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Automated sports coverage. Case study of bot released by *The Washington Post* during the Río 2016 and PyeongChang 2018 Olympics

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Abstract

Introduction. Approximately 30 relevant international news media outlets already use artificial intelligence to generate automated journalism. The news agencies Associated Press and Reuters and The Washington Post stand out as pioneers in this field. **Hypothesis and objectives**. Bots and algorithms are increasingly used in sport coverage to take advantage of the large volumes of structured data and the cyclic pattern of sports competitions. The use of this technology is compatible with human editorial intervention. **Methods**. The study is based on the case study of the automated storytelling bot developed by The Washington Post to cover the 2016 and 2018 Olympics on Twitter. **Results**. The automated storytelling bot helps to streamline the coverage of the mega sporting events in real time: events schedule, results, medal tallies, reminders, etc. **Conclusion**. Artificial intelligence is effective in the coverage of sporting events and complements the work of reporters, as it frees them to focus on more creative activities.

Keywords

Automated journalism; robot journalism; artificial intelligence; sports journalism; match reports

Contents

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1. Introduction: Artificial Intelligence in journalism

New approaches are being adopted in the media industry and in journalism, in particular, as a response to the profound transformations experienced in recent years in the making and distribution of news for an increasingly critical and participatory audience. The media's need to adapt their routines to users' new consumption habits and the impact of disruptive technologies are being instrumental in understanding the evolution of journalism, which is plunged into an era of platform convergence and transmedia storytelling.

As Flores Vivar points out (2017, p. 61-62), "transmedia storytelling is a trend that largely matches the characteristics of current journalism, since it is about telling a story in different ways and on various platforms, with the participation of readers". In this context, according to this author, "the logic of transmedia storytelling generates an ideal context by making each medium to make a unique and differentiated contribution, converging on the Internet and on mobile devices".

These disruptive technologies include artificial intelligence (AI), which the *New Oxford American Dictionary* defines as "the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages" (Barret: 2013, p. 7).

Although the term AI is not actually new, as it dates back to the 1950s (Hansen, Roca-Sales, Keegan and King, 2017), its recent application to the field of journalism has received different names, such as "automated journalism", "robotic journalism" and "algorithmic journalism".

Harcup's *Oxford Dictionary of Journalism* does not include entries for *bot*, *automation* or *robot-journalism*. He only includes entries for *algorithmic journalism*, which he defines as "the use of computer software to transform data and other material into a story that resembles a piece of human journalist, by following a pre-programmed structure and formula" (2014, p. 9). Van Dalen (2012) also prefers the term "algorithmic journalism", while Dörr and Caswell use "automated journalism" and others like Carlson (2015) mainly employ the term "robot journalism".

Likewise, a long time ago the term "natural language generators" (NLG) was coined to refer to a type of programs capable of automatically transforming computer-structured data into understandable texts with human appearance through the application of AI and computational linguistics techniques (Reiter and Dale, 2000).

As we will see later, NLG have been applied to journalism for news automation, i.e., "the application of artificial intelligence to news-making, which implies the identification of routine tasks that can be coded into algorithms that generate products that resemble those created by humans" (Túñez, Toural and Cacheiro, 2018, p. 751).

Beyond these terminological differences, many authors who have recently analysed the technological innovation and prospects of the journalistic market highlight the decisive and increasing influence of the use of AI in news reporting, especially in major international news media.

For Salaverría (2016, pp. 261-262), robotic news making systems, in principle, should not be understood as mere "androids that make editors' work redundant", but rather as "programs capable of writing journalistic texts using raw data". Cerezo also considers the progressive implementation of bots in news-making routines as a tool within the newsroom that helps journalists to find information and serves as an automation system valid to generate new information flows on news media's platforms and channels (2018, p. 47).

Anyways, news media's use of machines for storytelling only seems to be the tip of an iceberg that is being gradually discovered. In fact, the rise of AI in general is such that the media industry is already developing algorithms for various purposes, such as news ranking and the contextual analysis of news contents based on the aggregation of opinions and user generated metrics. As Lemelshtrich and Nordfors (2009, p. 24) point out, "journalism has become part of the machine, in the same way that the machine is already part of journalism".

Nic Newman, one of the most important experts in technological trends in the international journalism market, highlights in his 2018 trends and predictions report for the Reuters Institute for the Study of Journalism at the University of Oxford that the use of algorithms as one of the main manifestations of the application of AI in the media industry. He points out that this technology is applied in the generation of alerts, notifications and recommendations to readers, in journalism assistance programs, in fact-checking, in commercial optimisation and, above all, in intelligent automation of workflows in the newsrooms, for writing stories and the reporting of live events and liveblogging (2017, p. 31).

