Public talk at the Toronto Metropolitan University's School of Journalism, March 15th 2023.

What follows are the notes I took in preparation for the talk.

Journalism as the next Big Wave: a Media Ecology Approach

Luca De Biase

Very short abstract

The speech is dedicated to exploring how in the digital ecosystem journalism may serve as the foundation for unanticipated innovations that enhance the manner in which individuals receive news in a climate of uncertainty, epistemological inaccuracy and constant change. Artificial intelligence, self-referentiality of digital media dynamics, and bugs in the digital ecosystem seem to generate incredibly important opportunities for the future role of journalism. Because one could define journalism as a sort of artisan, popular epistemology.

Introduction

If you are immersed, by culture or psychology, in a narrative that describes the world in terms of progress, in which problems are solvable and in fact are solved, then you will probably think of Italy as a place that has little to teach and is always behind.

If you are immersed, by rationality or science, in a narrative that describes the world in the key of complexity, in which there are fewer problems than really tangled messes and there are fewer solutions than attempts to get by, then Italy is among the leading countries and can teach a lot.

David Lane came to live in Italy. At the Santa Fe Institute he has been pioneering the notion and research of economic complexity. I asked him if he came to Ita-

ly to be closer to his field of study. He said: «yes». I am from Italy and I know what he meant.

The news mess

That's the spirit with which I start this conversation about the news. And the question is: is the news a problem or a mess?

We can see that trust in the news is at its lowest. The percentage of those who trust newspaper, TV and radio news has halved between 1972 and 2022, according to Gallup, to about 34 percent, while those who say they have no confidence in that news are now 38 percent and were 5 percent in 1972. Edelman shows that people distrust even more the social media environment. And the Reuters Institute shows that people interested in news are decreasing, whatever the medium: they were 63% in 2017, they are 51% in 2022; 47% say they are "very interested" in news journalism (it was 67% in 2015). But in 2022, 38% say that they actively avoid running into journalistic news (it was 29% in 2017). Fake news, politically biased news, hate speech and weaponization of the media are all factors that turn away from the news. And added to these is the anxiety that the news seems to convey that people somehow want to remove.

According to some observers, there are are are important responsibilities of newspapers, journalists, editors, in all this. According to others, it is digital technology that has destroyed the traditional system of collecting and sharing, undermining the old business models. But in an ecosystem, mutations, as well as persistence, are related phenomena in a sort of co-evolution. The media ecology approach helps to see the complexity, accept the messes, and map them to develop a strategy for the long run.

It is especially necessary in a context in which the use of artificial intelligence to maximize people's engagement in social media, surveillance of citizens by large corporations and states, commercialization of personal relationships, fake news and hate speech, are undermining the very resilience of democracies and markets.

The way societies gather and share the news is a complex system. The more links and connections are build in this system the more important complexity becomes. Says Yaneer Bar-Yam, one of the most important researchers of complexity: «One of the main difficulties in answering questions is that we think the problem is in the parts, when it is really in the relationships between them. (…) "Complex Systems" is a new approach to science, which studies how relationships between parts give rise to the collective behaviors of a system and how the system interacts and forms relationships with its environment».

Concepts such as "emergence" and "interdependence" are important to this kind of approach. Self-organized patterns of behavior arise from interactions between parts. There is a strategy for getting desired patterns emerge? If there is, it starts with exploring different possibilities and not only exploiting situations those that are already happening. The frame for this kind of change is more defined as evolution than revolution, while the idea of evolution is not defined by competition but more so by cooperation. In a complex network, desired - win-win - evolutionary patterns emerge more through symbiotic relationships, which is basically the way communities thrive. And journalism is a very important dimension of communities' life.

Innovation strategy

Since the digital media have become the major means to publish, access, make and archive the news, difficult times and deep temptations have transformed the landscape for journalists and newspapers. But the notion of journalism has changed much less. And it seems to be emerging as a strategic win-win solution to some social problems, such as the sustainability of democracies and markets. And we want to test the hypothesis that the present phase of digitalization creates vast opportunities for journalism to have an impact.

In the ever changing digital ecosystem, the narratives, platforms and business models that have emerged in the last twenty years seem to be challenged. Regula-

tion, disruptive new technologies, the organization of digital companies and their platforms, new trends in advertising, the growing unsustainable need of digital technologies for electric power: all this seems to be creating the conditions for an innovation in the innovation direction.

