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How To Make Your Research Reach The Stars

Practical guide to spread your scientific output

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Abstract. As part of the EAS 2023 session, IFLScience presented some practical advice on how to effectively work with journalists and successfully spread scientific research. This work should be seen as a primer for scientists and public relations teams on the kind of approach sought by journalists. It will provide a framework for smoothly sharing research with the media and insight into how journalists tend to approach the work of converting scientific research into articles, posts, and videos.The goal of this work is to give you, the researcher, a better understanding of what journalists are looking for when they are interested in covering your research and how you can be proactive at spreading it.

Key words. science communication – journalism

1. Introduction

This paper highlights best practices to effectively communicate your research to journalists, to increase the reach of your work, minimize the mistakes on the journalists' side, and make the public more informed about science.

In a lot of these discussions, we would consider an idealized (almost fairytale-like) discussion of Science. Science is for the greater good. Communication of science is also for the greater good. We are well aware of the reality of things. People have biases and can have agendas.

It has been established that researchers understood at least some of the norms, values, and practices of the media, and this was independent to their direct experience with journalists (Moorhead , 2023), even if they had not been interviewed for news stories.

For us science journalists, the starting point of any article covering new research is always the research paper. Ideally peer-reviewed, papers are the primary source for our work (Veneu, 2008; Wihbey, 2017), especially for the more senior or seasoned writers who can read a paper without formal technical knowledge. But limiting our work to a translation of research in a more broadly accessible language would be a limiting exercise for us, and would not really help with the goal of delivering science news to a broad audience. So it is important for us journalists to interact with the researchers behind the research.

Past work has highlighted that the relationship between scientists and the media is seen as positive both by scientists and journalists, but both sides feel challenges, downsides (Dijkstra , 2015), and in some cases, risks (Nguyen ,

2019), where power structures are repeated as well as the possibility that a misunderstanding can end up being spread as misinformation.

We at IFLScience[1] believe that with clearer ideas of our journalistic needs, scientists can be assuaged of some of the risks, and we hope that by building a trusting relationship, other risks can be mitigated by frank conversations and timely interactions. We believe that scientists and science communicators are united in the accurate sharing of science for the betterment of the whole of humanity. And in this paper, we hope to provide some insights into what journalists need to help share academic work the best we can.

2. Practical Advice For Disseminating Research

Darwin postponed the publication of his theory of evolution by 20 years. It is only human to not always want to share one's work far and wide, but Science should be shared far and wide. Ideas, observations, and conclusions need to be checked and challenged when necessary, and if they are hidden in a drawer they are not doing much good.

There is this sense that communication, especially via journalism or public engagement, is only there to reach the general public, and some scientists do not see the need to involve that part of the population. We believe this attitude to be wrong in two aspects. First of all, other scientists are people too and they read news articles, go to museums, and post silly things on social media. Secondly, the public needs to be involved in scientific work because they pay taxes (and thus most of the scientists' salaries) and science is purported to be a common good.

Sharing research in accessible terms is so important in our view and it is not that complicated to do. Press departments tend to do a good job in sharing the work they believe to be the most eye-catching but any researcher could easily prepare accessible summaries of their work on personal, professional, or departmental websites. And just because the PR departments do a good job, it doesn't mean that knowing, and what journalists want, can't be beneficial to a researcher.

An effective press release or blog announcement will have the following elements:

- **Simplicity -** A simple explanation of the results is key, ideally at the start. We know that is not always possible as often the details and importance require contextualising and explanation, but aiming to have the explanation as early as possible helps streamline this process.

- **Summary -** Have paragraphs or bullet points at the top, like an abstract, ideally with a simple explanation. This makes it easier to catch people's attention.

- **Crucial details of the story -** Is it a discovery, follow-up result, or a challenge to previous studies? A press release is not the place to be modest.
  Tell us the exciting things about the research. Help us contextualise it too. Tell us if it is connected to other studies. We like to link back to previous articles and there's a chance that we have covered the relevant research you are citing (or challenging). State connection to the real world or potential applications or major dilemmas it tries to answer. This helps the general public understand the context of this research and how it may be used/affect their lives

- **Explanation of technical terms -** Science journalists have a wide array of backgrounds. Some might have come from a science career, others come from media and journalism, others from PR, and others from something completely different. You cannot assume that everyone is familiar with the technical terms. Explain them as you introduce them.

- **Include supporting material** - Modern journalism is all about multimedia. If you have images, videos, audio, or infographics, please make them available. For

[1] https://www.iflscience.com/

images in particular, make sure they are high-quality. If the website doesn't support that, you can share a public folder with the extra material, and make sure that the credits for this content are easy to find.

– **Links to research journals** - Please include links to the relevant papers in the press releases. Many readers will want to read the original paper, whether these readers are members of the general public or specialist audiences.

– **Embargo** - If the research is embargoed share it in advance with the journalist. We love to know what we might cover over the course of a week and we would love to get in touch to ask questions directly and get exclusive quotes. But that planning requires time.

