

4th Kavli Symposium on Science Journalism

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WFSJ
World Federation of Science Journalists

THE  **KAVLI FOUNDATION**

INTERIM PAPER | 4th KAVLI SYMPOSIUM ON SCIENCE JOURNALISTS | TECHNOLOGY & TRUTHS

Interim paper by Ryan Wallace | May 2018

Now in its fourth iteration, this year the annual Kavli Symposium on Science Journalism sought to explore the intersection between technology and truth. The symposium, whose theme was “How to ethically harness the potential of open source data and avoid fake news”, explored four primary topics in its discussion of science journalism and the future of the industry. These topics included: Data Journalism, Protecting Data Sources & Personal Data, Fact-Checking & Fighting Misinformation, and the Implications of A.I. in Science Journalism.¹ However, in creating an opportunity for the world’s top journalists and editors to collaborate, the 4th Kavli Symposium on Science Journalism (KS4) opened the door to important conversations for the industry. And while not all science journalists, editors, or researchers were able to be in attendance, this article seeks to bring to light some of the symposium’s most important conclusions.

HISTORY OF THE SYMPOSIA

Started in 2014, the Kavli Symposium on Science Journalism is a joint effort between The Kavli Foundation and World Federation of Science Journalists (**WFSJ**). Through this collaboration, these organizations bring together some of the world’s top science journalists, editors and researchers from media organizations and academic institutions alike. The original goal was to define science journalism, support new and innovative practices, and to build an international community that would bolster collaboration.² And since its inception, this symposium has examined case studies and academic literature to tackle some of the industry’s most important topics. From data mining and tracking international stories like Ebola or Zika, all the way to collaborative efforts on covering clinical trials or GMOs, the Kavli Symposia on Science Journalism continue to explore ways of improving science journalism worldwide.^{3,4}

Since philanthropist Fred Kavli started the The Kavli Foundation in 2000, the organization has established research institutes, professorships and symposia worldwide in hopes of supporting the international science community. The core mission of the foundation is “to advance science for the benefit of humanity, promoting public understanding of scientific research, and supporting scientists and their work.”⁵ And in its efforts towards promoting the public understanding of scientific research, The Kavli Foundation has also formed partnerships with influential organizations like the American Association for the Advancement of Science (AAAS) and the WFSJ to support science journalists, who communicate complex topics to the general public.⁶ The WFSJ organizes and leads the Kavli Symposium on Science Journalism each year, bringing together an eclectic international group of participants that constitute the top science journalists and editors in the industry.² Together, these organizations and the participants they invite are able to not only explore the future of science journalism, but also create actionable plans that will help shape the news of tomorrow.

BUILDING AND MAINTAINING PROFESSIONAL LEARNING COMMUNITIES

Professional and academic conferences, like the Kavli Symposium on Science Journalism, are often noted for creating what are known as “learning communities”. The learning communities created from these conferences not only support the bidirectional sharing of knowledge, but also aid in building knowledge by organizing the framework for academics and professionals to collaborate and reflect together.⁷ Internationally, there is a consensus that professional learning communities are important for sharing and critically interrogating common practices in a collaborative, learning-oriented, and growth-promoting way.⁸ From previous studies and a socio-cultural perspective of conferences, it can be seen that these symposia can serve to formally present recent developments in the field of study, evaluate these findings, interpret and contextualize them, as well as to ensure that professional practices both substantively and methodologically improve for the future of the industry.⁷

In addition, by bringing together this group of individuals from top-ranked institutions, the Kavli Symposium on Science Journalism has the unique opportunity to influence the future of the industry in an interesting way. At the conference, academics in mass communications and other disciplines can share findings about how to improve coverage of the sciences. Journalists and editors can share practical considerations from the newsrooms, and how they influence science journalism more broadly. Collectively, with the attendance of top editors at influential news organizations, the group of attendees can explore the industry of today and tomorrow. And what’s more is that these organizations can form collaborations and partnerships from these learning communities—creating lasting ties between this group of important individuals.