The automated journalism generated by this robotic language and algorithms, with varying degrees of human editorial supervision, is opening new horizons for the coverage of important international events. Therefore, below we analyse how automation is being used in journalistic coverage, as well as the main advantages and uncertainties posed by its application for the professional future of writers and reporters.

1.1. Automated journalism: an international overview

Although automated news-making algorithms have been developed since the 1990s (Van der Kaa and Krahmer, 2014), their application in the newsrooms of some of the most important news organisations in the world has accelerated in the last four or five years. This has been fundamentally motivated by the urgent need of these companies to find a sustainable business model and the economic pressure to increase productivity in the creation and distribution of news contents (Enswell and Dörr, 2018: P. 478).

The recent development of news automation has followed two parallel paths: on the one hand, some media have developed their own software or have collaborated with companies specialised in NLG

solutions or with other media that do produce their own technology and then share it with other news organisations.

The first group includes the American news agency The Associated Press (AP), which in July 2014 partnered with the technology company Automated Insights to test the automatic writing of short news on financial results and investments (Brandom, 2014). A few months later, after the number of teletypes on this subject multiplied by ten in March 2015, it began to use this same technology for the coverage of sporting competitions, in particular the NCAA College basketball matches, especially after Automated Insights was acquired by Vista Equity Partners, the owner of STATS LLC, the most important sporting data provider in the American continent. This facilitated the synergies that allowed AP to increase its commitment to the automation of sports news ever since, as it did it in 2016 when it extended its use to the summary leads of minor (non-professional) league baseball matches.

A report issued by the Nieman Lab at Harvard University (Lecompte, 2015) announced the progressive application of automated tasks with robots and algorithms in an increasing number of newsrooms to expand coverage, engage audiences and respond with agility to breaking news. The media listed in that study includes, in addition to AP, specific work units created in Bloomberg, The New York Times, ProPublica, Los Angeles Times, Forbes and Oregon Public Broadcasting. In those first experiments with the possibilities of new AI tools for automated storytelling, the fields of action were mainly business and sports, ahead of others such as weather information, election results and poll results.

Moreover, in 2016 Reuters partnered with semantic technology company Graphiq to develop bots and advanced automated news writing software to generate short news about sports competition results and data-driven interactive visualisations on a broad range of topics. These visualisations are offered in dynamic and accessible formats and will work across devices and platforms, with data updating in real time.

Thus, news automation in the field of sports is not only being used for news in brief, results and forecasts, but also to enrich the liveblogging of sports matches by transforming data into graphics in real time, as The Telegraph has done it since 2016 with its Roboblogger bot. The British newspaper has improved the efficiency of its liveblogging with its purpose-created software, which allows it to publish an endless number of visualisations from the data generated in sporting events, which are covered live online. In this way, rather than trying to increase the number of coverage teams, automation aims to satisfy the growing demand for sports information among consumers, who expect to receive live results, statistics, graphics and key information on their mobile phones.

Another news company that has heavily bet on AI for automated journalism is The Washington Post, which in 2016 developed Heliograf, a computer software initially conceived to expand and streamline the news coverage of the 2016 Summer Olympics in Rio (Brazil). The testing of Heliograf, as we will discuss below, was satisfactory and allowed the newspaper to expand and polish this technology for the coverage of other events, sporting or otherwise.

Undoubtedly, the leading international news agencies, led by AP, Reuters and AFP, are the media companies that have bet more strongly on automated journalism so far. According to a study published

by the Reuters Institute for the Study of Journalism, in 2016 there were already 15 major agencies in Europe and North America that had regularly used algorithms for automated news writing or had tested them at least once.

This report notes that "automation is an increasingly important tool for content creation in news agencies", in large as well as small organisations, which have also started to test this technology, and that NLG algorithms "are used mainly for reporting events in finance and sports, where structured data is more commonly available" (Fanta, 2017: P. 20).

Studies have highlighted the unstoppable growth of this technology in the newsrooms. Graefe (2016, p. 17) identified up to 11 companies that provide automated journalism software (five of them based in Germany, two in the U.S. and two in France), while Túñez, Toural and Cacheiro (2018) identified 21 companies that, together with sixteen media organisations (especially American and German) and 13 news agencies, are leading the development of automated journalism worldwide.

Although other authors estimate a different number for the media that may have already used algorithms and bots for automated journalism, all agree that this is the main application of AI in the newsrooms today. This reality, however, raises questions about the implications that the growing development of this technology can have for the work of writers and reporters in the media.

1.2. Advantages, limitations and uncertainties for journalism

While many authors have warned about the risks that the use of robots may entail for journalism, such as making journalists redundant, other authors such as Van Dalen (2012) have highlighted the advantages. These include the opportunity for reporters to have more time to investigate, as automated journalism frees journalists to do their job better by focusing more on reporting and on covering previously unreported stories. For his part, Silverman (2013) points out that bots serve to improve the quality and accuracy of journalism, since its use favours real-time fact-checking, quick error identification, instant generation of fact-based timelines, plagiarism detection, text manipulation, as well as efficient gathering of numerous sources.

