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Abstract
The paper approaches AI-powered algorithms that perform activities belonging to journalism, public relations, advertising, and propaganda. Such communicative artificial agents are usually commissioned and put in action for a 'cause', which may be the corporate profit, party promotion, candidate election, but also to eliminate competitors, vilify reputations, and else. This Automated Communication (AC) brings new possibilities and threats, for sure, but eventually it may severely harm democracy and its institutions – whenever the behind-the-machines intentions and objectives differ from or menace the public interests and live.
Keywords: Automated Communication; artificial communicative agents; AI-powered algorithms; Artificial Intelligence; journalism; PR; advertising; propaganda.

1) Introduction

The Information and Communications Technologies (ICT) have been understood as media and tools used by humans to inform and communicate with their peers. Seldom or never one has treated such devices as effective players in themselves. But artificially intelligent machines have evolved to become socio-political agents, also able to generate and convert new economic value (Nobre, 2018). This paper is about commissioned AI-powered algorithms (working along humans or perfectly autonomous) that perform informative/communicative activities for a 'cause'. This means intention and objective: e.g. machines that were built and put in function to make profit or to elect a candidate, as well as to eliminate competitors or denigrate reputations – personal or institutional. The AI-powered ICT means, therefore, the automation of journalism, public relations, advertising, and propaganda. In each of these fields one can note intelligent algorithms (partly to fully) replacing journalists, PR professionals, advertisers, and propaganda experts. This paper reunites material that highlight such automation, inviting to further research on the Automated Communications (AC).

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2) Automated Journalism

Machines becoming able to produce news autonomously may be disturbing for journalists, media, society, and citizens. For instance, journalists may feel their jobs threatened, low tech media (e.g. magazine, newspaper) may have severe problems to compete, society may loose control over some democratic activities, and citizens now have to ask about the quality/origin of the news they receive. Anyway, an artificially intelligent algorithm (AIA) functioning as a journalist brings new possibilities and concerns – since part of the journalism is about public opinion formation, public actors/activities supervision, public speech maintenance, and public interest defense/promotion. But AIA has also potential positive developments, implying greater flows of information, more areas being covered, more agents/activities being supervised, and more citizens' voices being heard. The automated journalist (AJ) is already working and publishing, and the news it produces have been analyzed and put under readers' evaluation.

Graefe (2016:4)	In recent years, the use of algorithms to automatically generate news from structured data has shaken up the journalism industry—most especially since the Associated Press (has) started to automate the production of its quarterly corporate earnings reports. Once developed, not only can algorithms create thousands of news stories for a particular topic, they also do it more quickly, cheaply, and potentially with fewer errors than any human journalist. Unsurprisingly, then, this development has fueled journalists' fears that automated content production will eventually eliminate newsroom jobs, while at the same time scholars and practitioners see the technology's potential to improve news quality.
Santos (2016:156)	Our focus is (on) automated journalism (AJ). In short, automated journalism can be explained by the fact that, nowadays, part of the journalistic content published is not written by humans anymore, but by machines(.) Regardless of what method is used to realize such a task, the fact that text and journalist are so radically disconnected appears (to us) problematic (yet) interesting.
Wölker, Powell. (2018:14)	Normatively, this study's findings show that one principal requirement of computers to become journalists is fulfilled; audiences assign equal credibility to the algorithms and their work. In this respect, they have reached equal status to their human colleagues. (…) Yet, while automated journalism will evolve in sophistication, which could in turn positively affect selectivity, a great weakness persists: computers will never act as the fourth estate. Journalism and democracy are bound through a 'social contract', where journalists take on the role of watchdogs of politicians and society to not misuse their authority(.)
Linden. (2017:72)	This study within an institutional framework of media production has primarily shown how the work of journalists is empowered and supplemented, but also replaced by smart machines. The three cases of news automation studied showed 1) increased efficiency and job satisfaction with automation of monotonous and error-prone routine tasks (Associated Press), 2) automation of journalism routine tasks resulting in losses of journalist jobs (Local Labs), and 3) new forms of work that require computational thinking (ProPublica).

3) Automated Public Relations

The Public Relations robots (PR-bots) have arrived. In spite of their only partial acceptance (Nobre, Gil: 2019), several activities in Public Relations have been already performed by algorithms: agenda management, messages exchange, following up, clipping, stakeholders profiling, targeting, pop-up campaigns, crisis sensing, etc. However, the more strategic level of PR (e.g. deep analysis, social relations, political contacts, feeling and experience) remains still in a solid human basis. But even here the AI-powered algorithms (AIA) have been advancing, with context aware chat bots, social sensitive machines, and politically persuasive artificial agents. The for-profit promotion/defense of clients' private interests were never so technologically advanced, nor so prone to disruptive achievements and misguidances. Also, one shall remember the potential impact that this may have over the public interests and live.