Well: in this moving ecosystem, can journalism be the foundation of unexpected innovations, while enabling an improvement in the way citizens get the news? Some facts seem to show that a positive answer is possible.

Journalism

But first of all we need a shared idea of what journalism is.

There are many definitions for journalism. Some are quite fascinating. And those that love journalism often repeat them. "Journalism is the first draft of history". And: "Journalism is the literature of civic life". James W. Carey has said: «Perhaps in the end journalism simply means carrying on and amplifying the conversation of people themselves». Bill Kovach and Tom Rosenstiel wrote: «It is difficult even to separate the concept of journalism from the concept of creating community and later democracy».

Of course, we want to avoid defining journalism too narrowly so as not to restrain its adaptation to historical changes.

But we know that journalism is not only the job of journalists: it is an important matter for all citizens. And in the digital social media context journalism can be made by all citizens and not only professionals. Moreover, journalism is not only the business of publishers: it is a tool for communities that thrive, and it can be made by for profit businesses as well as it can be made by non for profit organizations or even public institutions such as in Europe the public broadcasting networks.

Journalism is a research discipline. Journalism has developed a methodology for finding, sharing, archiving, retrieving, understanding the news. Kovach and Rosenstiel wrote: «The central purpose of journalism is to tell the truth so that people

will have the information they need to be sovereign». Of course, knowing what the truth really is, cannot be an easy goal. Thus it is much more important to say how journalism pursues this goal: journalism has a purpose, but it is a methodology to seek it.

The very identity of journalism is in the way it works. Journalism is a discipline with a methodology: which is about "getting the facts right", it is about "pursuing accuracy and fairness" in finding the facts. It is about independence from sources, quality documentation for reporting, legal understanding of what is privacy and what is public interest, proportionality in the interpretation. Brief: it is not anything as sophisticated as the scientific method, but it can be seen as a sort of humble, craftsman's version of the scientific method. Journalism in the end is a popular form of epistemology.

The method is the message

Journalism is its method. And the method is the message.

In the context of the triumphant artificial intelligence, there is the risk of misunderstanding the very idea of knowledge.

What's the value of knowledge coming from artificial intelligence? We know that artificial intelligence can be biased in the data it uses, and that it can be far from transparent and understandable in the algorithm by which it is made. So in this context what's the role of a discipline such as journalism which identity is a method made for finding the biases and decoding the values behind algorithms? The role is both finding facts and generating a popular awareness about epistemology.

In the hypertrophic amount of information available in digital social media, managed through artificial intelligence systems, the risk is that a self-referential culture will form. In that context, journalism has a mission: to go into reality and return to the media-sphere to report on reality.

In short, the method of journalism is not only useful for studying pieces of the complex system of reality, but is also a systemic message about the importance of

the relationships between the facts being told and the context in which they are explained.

Today I have to tell three stories, just three stories, no big deal (who said that?). Speaking of quotations, the text presented here for the Toronto speech next March 15 is in small part a reworking of previously offered articles and speeches, I wrote for Il Sole 24 Ore, the Oecd Forum, and Vivre par(mi) les écrans.

Artificial intelligence

Defending himself against the criticism of those who accused him of offering a sugar-coated portrait of Venetian daily life, 18th-century Italian playwright Carlo Goldoni observed, "If I wrote the true, no one would believe me. So I must write the verisimilar". A lesson that has been taken to extremes by the creators of ChatGPT, the most talked-about artificial intelligence of the past three months.

The staging has been spectacular. In a matter of two months, one hundred millions people have tried it out, commented on it, copied it, used it for work and leisure. But enthusiasm for new technologies travels like a sound wave: it rises, peaks, falls; and eventually subsides. As for ChatGPT, the stage of maximum excitement has been passed: the great outpouring of applause for the apparent brilliance of this automated chat's responses was soon submerged by the most authoritative booing. "High-tech plagiarism", accused linguist Noam Chomsky. "Rubbish!", blurts out Tim Harford, economist. "Hallucinations", judges Gary Marcus, cognitive scientist.