In this sense, Graefe (2016, p. 7-8) considers that the main opportunities that algorithms afford to journalism are their ability to produce a greater number of news at a faster rate, to simultaneously tell the same stories in different languages and angles, to customise the news or produce them on demand according to users' requests and metrics. Nevertheless, also remarks the limitations, including: the dependence of the information provided, which may also be inaccurate or biased according to the source; their inability to question, explain and establish causes, i.e., to shape or form public opinion; and the very low quality of automated writing, despite many technological advances.

Other researchers such as Van der Kaa and Krahmer (2014) do not seem to agree with this last statement and give credibility to the texts written by machines because the "key elements of the work of a journalist show strong similarities with the tasks of a robot writer".

Clerwall (2014) goes even further by stating that "it is very difficult to tell the difference between an article written by a human and another produced by a computer". However, he clarifies that the main advantage of automated journalism is that it will free journalists from routine and descriptive tasks to focus on more creative activities. The journalistic routines that can be better performed by bots and algorithms are those that have a cyclical nature like the reporting of finance news and sports results and alerts.

The division of the functions and tasks performed by robots and people in the newsrooms appears to be a solution to facilitate the coexistence of two ways of producing journalistic content in the media. This is because, it is believed that AI tools are of great help in the publication of certain types of stories that otherwise would be unviable if only humans were available. Hence, automatic writing software, rather than replacing journalists, will help improve their work (Hansen, Roca-Sales, Keegan and King, 2017: P. 3).
The discussion raised within the profession about the use of algorithms and their consequences in the news-making process has also moved to the field of ethics. In this regard, the issues that cause more controversy have to do with the challenge of keeping verification and fairness standards to reduce possible biases and inaccuracies and the editorial decisions regarding the selection of sources and the attribution of responsibilities in relation to what is published (Thurman, Dörr and Kunert, 2017).

Therefore, it is key that journalists become familiar with this technology and are able to transfer their editorial decisions to bots and algorithms, so that the media content that is sent to users is relevant and adjusted to criteria based on professional rigor and ethics. "By helping smart machines to discern between target audiences, humans can make them act more responsibly and produce reliable content" (Marconi and Houshmand, 2018).

1.3. Automation in sports coverage

As noted above, automated journalism has found the way paved in sports coverage, because sports have an important statistical element that favours the management of structured data, even in historical series, as well as the implementation of routines, given that this type of information often has a repetitive character.

Thus, it is no surprise that the growth of structured data available to newsrooms has become the mainstay of automation growth in sports journalism. As in the case of financial information, numerical tables with classifications and results of sporting competitions "were the first contents to leave the printed pages to find better accommodation in online editions, in part because this type of information can be handled very easily through digital systems" (Lecompte, 2015).

AP and Reuters were the first news providers to detect the possibilities of AI to automatically generate sports information from data structures, but in fact what they really did was to partner with Narrative Science, an American tech company dedicated to NLG. Born as an academic project at Northwestern University, in 2010 this company developed StatsMonkey, a bot that for the first time wrote sports recaps. Baseball "served as an ideal starting point due to the wealth of available data, statistics and

predictive models that are able to, for example, continuously recalculate a team's chance of winning as a game progresses" (Graefe, 2016: p. 15).

Apart from the increased flux of data through computer systems, the growing application of AI and, more specifically, of automatic writing software in the production of sports recaps are also related to the characteristics and evolution of this specialised news genre.

With digitalisation, sports stories ceased to be descriptive and chronological to become non-linear and explanatory (Becedas, 2017). Given that now almost everyone knows the outcome of a sports competition thanks to the immediacy of social networks, mobile alerts and websites, journalists should focus on analysis, reactions and context to provide added value to their stories. Having overcome the what of the story, the journalist should focus on the how and why, making the best use of the possibilities offered by digital language.

Thus, the birth and expansion of more or less automated sports data news are also directly related to digital media's increasing use of graphics and visualisations of statistics to the detriment of better crafted texts, which are sometimes relegated to other types of stories.

For this reason, while robots are used in the newsroom for the creation of shorter texts, sports journalists should create other informative pieces that require their presence in the sports field. The new sports coverage must provide the reporter's own analysis and personal view, "which does not mean repeating what is evident to anyone who has seen the game" (Kian, Clavio, Schultz and Sheffer, 2018: P. 80), like the play to play, result and basic statistics of the match.