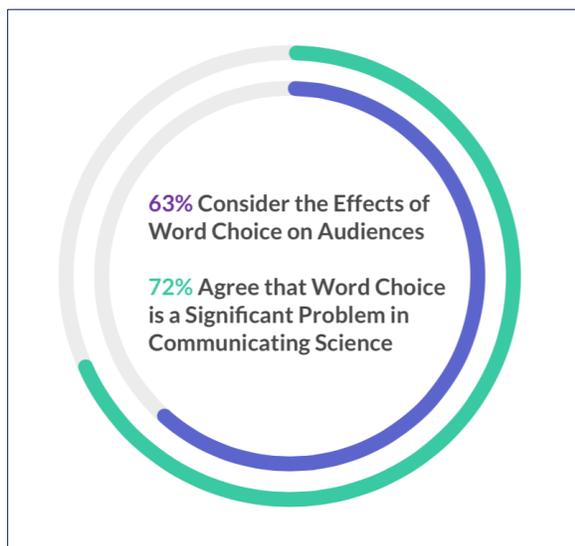
LESSONS LEARNED FROM THE 4TH KAVLI SYMPOSIUM

1. Fact-Checking and Fighting Misinformation

The group convened on the first evening to talk about data journalism and fact-checking in what is being called a “post-truth” era. Science Writer, Vanessa Schipani from Factcheck.org, started the symposium with a presentation and a Q&A session that brought forth a lengthy discussion on the role of fact-checking in science journalism. Schipani explained that her organization is “not in the business to change peoples’ minds” and went on to explain the process of how claims are chosen and debunked in a systematic and quasi-formulaic way. While the process is complicated by opinions and vague claims, concise claims not backed by scientific research are clear targets for Factcheck.org.

Once opened to a Q&A session, several important points were brought up out of the dialogue started by Schipani. One key point that was made was the failure of science journalists to convey that science, and the scientific method itself, revolves around doubt and uncertainty. By giving scientists and researchers a voice of authority, science journalists often portray the facts as just that—incontrovertible facts. However, it is important that science journalists convey to news audiences that science in any field is a constant work in progress. And though sources may be an authority in the field, that does not mean that their perspective is the only one that needs to be shared. Similarly, attendees questioned the sources of fact checks and whether fact checkers have the same goals of an impartial perspective as science journalists. Questioning perceptions of bias, it was asked whether political affiliation or other factors may play into the selection process of what claims are debunked. The evening closed talking about the importance of communicating nuance in science stories and capturing multiple perspectives when fighting misinformation.

The second day of the symposium this conversation continued with Dr. Kathleen Hall Jamieson’s presentation titled “Pre-emptive Reporting: Increasing Public Understanding of What and How Science Knows in a Polarized Climate.” This conversation explored messaging in science journalism, specifically focusing on word choices in reporting science and the necessity to hold scientists accountable. Dr. Jamieson highlighted important case studies and opened the conversation to the group where attendees discussed the “crisis” of language in the sciences. Accountability was an important topic discussed by the group and with it emerged a conversation about science journalism in the age of mistrust—touching on the “Fake News” conversation surrounding news media.



In a post-conference survey distributed to attendees, the group (N=32) was anonymously asked for their honest answers and opinions to multiple questions surrounding these topics. In response to a question asking whether they believe that word choice is a significant problem facing science journalism, 72% of attendees agreed that to some extent word choice is a significant problem. And when asked if they consider how their word choices may affect how audiences process the information in their articles, 63% of attendees said that they do. Valuable points, however, were additionally brought up during this symposium and survey.

While a majority of attendees saw value in fact-checking and agreed that word choice is a significant problem, they also discussed that many organizations do not have fact checkers and instead rely on science journalists to do a majority of this work. And while journalists consider word choices, tight deadlines and growing expectations of science journalists may impede the fact-checking process.

2. Data Journalism

Led by Stephen Doig and Jennifer Lafleur, the second day of the symposium also saw an interesting conversation on the growing importance of data journalism in the work of reporting science. The goal of the presentation and the conversation that followed was to illuminate how to obtain data, find its value once you have it, and to teach journalists to “get your nerd to talk with their nerd”—the ultimate goal in obtaining data. From simple examples of police reports to complex C-GIS software for mapping or sonifying seismic activity, this presentation covered global efforts in expanding the relevance and use of data journalism. Equating their work to that of academic research, Doig and Lafleur called data journalism “social science done on a deadline.”

They talked about practical considerations, like how to find important numbers out of cluttered data sets and how to deal with a “dirty database”. And later, this led to a conversation about unintentionally p-hacking—doing so many statistical manipulations of the data that an insignificant finding is suddenly a breaking news story. In the post-conference survey, a majority of 53% of attendees agreed that p-hacking is currently a problem in data journalism. However, only 31% of attendees are currently using data journalism in their reporting on scientific topics. Limited availability to data and the difficulty of analyzing this data (i.e. lack of training and professional development) were highlighted as significant impediments to the incorporation of data journalism in their reporting.