– **Quotes** - We love quotes because they truly bring articles together. Ideally, we want quotes from the various members of the team (ideally a diverse team). One important advice for researchers is to avoid complex jargon. The best quotes are about excitement for the results or reiterating the results in simpler terms. Lenghty quotes full of jargon are not helpful. Quotes are supposed to help explain the research, if we need to explain the quotes as well, we might as well not use them. Quotes also humanise a story - add passion, humour, enthusiasm, pathos - and remind the audience that science is carried out by humans. Quotes can also say the things we as unbiased journalists cannot say.

– **Social Media** - Social media is a powerful tool for discussing scientific results, promoting papers, and reaching journalists. A social media presence is not only another avenue for journalists to see your new work, but it also suggests you understand sharing your work - links, pics, graphics etc - and are willing to engage in communication about it, making journalists more likely to approach you about covering your research.

Such a detailed press release would be a dream. We understand it might not be always possible, but we believe most of the points are achievable in each press release that is shared by universities and institutions.

Even using only a few of the items from our list is useful in any type of public engagement communication, and we do believe it is useful in academic settings as well. Making content more accessible for students, early-career researchers, or researchers not in the field, is a bonus. Approaches like commentaries or simple language abstracts/summaries (that some journals do) add important value to the research.

3. Academia is not an isolated system

There is not a single school of thought when it comes to deciding when to publish something on ArXiv[2] or any other online repository of papers. Some upload them when they send a paper to a journal. Once the paper is accepted or published, some people upload them as soon as the paper is ready.

We do not believe there is a correct etiquette – or at least one that is not influenced by our personal bias and opinion about science and the peer-review system – so we will not discuss if and when to upload a paper to a preprint site and instead will tell you, researchers, we journalists definitely read the ArXiv.

That is the meaning of the title of this section. If you produce scientific research, do not think that your work only reaches other academics. There are plenty of non-experts who will encounter it too. Thanks to the internet and social media, even the technical realms of professions are not isolated systems. Your work will be read. And it could be misunderstood.

In our journalistic careers, ideally most of our coverage comes from peer-review research, either published or accepted for publication. Still, we do on occasion encounter pa-

[2] https://arxiv.org/

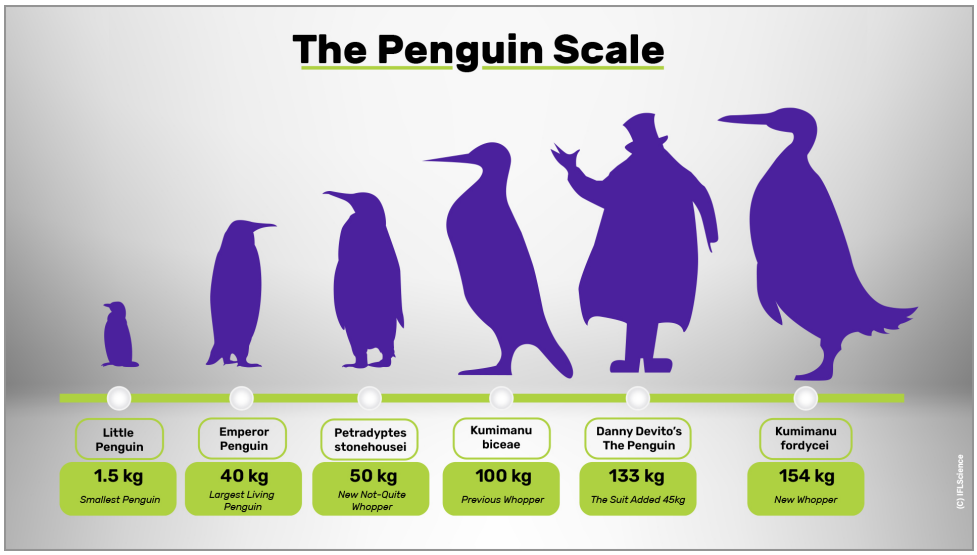

Fig. 1. A bespoke graphic that we created for a news article on the discovery of the Kumimanu fordycei. The height estimates are vaguer, but this image gives a sense of the weights of penguins, living, dead and fictitious. Image credit: ©IFLScience using data from Tess Cole, CC BY-ND, and Dr Simone Giovanardi.

pers for the first time on the ArXiv, with findings that are too interesting not to cover. We always clarify when a paper has not yet been through the peer-review process and seek expert comment to provide more information.

We know that some scientists take umbrage at that. We aim to contact researchers to ask questions about their work, and there have been occasions where we had been asked not to publish an article because the paper was uploaded to get feedback from other scientists, and was not ready to be submitted.

We do tend to agree to those requests if we receive them. Our goal is a mutually beneficial relationship with scientists, but we want to make it clear that if results are being shared and discussed online, it is not possible to keep them from the general public. We think here, particularly, researchers have the power to shape the conversation. The ArXiv has a comments section but if you feel strongly about your work not being covered may we suggest an appendix aimed at journalists asking for the work not to be covered yet, or covered as a "work in progress" highlighting both the results and what is currently still in the works. This is better than publishing your work and then being surprised that people are reading it.