The new sports story and its demands beyond stats has been also discussed by Gisondi, who also considers that the work of the sports reporter has to be basically "the search of angles and approaches, leads and stories that make even those fans who saw the game find a reason to see it through the journalist's eyes" (2011, p. 11).

It seems clear that we are in a situation where it is possible to redefine the role of the journalist in sports reporting and the way to cover competitions. In this regard, Lou Ferrara, a former editor-in-chief of AP and the main advocate for automation in the American agency, explains that sports coverage has changed forever, from the moment in which the matches were presented live with a wealth of detail in the new digital platforms (Mullin, 2015). Therefore, the contributions that must be made by the sports reporter to meet the new information needs of the sports fan now have much less to do with the match itself and much more to do with what surrounds the competition and its protagonists, both inside and outside the locker room (coach decisions, player relationship, contracts, etc.).

Therefore, the media's growing interest in revitalising their coverage of news events, like sports, is a response to a growing demand, taking into account the fact that these events are already followed up through second screens and that streaming and conventional TV are complemented by liveblogging and comments from journalists and social media experts, as well as live news alerts offered by apps. "Innovation and commitment to improving data services is constant in sports media, which are aware

that the live coverage offered by the competitions has become the centre of the digital strategy to generate more traffic and become a global journalistic brand thanks to sports" (Rojas Torrijos, 2016).

In this incessant search for innovative solutions for the improvement of the coverage of sporting events, international news media have found a solution in AI and, within it, in automation. Thus, during the 2018 FIFA World Cup Russia, the French Le Figaro developed an automation software that generated visual recaps with graphics and data only five seconds after the end of each game. "No human can do it so quickly", pointed out this medium, highlighting the utility and profitability of this technology. Meanwhile, others like the Canadian news site The Score and The New York Times, have opted for automation to generate personalised alerts and even first-hand and differentiated information through Facebook Messenger.

Sports journalism is an area where innovation proliferates and this is revealed especially in mega sporting events, be it a World Cup or the Olympics. These events are exploited by the media, given their global impact, as a propitious opportunity to test new narrative formulas with which to cover the competition in a more explanatory and analytical way, with the ultimate purpose of covering the event from new angles that can attract more attention from the audience (Rojas Torrijos, 2018).

2. Case study

One of the media companies that showed the strongest commitment to innovation in the coverage of the latest world sporting events (World Cups and Olympic games) through narrative reformulations and, especially, through technological solutions is The Washington Post. Below we analyse how this American newspaper applied AI in its coverage of the 2016 Summer Olympics held in Rio and the 2018 Winter Olympics held PyeongChang (South Korea).

2.1. Research justification, objectives and hypothesis

The Washington Post has become one of the most innovative news media and a benchmark for the whole media industry due to the way it is leveraging its investment in technology to make better journalism. Since this newspaper was acquired in 2013 by the founder of Amazon, Jeff Bezos, The Post has bet on the development of its own technological platform (called *ARC Publishing*) and has promoted a culture of innovation and experimentation to transform its newsroom, going from being a local to a national newspaper, and reorienting its business to develop a digital subscription-based model.

In this way, it has become a customer media, which are news companies that have managed to adapt to the new ways of consuming information demanded by "new users, who are hyperconnected, disloyal to the traditional newspapers and accustomed to a fragmented and continuous consumption of information" and whose main success "has been to put technology at their service, giving priority to their needs and demands" (Cerezo, 2018: P. 20-21).

Within this technological and innovative bet, The Washington Post is one of the pioneering newspaper publishing companies in the use of bots for automated journalistic writing. Following the steps of AP

and other news agencies, The Washington Post developed its own AI software, called Heliograf, to automatically generate headlines and briefs. To this end, the chosen platforms were Twitter, Facebook Messenger and the liveblogging of the competition.

This technology was applied for the first time in the 2016 Summer Olympics held in Rio, a sporting event that became a pilot experience. The so-called *Post Oly Bot* was used again in 2018 for the coverage of the PyeongChang Olympics. The Olympic experience encouraged The Washington Post to use this technology also to cover college football league matches and even the 2016 American presidential elections.

Given the uniqueness and relevance of the medium, as well as the pioneering nature of this technology and its application to the coverage of large sporting events and its subsequent use in other news areas, this study has as main objectives: to analyse quantitatively and qualitatively the coverage of the 2016 and 2018 Olympics carried out by The Washington Post' automated storytelling bot; to identify the possibilities that automation offers to improve news coverage, and, finally, to determine the degree of complementarity between algorithms and bots and human work in the news-making process.

The study departs from the hypothesis that while automated journalism has generated concern in the newsrooms, many news media, like The Washington Post, have implemented this technology because it is profitable and frees journalists to dedicate more time to do their job better, or at least to carry out different and better coverages, especially in the case of mega sporting events.

