather a visual abstract of your research

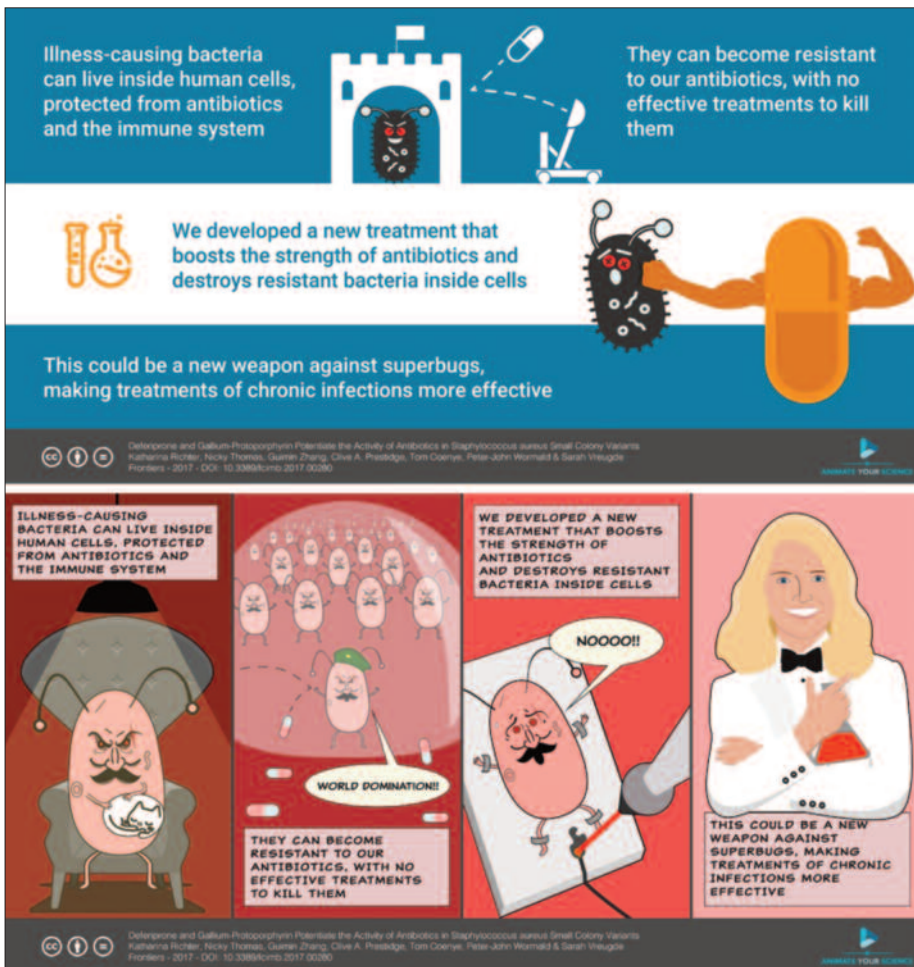


Figure 4. Examples of two approaches to a graphical abstract for the same paper¹²
Upper panel = Infographic Style. Lower panel = Comic Style¹¹

Where to use a graphical abstract

As graphical abstracts are effective in capturing attention on social media, more and more journals demand a graphical abstract for publishing manuscripts.^{5,6} This can be as a key figure at the beginning of an online publication,^{7,8} or in a graphical table of contents.^{9,10} After all, the graphical abstract is a tool to guide you towards papers of interest.

A graphical abstract does not have to be limited to online use. We believe that a graphical abstract is effective as a conference poster in its own right, especially if you are there to provide more information to the viewer. Graphical abstracts have even been embedded directly into conference posters. This gives an opportunity to include a rapid “take-home summary” to the viewer, while still providing more detailed information as well.

Styles of graphical abstracts

So how *should* a graphical abstract look?

Firstly, we should follow the same design principles as when creating a beautiful poster. This means “less is more”, so choose one key message/finding to summarise your work. Remember, the goal is not to replace the paper, but rather to bring more eyes to it.

The second thing to carefully consider is the target audience. Is the graphical abstract for networking purposes at a conference? Or is it to engage with the general public on social media? This will influence your choice of style.

Consider the *Infographic Style* (Figure 4, upper panel). This is a clear and effective style that offers great flexibility and can be tailored to your target audience. Provide *some* detail to inform a scientific audience or stick to the broader context to relate to the general public. A graphical abstract is not the place for figures or charts, rather key points should be graphically supported by pertinent visuals and icons.

As always, include an eye-catching visual to stand out.

Alternatively, the *Comic Style* (Figure 4, lower panel) is an excellent way to engage with the general public and scientific community alike. It does not lend itself to presenting precise findings but is a powerful and fun way to communicate the broader research impact.

From regular microbiologist to James Bond (Katharina's experience)

When attending conferences many junior researchers compete for visibility, but how can you stand out from the crowd?

For me, trying a new thing – putting a *Comic Style* graphical abstract^{11,12} (Figure 4, lower panel) on a poster – felt like being a scientific rebel. I worried about being ignored, being laughed at, and diminishing my reputation as a scientist.

But being brave enough to deliberately be different and challenge the status quo on wall-of-text posters worked out! After putting up the poster in the morning of the conference, it only took until lunchtime to receive enquiries of attendees asking if I was the female James Bond. Wow, this was unexpected, in particular as there were 400 posters pinned up. During the poster presentation in the evening many people came along and wanted to know more about my research. I almost lost my voice as I was talking for 2 hours straight, I got connected to various researchers from around the world and suddenly felt myself being on the radar of high-profile investigators. Even months later, one of the conference organisers contacted me, remembering my unique poster, and enquired if I was keen to write a book with her. On top of that, I was invited to an international visit at a prestigious laboratory, where I had access to state-of-the-art facilities to boost my research and write a joint paper. All of this because of a poster!

If done right, a poster can be a powerful tool to increase a researcher's visibility, and a conversation starter that can open pathways that you never imagined were possible.

So, give it a try, change your poster design, and leave a unique impression.

Let's bury the wall-of-text poster once and for all

It's clear. Conference posters are traditionally designed to do the opposite of their objective: to spark a conversation. But posters are not a data dumpster. It's time to break the status quo and use the right tool for the job. Let us *bury the wall-of-text posters and embrace graphical abstracts*. It will make researchers stand out, increase their visibility, enhance their networking opportunities, and it will give a better experience to readers. Win-win.

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Conflict of interest

Tullio Rossi is the founder and director at Animate Your Science. Flynn Slattery works as a science communication officer for Animate Your Science. Katharina Richter has no conflicts of interest to report.

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