Had it instead been a tidal wave, it would have receded by now, leaving all kinds of debris on the beach. And it is among those that one must look for what will remain of the experience. As everyone knows, there is the statistically-generated eloquence, based on of billions of texts chewed up by the system, which manages to work out a sentence that probably continues an amalgamation of beginnings. The best results, however, are obtained through the intervention of thou-

sands of people, paid a few dollars an hour to make corrections, as CTO of Expert.ai Marco Varone reminds us. And yet still there is a smattering of errors, omissions, pure and simple fabrications: David Smerdon, an economist at the University of Queensland, asked ChatGPT, "What is the most cited economics paper in history?" The machine answered, "'A Theory of Economic History' by Douglass North and Robert Thomas, published in the Journal of Economic History, in 1969, cited more than 30,000 times. The paper is now considered a classic of economic history". "Good answer", Harford comments on the Financial Times, "Too bad that paper dœsn't exist". ChatGPT points to the verisimilar and has no interest in distinguishing the true from the false.

Because, in fact, it is not a machine for knowing. It is a machine for conversation. Elena Esposito, a sociologist of cultural processes at Bielefeld and Bologna, puts the problem in its exact context in her decisive book, Artificial Communication: How Algorithms Produce Social Intelligence. It is not understanding machine intelligence but rather its function in communication that produces sociality. And pressing on the same interpretive vein is Simone Natale, media historian in Turin and author of Deceitful Media. Artificial Intelligence and Social Life after the Turing Test. Natale chooses a more careful angle on the illusory nature of the machine, which presents itself as capable of responding to a need for knowledge while it is nothing more than simulation. An especially apt interpretation to comment on the ChatGPT crisis.

Is this the technology that should replace humans in journalism? Actually, it should replace journalists in the work they are supposed to do for newspaper publishers, according to one of them.

«Artificial intelligence has the potential to make independent journalism better than it ever was – or simply replace it», Mathias Dœpfner said in an internal letter to employees, as reported by the Guardian. Dœpfner is the ceo of Axel Springer, giant German publisher, owner of Politico, Die Welt, Bild. Dœpfner said that the

German company prepares for job cuts because automation and artificial intelligences such as ChatGPT are increasingly making many of the jobs that supported the production of their journalism redundant.

AI tools like the popular ChatGPT promise a «revolution» in information, he said, and would soon be better at the «aggregation of information» than human journalists. «Understanding this change is essential to a publishing house's future viability,» said Dœpfner. «Only those who create the best original content will survive». Dœpfner thinks that investigative journalism and original commentary, as well as understanding the "true motives" behind events will remain a job for journalists.

Also BuzzFeed, Daily Mirror, Daily Express, CNET have experimented with artificial intelligence. The Guardian reports that CNET «acknowledged in January that the program had some limitations, after a report from tech news site Futurism revealed more than half of the stories generated through AI tools had to be edited for errors».

But the relaunch is already in place. The issue leaves the playful terrain of fun interaction with a chat bot and becomes serious when analysing the next incarnation of the technology. Just as enthusiasm is dying down for ChatGPT–the answers of which were simply elaborations on a monolithic body of data that stopped being collected in 2021–its creators at OpenAI, allied with Microsoft, have produced a new version called GPT3.5 that is capable of updating itself with Bing search engine results. Cognitively, this is a huge leap. If before search engines returned a series of links, leaving it up to the user to choose what to think of them, today it could also add an elaborate one that chooses an angle with which to summarise what was found. "It's all about interface", says David Weinberger, a philosopher of knowledge. "Assuming the hallucinations are contained, I worry that the new chat entry becomes a kind of disembodied oracle. The series of links returned by the old search engine helps expose the nature of knowledge, multiple, never stabili-

sed". If the engine with the new chat technology instead returned a text with its interpretation of what it found, rather than leaving it to the users, it would end up impoverishing knowledge.

So yeah. The debris left behind by the ChatGPT wave changes the perspective. Until now, the debate about society adapting to artificial intelligence had focused on ethics. But the new problem is epistemological. The question is no longer just what is right to do with artificial intelligence; the new question is what is the value of knowledge communicated by artificial intelligence? If the verisimilitude communication machine that is the new version masquerades as documented knowledge of reality, there is a risk that it may generate not a wave of enthusiasm, but a tsunami of illusions.

Illusions for the reader. Hallucinations for the writer.