Thus, it could be argued that bots and algorithms are being used to write news (especially short and data-driven pieces) that journalists are able to write and that their use will not make journalists redundant, and that it makes more sense for journalists to focus on writing interesting stories rather than on reporting sports results and statements, which can be generated automatically by different digital platforms, although with some human editorial supervision before their publication.

2.2. Methods

This article offers an in-depth analysis of the use of the Post Oly Bot during the 2016 and 2018 Olympics. To this end, the study is based on the content analysis of the 999 messages posted automatically by The Washington Post in the Twitter account created by this medium to report in real time the development of the summer and winter Olympics.

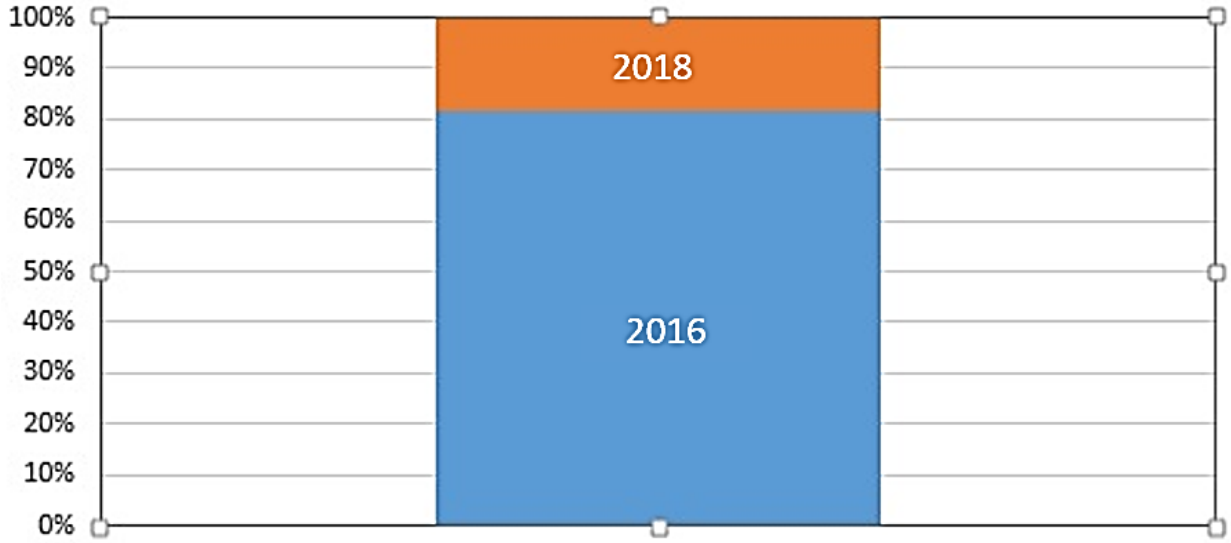
The proposed research design is divided in two phases. The first one focuses on the quantification and differentiation of the coverage carried by the automated storytelling bot of the 2016 and 2018 Olympics, taking into account the identification of the typology of tweets, their frequency of publication and their use of data and graphic and audiovisual content. The second phase is qualitative and focuses, first, on establishing the extent to what the bot integrated different elements or only added information to the coverage made by special correspondents who published on the newspaper's website during both Olympic events; and, second, to determine whether the automated publications required a greater or lesser degree of human editorial intervention.

3. Results

The Post Oly Bot's Twitter account was activated to support the news coverage of The Washington Post's reporters at the 2016 Rio Olympics. The first tweet was posted on 12 August 2016, five days after the start of competitions in Brazil. This reflects the experimental nature of this new channel, although, as it will be shown in the results section, it was very active since its launch and until the end of the games on 22 August.

The pilot project undertaken in the coverage of the Rio Summer Olympics lasted 11 days. In that period, this medium published a total of 816 tweets from the account @WPOlyBot, which represents an average of 74-75 tweets per day. In contrast, as shown in Figure 1, this bot only posted 183 tweets during its coverage of the PyeongChang Winter Olympics, which covered the full duration of the event, from 9 to 25 February 2018, which equals to 11 posts per day.

Figure 1. Tweets posted by the Post Oly Bot during the 2016 and 2018 Olympics



Source: Author's own creation.

3.1. Coverage of Rio 2016

During the Rio Olympics, whose coverage by the Post Oly Bot included up to 84 tweets in a single day (14 August), the daily behaviour of this bot was structured in the following way:

1. The day's schedules
2. Medal tallies (once a day, at start of the day, in the morning)

3. Reminder of start of final or important competition (15 minutes) with link to live coverage on the web
4. Results (described in a sentence)

cyclically day after day and correspond to a pre-set editorial programming, which is a form of human intervention that goes beyond the database used by the bot to extract the information to write the tweets. As for the typology of the tweets used, it should be noted that the majority corresponded to results (Image 1), which did not include charts and respond to the 'one tweet, one sentence' scheme. The writing of each result also follows a pattern that is almost always repeated:

- Athlete's name + hashtag with the 3-letter abbreviation of the country
- Wins "name of the competition", beating
- Athlete's name + hashtag with the 3-letter abbreviation of the country
- Indication of the winning of gold and silver medals or bronze in the case of third-place events.