Galloway, Swiatek. (2018:735)	Various examples show a range of current AI applications. For example, Marx (2017) notes that some public relations agencies have started to use AI for tasks such as monitoring social media and predicting media trends. Practitioners also employ widely available AI-based tools such as Buzzsumo, Trendkite and Hootsuite for social media analysis, while others are developing their own AI tools. Jeske (in Dietrich, 2017) explains that his firm, a Search Engine Optimization agency, has created an app that uses AI and machine learning to undertake client work, including outreach and publicity. It has trained its software to score HARO (Help A Reporter Out) requests based on factors such as the desirability and authority of a media outlet and the likelihood of a particular journalist or outlet including a follow link. The app also analyzes a site's data and mines it to find promotional opportunities based on the site owner's goals.
Rogers. (2019)	One use for artificial intelligence in public relations is that AI will be able to send direct, relevant messages to specific audiences. Real-time big data offers practitioners the information they need to provide current content that consumers want to see. It is already being used by servers like Facebook, which use it to filter advertisements and in chatbots, and the Associated Press, which uses it for writing full earnings reports. According to the article How Advancements in Artificial Intelligence Will Impact Public Relations, "Savvy PR professionals will understand that big data and AI can provide their readership with amazing, data-rich research on a myriad of topics. Companies should not fear big data and AI, they should instead embrace the trend and experiment with new stories that match big data analysis and messages to the audience." Meaning that artificial intelligence is a tool for public relations practitioners, not a threat. Using artificial intelligence in the public relations industry will mean faster, optimized results that will in turn allow practitioners to meet their goals faster than ever. When applied to public relations, artificial intelligence is able to process data and statistics much faster than any public relations practitioner would. Artificial intelligence has already been introduced to public relations throughout the use of automated social media platforms and paid media and marketing analytics, thanks to digital advertising and programmatic buying. According to the article How Will Artificial Intelligence Affect PR?, "Although artificial intelligence offers benefits to PR, with the potential of removing some of the more timely

	processes, creative thinking and messaging are aspects that would fundamentally need human input." Meaning that while artificial intelligence will be able to make public relations more efficient while dealing with numbers, it ultimately cannot replace human creativity, which is essential to public relations.
Peterson. (2019)	AI has had a bit of a slow start in the communications professions. In fact, in 2017, just 3 percent of news stories discussing the PR industry even mentioned AI. PR professionals, however, are slowly but surely adapting to new technologies. PR agencies have now begun to harness the power of AI in their daily functions and to realize its potential to streamline client operations, create new experiences that increase brand affinity and improve user experiences. Here are just a few of the ways PR pros are using AI today: 1. Data-Driven PR Campaigns. Automation and machine learning can aid in the creation of new campaigns while simultaneously eliminating the guesswork(.) 2. Automate Mundane Tasks(.) Responsibilities like scheduling calendars, structuring meeting notes, setting due dates, creating Gantt charts and sending out follow-ups can now be completed by an emerging technology practice called Robotic Process Automation (RPA), a form of AI that enables business professionals to automate rules-based processes. 3. Sentiment Analysis and Crisis Management(.) AI is now used in sentiment analysis, which utilizes natural language processing to differentiate vocabulary use, tone and language context. The real-time insight that AI provides allows PR companies to respond quickly and effectively to any press that may arise regardless of sentiment.
Panda, Upadhyay, Khandelwal. (2019:2)	With the adoption and application of AI tools and technologies, organizations can measure the value of PR efforts and ensure alignment with their business' overall mission and goals. In the context of PR, AI has the potential to automate and perform various tasks. These tasks include writing data-driven stories, organizing and updating media lists, aiding in crisis management, converting and transcribing audio into text, following and predicting media trends and monitoring and managing social media. (…) AI with its self-learning capabilities offers PR professionals a tool not only to harness insights from this massive data but also a system to respond autonomously to tweets, queries, grievances, posts and other messages on the social media.
Bourne. (2019:119)	While more companies now use AI tools to support existing communications teams or to manage all social media communication, the PR industry chooses not to see this activity as a direct threat. After all, PR-bots still lack the nuance to navigate thorny reputational issues or to recognise a crisis (Wilson et al., 2017). (…) Since neoliberal thinking drives many client-organisations, they may regard PR-bots as a compelling proposition for their sheer efficiency: PR-bots can work 24/7, occupy many global spaces instantaneously, and provide 'just-in-time' message response to the media and the public. For consumers, the real problem with friendly PR-bots is that the human touch they offer is just an illusion. You think you're getting truly personalised service, when you're simply getting cheaper service(.) Bots use our trust to promote purchases, garner votes, build desires and so on (Donath, 2019)(.) As economic anthropologist, Brett Scott (2016), points out, a company does not address itself as 'I' in its regular correspondence to you. But PR-bots will do exactly that, allowing us to think we are talking to corporations in the first person, when what we are really doing is the opposite. We could become lulled into thinking that trustworthy bots mean trustworthy companies. Businesses that are renowned for poor service could hide behind friendly PR bot-led communication, while removing much-needed services even faster than ever (Bourne, 2018). PR-bots could become an important means of protecting spaces for the powerful, allowing corporate elites to retreat from meaningful interaction with customers and other stakeholders, while giving the public the impression of voice (Moore, 2018).