By now the term "hallucinations" has passed into common parlance to speak of the drivel that occasionally escapes the albeit eloquent prose of generative artificial intelligences. Launched by Gary Marcus, a cognitive scientist who cultivates a critical interpretation of the hypothesis of building a generalist artificial intelligence, the term hallucinations now designates that set of inaccuracies, errors, or outright fabrications, while still verisimilitude, that the various ChatGPTs and the like produce when they in fact prefer the smoothness of conversation with users to the admission that they do not know something.

Over the past few months, news reports have accounted for responses containing citations of scientific papers that do not exist and biographies of great people embellished with fictional facts. The problem is that hallucinations jump out at those who know the subject matter, but remain hidden to those who do not know the subject matter being discussed. Which happens all the more often the greater the use of generative artificial intelligences in the production of answers to the queries that billions of people address daily to search engines. After the bad impressions

collected in order by Google, Microsoft and then others, someone has realized that this can even become a legal problem.

Snapchat, for example, released its My AI, enhanced by technology developed by OpenAI, with a disclaimer warning that "My AI is subject to hallucinations." In addition, the same disclaimer suggests "not to share secrets with My AI or rely on My AI for advice." Clearly Snapchat anticipates that someone will sue the company when the knots of hallucinations, possible privacy violations, and bad advice come to a head. Will the disclaimers be sufficient in that case? And should those kinds of artificial intelligences move out of the entertainment domain and into professional life, who will bear the risk of any damages?

Meanwhile, regulation will have to accelerate to prevent potential harm. Answers will have to be found about the copyright of the original texts from which the artificial intelligences derive their results, liability for possible plagiarism and errors, forms of automatic comparison between information sources that may contain bias, and so on. The European Commission is moving forward with its AI Act. And it has a lot of work to do.

Self-referentiality

In December 2016, Cnn's Alisyn Camerota has an interview with Newt Gingrich, former Republican speaker at the US Congress[1]. The journalist cites FBI statistics that show crime in America has been falling sharply for years and, based on that data, challenges Republican claims that Democrats have done little to keep Americans safe. Gingrich responds that Americans don't think that way. The reporter insists on citing the data. Gingrich says: Americans feel different. And he explains, by saying that "yes", the statistics cited by the reporter can be facts, but even what Americans think is a fact. «As a politician, I'm on the side of the feelings of the American people. As a reporter for Cnn, you can stand with your experts».

---

[1]   https://edition.cnn.com/videos/tv/2016/12/01/gingrich-camerota-crime-stats-newday.cnn

It is a story about perceived facts versus documented facts. The former are facts that arise from communication and the latter are facts that must be communicated and understood. The former can be manipulated by the communication technique. The latter can become obscure to those who do not understand the scientific theory that motivates and documents them.

At that point anything can happen. In the case of economic policy in Europe, for example, a conflict has emerged based on the opposition between a scientifically based but rigid approach and a demagogic anti-tax, balanced budget approach. In that context, science, the system of experts, can be considered part of the establishment, especially if it contradicts what demagogues say to please their audience.

Populism is against technocracy if the technocracy is based on a theory that dœs not adapt to change. "What people perceive" can be changed based only on changing the narrative that lives in the social media environment: it is a self-referential kind of news. It is a fact, but it only happens in the media context.

Going to see what is happening in reality and coming back to the media to report it may be too challenging, it may be presented in a way that looks suspicious of complicity with power, it may simply be less interesting.

A very interesting investigation by Carole Cadwalladr for the Guardian[2] showed that in Wales, Europe has invested heavily to support development but people voted Brexit based on social media reports about the danger of mass immigration if the UK remained in the European Union. There was a self-referential news system, full of fake news, going at full speed thanks to the pro-engagement algorithms in the social networks. On the other side there was reality: but a sort of boring reality.

---

2   https://www.theguardian.com/uk-news/2016/jun/25/view-wales-town-showered-eu-cash-votes-leave-ebbw-vale

As Ethan Zuckerman, professor at the University of Massachusetts at Amherst, has shown[3], not everything happens in the context of digital social media: there is a bouncing game between traditional and digital media that when it works multiplies the impact of messages and reinforces the stories that somehow explain them, documented or undocumented.