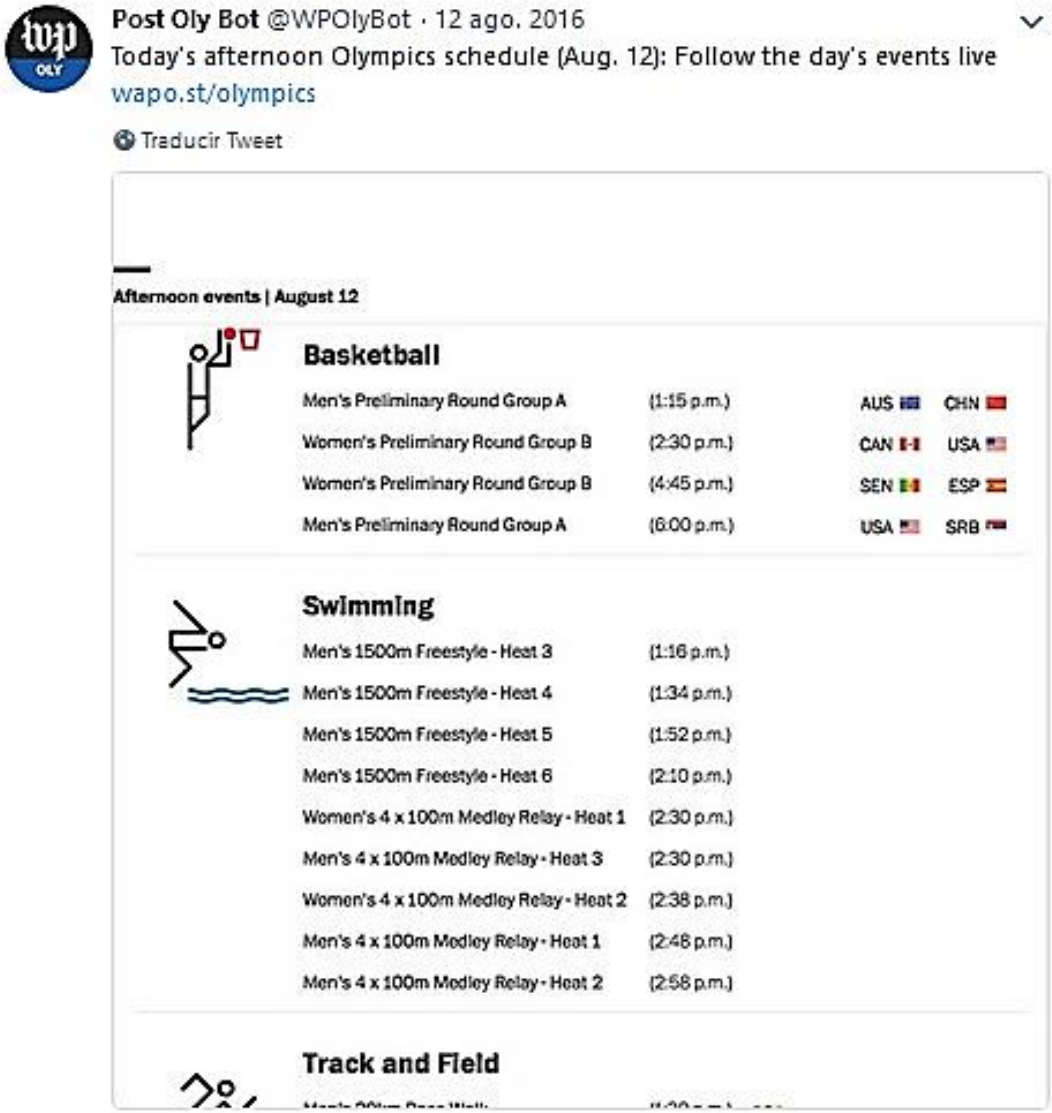
Image 1

Twitter screenshot taken on 1 October 2018.

Together with the results, the bot generated tweets with updates of the medal table (usually one a day, without charts) and reminders of the day's competitions and schedules. Regarding the latter, not all the events were reminded, but a selection of them, two or three a day. In addition, corrections of mistaken data were published. Again, there is human intervention with an editorial character, both before and after, to improve the performance of the algorithm.

These reminders did include charts with pictograms of the different sports, produced by the medium's corresponding departments (Image 2):

Image 2



Twitter screenshot taken on 1 October 2018.