3. Protecting Data Sources & Personal Data

Building on the conversation regarding data journalism, Simson Garfinkel from the U.S. Census Bureau spoke about ways in which science journalists can not only protect their own data, but also the data of others that may be embedded in their reporting. Starting with practical considerations for the journalist on-the-go, Garfinkel discussed how to assess the risk of having your data lost. Once risk was assessed, attendees learned how to protect their own data with methods like: 2-factor authentication for their

accounts, encryption at every level of data delivery and storage, as well as off-site storage and organizational security. However, this conversation expanded substantially to cover protecting data sources and the information of individuals in data sets—highlighting significant errors made by previous organizations and new methods that seek to combat these breaches of data security in the future. One such method that sparked substantial conversation was that of “Differential Privacy”.



54% of respondents (n=26) agreed that “Differential Privacy” should be used to secure datasets.



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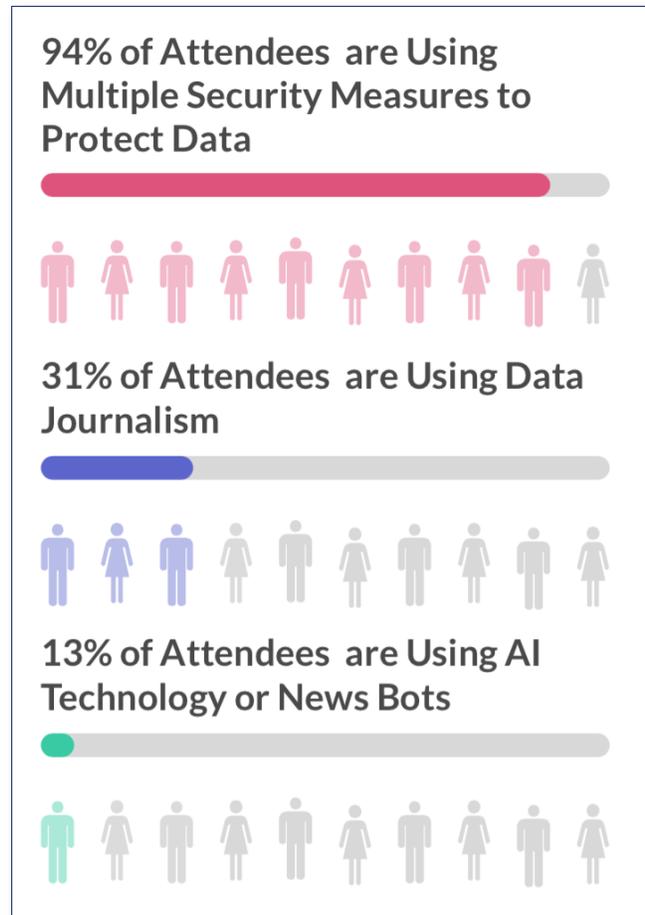
“Differential Privacy” is a mathematical technique used to protect data by intentionally adding noise to the data set. In using this form of protection, journalists and scientists are not actually looking at the data itself, but rather a manipulated data set that has wide-ranging error values depending on the size of the data itself.^{9,10} Noise is randomly added into the data set in an inverse proportion—for small projects, a large magnitude of noise is added; and larger projects conversely only require a small magnitude of noise to be added.^{9,10} In the post-conference survey, all but 2 attendees (a majority of 94%) stated that they use multiple security measures to protect their data and the data of their subjects. And when asked if they would agree to use “Differential Privacy” techniques to protect the identity of individuals in datasets that they publish, 54% of respondents (n=26) agreed that they would.

4. A.I. Implications in Science Journalism

Prior to finishing the symposium with a round of breakout sessions that critically examined the topics discussed and created potential international collaborations, a productive conversation was sparked by Sam Han (Engineering Director of Data Science and Artificial Intelligence at *The Washington Post*) regarding future implications of using A.I. technology for science journalism. Han used *The Washington Post* as a case study and important example for how supporting innovation and the use of A.I. can help publishers succeed. News bots, automated storytelling technology, and article popularity prediction software were but a few topics covered in the presentation.

While A.I. is still a templative technology in its current form, Han highlighted its importance in creating simple content, like election poll results or sports score announcements. The future of A.I. is bright for news reporting in general, but for science reporting this conversation highlighted not only the benefits that publishers would obtain by fostering this technology but also that science journalists may be able to reach their target audiences in a more direct and personalized way.