4) Automated Advertising

Everybody associates online advertising with internet, computers, and smartphones. Since the beginning, browsing the internet was synonymous of pop-ups, ads, recommendations – with each click being monitored, tracked, and used with marketing purposes. Actually, the digital footprints we leave feed a database for future automated selling efforts – since AI-powered algorithms are supposed to analyze and manage our data, converting them into someone's benefit/profit. Now the artificial salespersons can interact and communicate, advancing the prospection of (real or subjective) needs and narrowing/customizing the offer of 'remedies' (i.e. services, products, experiences). The current technologies aim the corporate profits, of course, which do not always converge with citizens and public's best interests. For example, a short term 'corporate profit maximization' (CPM) may push the families to a deepen current debt, as well as the long term CPM (or metaphorically 'a sustainable lifetime value conversion') may harm families' plans for financial autonomy and independency.

Teads. (2017:7)	Consumers are already being groomed to communicate with intelligent apps and devices. Smartphones and wireless speakers featuring virtual assistants such as Apple's Siri, Amazon's Alexa, and the Google Assistant demonstrate how AI can not only process spoken queries and commands, but engage users in conversations that feel increasingly natural. AI ads will encourage us to ask them relevant questions: "What's the price?" or "Can I get heated seats and satellite radio?" These ads will deliver intuitive responses, automatically.
Kietzmann, Paschen, Treen. (2018:264)	The more unstructured data an AI system processes, the "smarter" it gets and the more fine-grained and insightful its subsequent results are for advertisers. As The NorthFace accumulates data from jacket searches and combines this information with actual purchases made by customers, the system learns more accurately to predict recommendations that most likely will satisfy the needs of the customer, and it refines the results to prioritize these options. Machine learning also can help predict customer lifetime value and conversion likelihood. By analyzing patterns and learning from data about the past behavior of consumers in the trial stage of a product, machine learning can ascertain how likely a consumer is to purchase the paid version or predict the future value of a particular customer.
Yang, Yang, Jansen. (2017:3)	The umbrella term computational advertising encompasses a spectrum of computational systems, technologies, and methods of advertising and promotional behavioral analytics and decision making. Particularly, computational advertising refers to an advertising ecosystem with fruitful computing capabilities that employ mathematical, physical, IT, and economic approaches to expressively represent a rich set of advertising objects and environments, model and analyze complex stakeholder behaviors,

	facilitate efficient, profitable delivery of advertising information to potential consumers across various media vehicles in different contexts of customer/product/brand/firm interactions and touchpoints, and provide efficient, optimal solutions for advertising decision making and market design.
ARF. (2018:1-3)	Simply put, AI is software that learns. (…) AI is an area of computer science focused on automated decision making based on feedback and learning. This typically involves two components: Perception [Detecting ad fraud: determines whether ad traffic is legitimate; Image recognition and classification: determines a category (e.g. 'sunset') or value (e.g. 'brand appropriateness') for an image; Natural language processing: discovers relevant information in a text, such as the sentiment of an email or review; Voice recognition: allows machines to accept spoken commands], and Strategy [Personalized messaging: determines the optimal message on the level of the user, as well as the time and location to send the message (Chow, 2017); Content creation: predicts propensity to click on an ad and optimizes the content of future ads to increase clicks and might also use the context of the ad to create an ad that fits in naturally; Real-time bidding on programmatic advertising: searches for the lowest winning bid for ad placement; Recommendation engines: suggests additional products for purchase based on data known about the user].

5) Automated Propaganda

It looks like the "cold war" tension has migrated to internet: the defense and attack ambiance, the spread of lies and fake information, but also the promotion and cheering efforts. In such dealings the players may be countries (e.g. US versus Russia), parties (e.g. US Republicans versus Democrats), politicians (e.g. US Trump versus Clinton), persons (e.g. celebrities or regular citizens versus any antagonist), or companies (e.g. groups against Facebook). If propaganda is power-targeted communication (PTC), it becomes easier to understand the use has been made of algorithms to interfere into the public debate, to mold the public opinion, to generate/distribute (real and fake) news, to foster or vilify personal/institutional reputations, and to intrude into political campaigns and even elections (internal or foreign). Whatever the case and context, AI-powered machines have been used as a pros/cons warfare – both at the political, social, and economic spheres. However, such automated struggle for the decision power (DP) may harm democracy and its institutions.