Another type of tweet generated by this bot are the reminders of the competitions that are about to start. Normally, these reminders contain only one sentence about the beginning of a final or an event where medals are up for grabs (the editorial criterion of news hierarchy and selection is applied here too). They tend to be published fifteen minutes before the start and include a link to the live coverage on the website (Image 1), which highlights that the purpose of these automated messages is to complement and reinforce the medium's total coverage.

3.2. Coverage of PyeongChang, 2018

Two years after the pilot experience in Rio 2016, the Washington Post once again bet on automated journalism to complement its coverage of the PyeongChang Winter Olympics. Unlike the Summer Olympics, which have a much larger number of participants and competitions (Rio had almost 11,300 athletes of 207 nationalities participating in 306 games and 28 sports), the Winter Olympics usually acquire a varying relevance depending on the characteristics and tradition of each country (PyeongChang gathered more than 2,800 athletes from 92 nationalities to take part in 102 games and 7 sports) **[1]**.

Although it could be considered that the Rio Olympics is a much bigger mega event, The Washington Post's coverage of the 2018 Olympics through its new bot incorporated some improvements with respect to the one carried out two years before. These improvements had to do with the transversal work developed by the graphics department and, consequently, with the importance that this medium gives to design to enhance the informative and visual quality of its coverage of large sporting events. In this case, the pictograms of each sports modality and the logos of athletes also appeared in the GIF format to illustrate the competitions in all the platforms.

In the PyeongChang Olympics, whose coverage by the Post Oly Bot included up to 18 tweets in a single day (February 24), the daily behaviour of this bot was structured in the following way:

1. Reminder of medal tallies
2. Reminder of the start of a competition
3. Podium results with link to the website
4. New result/announcement
5. Medal leaders at the end of the day

Regarding the typology of the tweets, the results stand out, ahead of medal tallies and reminders, whose posting went from 15 to 5 minutes before the start of the event. Unlike Rio 2016, the results were usually extended to two sentences instead of one (Image 4) and responded to the following scheme:

- Winner of gold medal, name of event, country, time or points;
- And in second sentence: name-country-silver medal and name-country-bronze medal.

Image 4

Twitter screenshot taken on 1 October 2018.

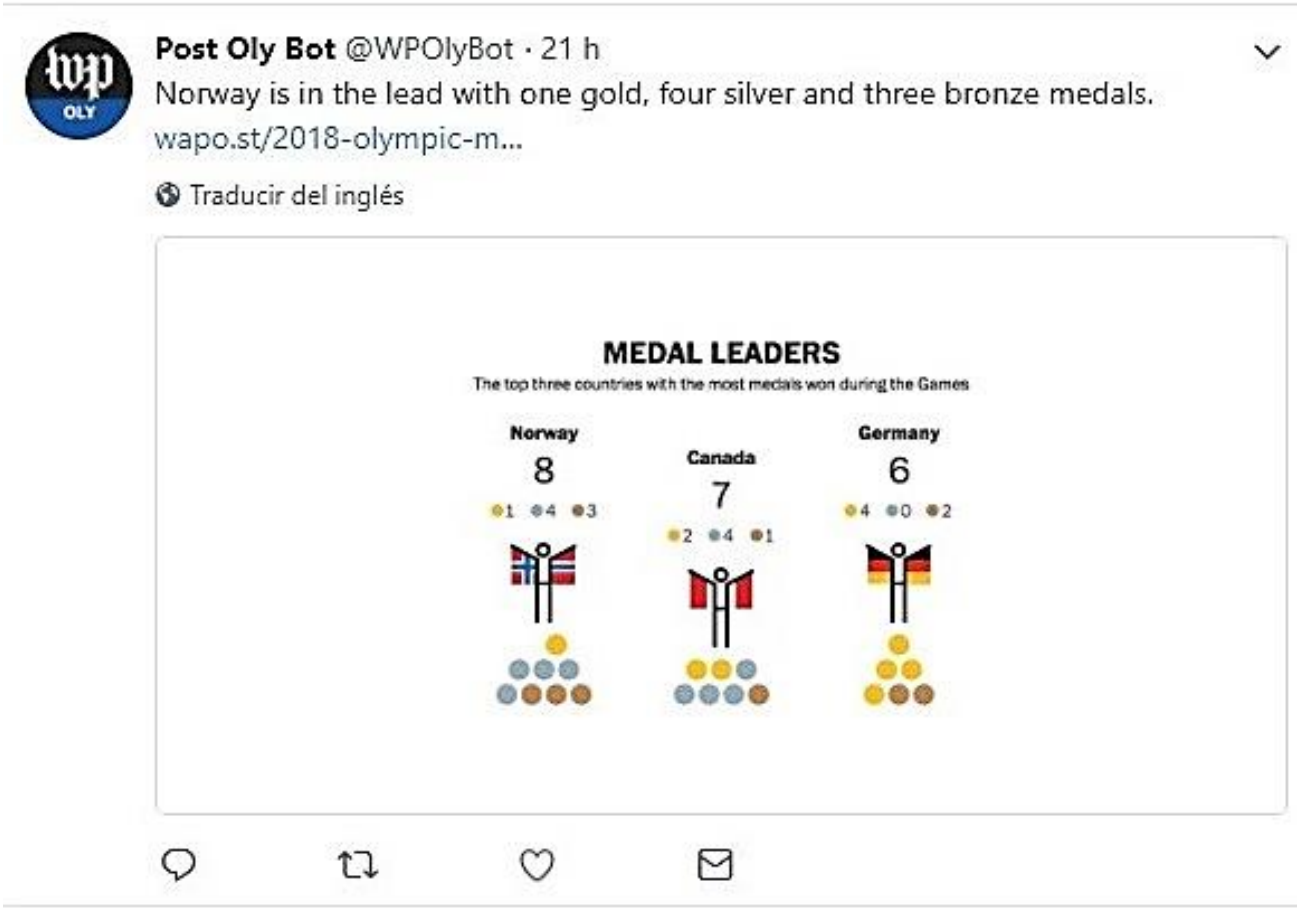
An aspect that distinguished the bot's coverage of the PyeongChang Olympics, in comparison to the Rio Olympics, was the weight of graphics, which became very evident in the medal tally updates (Image 5), which were made twice a day.