In the post-conference survey, a 59% majority of attendees noted that their news organizations do not currently use A.I. technology nor news bots. And in a follow-up question, more than half of the respondents identified the cost of the technology, lack of knowledge/know-how needed to implement A.I., and the complexity of software as key barriers to the adoption of A.I. in newsrooms. As the future technology for this industry, A.I. is an area of growing interest for the WFSJ. While still in its most rudimentary form, future directions for A.I. may include using this technology to sort through large amounts of scientific data when reporting or detecting misinformation in the process of fact-checking.



FUTURE DIRECTIONS AND CONCLUSIONS DRAWN

Collectively, the conversations covered in the 4th Kavli Symposium on Science Journalism covered two of the most important topics in the industry today—**fighting misinformation and using technology to bolster reporting**. Aside from their practical applications in the methodology of science journalism, these topics were discussed at a higher ethical and epistemological level—seeking to improve not only the practices of today, but also those of the future. And by looking at the larger context of these topics, interesting and important conversations were able to emerge and help build knowledge in the industry. In discussing fact-checking and fighting misinformation, this symposium generated several important conclusions that may help the industry of science journalism soon.

As the “**Fake News**” conversation extends its reach beyond reporting politics, science journalists must be aware of how to improve their own reporting to ensure that they are presenting readers with the most accurate facts. Fact-checking techniques are important now more than ever, and since many organizations no longer have fact checkers on-staff, this symposium served as an important venue for professional development—as journalists and editors learned how to more accurately track down facts. Additionally, Dr. Kathleen Hall Jamieson’s presentation brought up many interesting points about the **importance of word choice and ways in which recent reporting could be improved**. The current “crisis” of language in the sciences can therefore be avoided by collectively improving reporting in science journalism, not only looking at more accurately conveying complex findings in laymen’s terms but also by giving greater context to the science itself.

Similarly, **technology** was an important focal point of this symposium, with conversations surrounding its uses, vulnerabilities and even its complex nuances. Presenters gave many examples of the uses of data journalism and artificial intelligence (A.I.) technology in reporting science. And for easy implementation of this technology in newsrooms, open-source software was discussed in-depth, with journalists and editors highlighting current and potential stories that could be created with these tools. But more importantly, this symposium continued a key conversation on the importance of data security and protecting sources in a digital era. **Science journalists learned new techniques to protect themselves, and the validity of new and old methods were considered for protecting data sets in the future**. Complex statistical techniques like “Differential Privacy” were discussed at several levels, and ultimately most attendees agreed that these techniques should be implemented in future projects that seek to disclose large data sets that may be leaked by anonymous sources. These techniques not only protect sources, but also the individuals whose information is encoded within the data sets; therefore, this symposium highlighted the important future considerations that the industry should have when using data journalism.

By looking at the Kavli Symposia on Science Journalism as **professional learning communities**, this year’s symposium quickly established a model for sharing and building knowledge between academics and professionals in science journalism, who came together to collaborate and critically reflect. Attendees were able to learn together from ground-breaking innovators within the industry and consider the **future applications or ethical concerns that may accompany changes within science journalism**. With a diverse group of participants, knowledge building was enhanced by having a wide variety of perspectives from academic researchers, science journalists, editors, and leaders of organizations who support science communication in its many forms. **While some conferences only focus on academic research or are solely geared towards professional development, this conference is unique in that it blends both to give a wide view of the media landscape and its future directions**. Future symposia may continue to explore the topics mentioned above, however, may also benefit by tackling topics embedded in the industry—like the prevalence and significance of media routines, or who serves as the gatekeepers of scientific information.

By creating the opportunity for these topics to be considered by the most influential journalists and editors in the world, the Kavli Symposia on Science Journalism continue to push the future frontiers of the industry, while critically reflecting on how it can be improved today.

BIO RYAN WALLACE

Ryan Wallace is a researcher and doctoral student at the University of Texas' School of Journalism. In 2013 he began his research career with a BS in Ecology & Evolutionary Biology from the University of California, Irvine. In 2017, he also received an MS in Biotechnology. With a multidisciplinary background, his research interests focus on how science is portrayed in the media, and ways in which researchers and journalists can better work together to convey science to public. As a science writer and editor, he has worked with The Latin Post, The Science Times, and Archaic Press Magazine.

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