Woolley, Howard. (2017:6)	Computational propaganda is a term and phenomenon that encompasses recent digital misinformation and manipulation efforts. It is best defined as the use of algorithms, automation, and human curation to purposefully distribute misleading information over social media networks (Woolley & Howard, 2016). Computational propaganda involves learning from and mimicking real people so as to manipulate public opinion across a diverse range of platforms and device networks.

Santini et alli. (2018:333)	According to Bradshaw and Howard (2017), the use of social media to manipulate online public opinion has been found in more than 28 countries since 2010. Among the different strategies, the authors highlight cyber troops as a global phenomenon: groups of bots created by governments, military organisations or political parties, and funded by public money, to engage in social media networks and manipulate local or foreign publics. Despite the presence of online bots since the Internet became public in the 1990s (Woolley 2018), social bots are a phenomenon that has emerged with the advent of social media. Social bots are algorithms that can automatically produce and/or disseminate content and interact with humans (Ferrara et al. 2016), creating a kind of artificial public opinion on social media networks. The algorithms are able to imitate human communication, including time patterns of content production and diffusion and the expression of feelings. According to Ferrara et al. (2016) social bots have already been used to infiltrate political debates, manipulate the stock market, steal personal information, mirror fake news, generate disinformation and noise. However, bots have also been used in acts of resistance.
Forelle at all. (2015,:4-5)	Bots Pretending to Be Government, Parties and Politicians. These bot accounts presented themselves as real political organizations, government offices, and real politicians, usually affiliated with the Voluntad Popular party. Many VP bot accounts represent themselves not as political candidates, but as VP party branches in different states and cities—they are branches of a party organization. (…) Bots Pretending to be Citizens. We identified bots that were tasked with presenting themselves as somewhat average citizens. Each account identified a unique username, they didn't all include special patterns of initials as the bot politicians, and they didn't parrot the names of political parties or government offices. In addition, these citizen bots used a different set of platforms for retweeting.
Ruediger. (2017:6-7)	In political discussions, bots have been used for the whole spectrum of political parties not only to obtain followers, but also to conduct attacks against the opposition and forge artificial discussions. They manipulate debates, create and disseminate fake news and influence the public opinion by posting and replicating messages in a large scale. For instance, they commonly promote hashtags that gain prominence with the massification of automated posts in order to stifle spontaneous debates on a certain topic. (…) The increase in the concentrated action of bots represents, then, a real threat for the public debate, representing risks to the democracy by manipulating the process of consensus building in the public sphere and in the selection of representatives and government agendas that can define the future of the country.
Treré. (2016:135)	In contrast to celebratory accounts that in various disciplines and fields have conceived the increasing use of digital technologies as a way to make governments accountable, and solve most of the issues that plague contemporary political systems, this article, based on an exploration of social and political experiences of the Mexican context, has demonstrated that digital tools have been successfully deployed by parties and governments to manufacture consent, sabotage dissidence, threaten activists, and gather information without citizens' consent. Nowadays, institutions and parties cannot only count on the traditional channels of propaganda, such as the powerful and biased mainstream media apparatus, but can also use their vast financial resources in order to hire crowds of sympathisers that can boost their image on digital platforms, deploy armies of bots and trolls that can be activated to sabotage dissent and hinder critical voices on social media, and infiltrate movements with imposter techies who can use websites to steal sensible activists' data.

6) Conclusion

It is time to admit that some algorithms have been performing activities belonging to journalism, public relations, advertising, and propaganda – with relative success and menace. Even though the quality of their outcomes remains open to debate, more worrisome is their potential impact over the public interests and live – not to mention the jobs they might destroy. Such Automated Communications (AC), with AI-powered algorithms enacting as artificial communicators, may have important developments to democracy and its institutions. Since these machines are commissioned and applied for a 'cause', their intentions and objectives may eventually diverge from those emanating from the people, the majority, or their representatives. They may also represent a legal threat, complicating the official supervision and law enforcement – for the internet is partly fluid and out of control. Anyway, it is worthy to note that an AI-powered machine (real such a computer or smartphone, or virtual such an algorithm) may be seen either as a social, political, or economic artificial agent (not as media and tool only). More, an AIA may be seen as an autonomous communicative agent (ACA) in journalism, PR, advertising, and propaganda.

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