In this case, the editorial intervention was revealed not only in the schedule corrections and modifications made in some tweets, but also in the use of this account for the promotion of the medium's coverage through the link included in the tweets. In this way, the information in the website also served to contextualise the results announced on Twitter. Likewise, the bot only retweeted of the posts made by the sports section of The Washington Post and this retweet was made by a human.

Moreover, in this coverage the results and reminders about the most noteworthy events were subjected to the editorial criterion of the people in charge of the sports section as the first key element for content selection and hierarchy. This editorial criterion was also reflected on the priority given in the coverage

(more reduced in terms of number of tweets) to the achievements of athletes from the USA, compared to what happened in Rio 2016, where there was a greater diversity of themes and protagonists in the publications generated by the bot.

Image 5



Twitter screenshot taken on 1 October 2018.

4. Conclusions

The Washington Post's automated coverage of Río 2016 and PyeongChang 2018 aimed to streamline the news coverage with live information and permanent updates (events schedules, results, medal tallies, reminders, etc.) of the many competitions that take place simultaneously. The results of this study highlight, on the one hand, the efficiency and profitability of this technology and reinforce the idea that the application of AI in journalism serves to satisfy users' need for the latest news on all types of devices.

Taking into account the bot's publication frequency, types of tweets and graphical content, its coverage fundamentally served to complement the work of special sports correspondents, who published their contributions on the newspaper's website during the Olympics. Thus, the Post Oly Bot was characterised by the shallowness of the contents it offered, so that the brief news it posted on Twitter were expanded and enriched with the content provided in The Washington Post's website.

The content created by this software is driven by data, statistics and other information generated in the course of the competition, so in principle no human intervention was required for their transformation into text. Its tweets are purely informative. However, although it is a bot, it follows an editorial criterion: its news coverage as well as the elements of its posts (use of graphics, links, etc.) is preconfigured.

Therefore, according to the case study conducted, it can be concluded that the editorial intervention is complementary to the use of automated journalism software and this is reflected both in the pre-coverage stage (selection and hierarchy) and in the course of the competition, which the journalist monitors and supervises (introduction of links and making necessary corrections).

The production of automated contents does not require the knowledge of expert analysts or specialised journalists, who must provide added and unique value to the medium through the production of another type of news and quality content.

Therefore, the results confirm the necessary complementarity that must exist between this technology and the work of journalists, as well as the profitability and effectiveness of its use for sports coverage. Moreover, the use of the bot in the newsroom can be compatible with the work of professional journalists especially if they focus on more creative and less automatic tasks.

The division of the functions and tasks performed by robots and people in the newsrooms appears as a solution that can favour the harmonious coexistence of two very different -albeit convergent- ways of producing journalistic content in the media in the coming years.

To be precise, the application of this technology opens new horizons for the coverage of sporting events because, while game results, statistics and statements can be reproduced automatically and faster than in the past, the work of the reporter has to focus on stories about the sports competition and its protagonists, on research and source management, on proper language use and, in short, on everything that bots cannot do as good as journalists and on everything that results is better journalism.

5. Notes

[1] Official data of the International Olympic Committee (IOC), available at: https://www.olympic.org/

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