Showcasing Science in its truest form, a self-correcting method to slowly expand our understanding of the Universe, is just as important as showcasing brand-new discoveries.

There might be journalists who feel that the importance of a new discovery outweighs the wish of the researchers – after all, they made it publicly available – and scientists who feel that only academics should have access to the ArXiv. However, the reality is that once you publish on a public site the genie is out of the bottle, and it's better to be prepared.

So consider how to best approach the ArXiv and consider that journalists might be reading. Using the comments section to include an approachable explanation, including any caveats, ensures a clearer understanding of a paper for those of us who are not experts in your research field.

4. What To Know About Dealing With Journalists

Deadlines - As it has been noted in the academic literature on science communication, scientists are aware of journalistic practices. While there might certainly be varying degrees of knowledge, with senior researchers being the ones more familiar, we believe it is important to provide a primer on what journalistic needs are and how to maximise interactions when you scientists are dealing with a journalist.

We think that the most important thing to state is a major difference between journalism and academia: deadlines. We all have deadlines, but journalists tend to have much shorter, sometimes immediate deadlines when it comes to news pieces. Often we ask for comments on something we would like to write on the day in question. This is not always the case, we write plenty of features that have deadlines of weeks or month-long projects, but in our profession, time is of the essence. Our inquiries are often ignored or we get replies weeks (once six months) after the piece was published. Comments elevate the articles, so we can be flexible and meet the timing of the scientists, but it is important that scientists are aware that we might not have the luxury to wait around for an arbitrary long time.

With deadlines in mind, it is important that you are ready when your research is being published. Is there supporting media available? Have you got the time to do interviews? Have you got a co-author who could help as well? Planning in advance is important.

Interviews - When it comes to comments, quotes, and interviews it's important to remember that we might not be experts in your particular field (or the whole discipline). It is important to approach it with simplicity and build up to the complexity if necessary. We find that the best comments to use are the ones that show the researchers' excitement for the new discovery, staying away from jargon as much as possible. Sometimes the reason journalists reach out to researchers is to clarify their research because we don't understand it. We want to cover it correctly, so making yourself available will prevent misreporting.

If you are wary of speaking with journalists, just imagine you are preparing a talk. What are the soundbites or takeaway points you want to impart? What do you want the public to know about your research? This is what you need to make sure to tell us, even if we don't specifically ask. Stop us and say "Hey, you should mention this in your article. It is very important, it's a game-changer, I just think it's neat!" Sometimes the best quotes are when we finish an interview and ask "Is there anything we haven't asked about that you would like to tell us?" Now is the time to share anything not shared in the PR - your personal involvement, funny stories, future applications for your research, etc. That's the stuff we are looking for.

Corrections - Nobody likes to make mistakes, but we are only humans. We might misunderstand what you have told us; or we might read the paper and misunderstand what we have read. It can also happen that we understand everything perfectly and we just write it poorly. It happens and we are happy to correct an article. But sometimes we do not know we are wrong. So if you spot something wrong when we cover your research please do let us know. We want to get things right.

Building Relations - Last but certainly not least, we like to interact with scientists. So please, build a rapport with us. If we've covered your work before, we may want to again. Do get in touch with us with updates on what you are working on/future research. We have covered so many stories because a scientist has dropped us an email with their papers. We can work on things together such as infographics (see Fig 1), videos, podcast episodes, not just articles. Yes, we often cover well-publicised papers in big journals, but we like to cover everything. Because cool science is found everywhere. We go through the ArXiv for that reason, so many interesting papers are there that we know our audience will be incredibly interested in it. We want to cover those papers and

to talk with those researchers. If that is you, well, you know where to find us.

5. Conclusions

We hope that this brief overview of approaches to effectively share your research has been useful. Here is a little summary of the most fundamental points, the ABC of research dissemination with journalists and the wider public.

1. Press releases are very important to spreading your research but they are not the only way. Research can be shared in multiple ways, even by directly sending it to journalists or writing blogs / creating social media posts. But if a press release is produced make sure it is good. That provides us with the tools to best showcase your work.
2. If your research is online, it might be covered whether you want to or not. So be aware of that possibility when you share your work.
3. If you are interested in working with journalists, know that our deadlines and schedules are likely different from yours.
4. If you have the time please make yourself available for comments. It is for both our benefits.

This final point is worth stressing. Journalists want original comments for a myriad of reasons. Chiefly it allows us to cover the research correctly, something particularly relevant to preprints. It allows for clearer explanations, context, future research, and application. It also humanises the story: you can bring humour, enthusiasm, excitement. It makes the story stand out.

We hope that this brief paper has given you pointers on how to work with us journalists, and shows that for the most effective science communication, we need to work together and understand each other's needs and priorities.

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