It is clear that digital platforms have gained a dominant position in the contemporary media system. When digital became important, in fact, an important change occurred. In the analog era, the scarce resource in the media world was the space on which people published: publishers controlled the scarce resource and its price was high. With digital, space has become very abundant and its price has plummeted, putting publishers' business in crisis. The scarce resource has become time, attention, and public trust. For a time, the audience drove the change in a disintermediated environment. Then platforms took over and organized the audience and managed its time and attention. Reintermediation created powers never before known in the media world with platforms capable of serving billions of people.

But platforms didn't succeed in conquering long term trust as well. As the data shows, trust in social media is even worse than trust in traditional media.

The dynamics of trust is more related to the narratives that emerge in a complex, crossmedia space.

Nodes (Narratives Observatory combatting Disinformation in Europe Systemically) is a European project that should find the way to fight disinformation by decoding the way narratives create cultural spaces in which disinformation can travel at high speed. It is a project by Reimagine Europa and I also give a hand to it.

Narratives can explain the climate emergency or the covid epidemic using a conspiracy theory. But there are also narratives that explain technology as progress with only one rule: every new version of the technology is better than the previous.

---

3   https://www.je-lks.org/ojs/index.php/Je-LKS_EN/article/view/1135818

In general, grand narratives bring order to knowledge based on a timeline, so they are able to answer questions about what the consequences of events are. So they have great importance in the civic decision-making system. Which means that the decoding of narratives is an important premise for initiating more constructive forms of deliberation for decision-making.

The Nodes project relies on a team of scientists, psychologists and scholars of modern mythologies. It makes use of large databases to find out what words and stories are circulating in the media, but then delves into the structure of narratives with qualitative work that is very complex and time-consuming.

In decoding narratives, there is a need for inquiry, analysis, and source critique, which is done by a method whose purpose is to improve the information ecosystem. Again, a set of facts generated by the very logics of the media system is confronted with research that must go into reality and report on it. This and other research activities can ground a new form of journalism. After all, framing, priming and agenda setting were activities of traditional journalism: subject matter expertise, in the new media context, can also serve to decode these kinds of information organizations that emerge in digital media.

The great debugging

ProPublica[4] has found that Google is not transparent in the list of publishers that can host its ads. Legitimate advertisers can find their commercial messages In contexts that are hardly legitimate, such as porn, piracy, fraud. But Google dœsn't provide information about this.

ProPublica's article has found a story about a Canadian conservative publisher that used to run the right-wing site Conservative Beaver that was very interested in systematically publishing fake news, such as a story falsely claiming the FBI had arrested Pfizer's CEO for fraud. As ProPublica writes: «The site had falsely claimed Ba-

---

4   https://www.propublica.org/article/google-display-ads-piracy-porn-fraud

rack Obama was arrested for espionage, Pope Francis was arrested for possession of child pornography and "human trafficking," and the Pfizer CEO's wife died after being compelled to take a COVID-19 vaccine».

Google placed ads on this site with no problems. After Pfizer threatened to sue the publisher for defamation, the site went offline. But today the Canadian publisher runs a new conservative political site Toronto 99 and uses the same Google publisher account he had for Conservative Beaver to collect ad revenue.

I asked Google what was the comment. They told me that ProPublica has done a very good work of debugging Google's system.

From the point of view of a giant information system that governs world knowledge, journalism may appear to be a form of debugging.

There is little that is fully automatic in the global information system. Artificial intelligence learn on corpora of knowledge that are human made, get better thanks to thousands or underpaid workers and thanks to the feedback coming from millions of users, only to make mistakes that can be debugged only by humans.

Improving the bodies of knowledge on the basis of which machines work can be work conducted methodically, and likewise can be the work of improving the results of machines in terms of knowledge generation. Is the method for doing all this a form of journalism that confronts machines?

Probably, the design of the next systems will not be limited to the engineering of machines but to the design of the relationships between machines and humans.

Proposals

Journalists can be an evolving profession. Newspapers may be a business that is radically changing. But journalism is a discipline of the future

The complexity of what happened to the cultural dynamics needs a systemic solution to the problem of quality of knowledge.

Media ecology is the environment in which all collective operations and community activity develop. In some cases they don't really work without information and quality of information is the way they can work well. Markets and democracies are two examples of this systemic problem.

And journalism is a systemic solution:

- Debugging fake news
- Decoding framing
- Keeping alive different agenda setting
- Maintaining civic priming
- Improving artificial intelligence corpora with quality structures and data
- Keeping people in charge of artificial intelligences and not the opposite
- Keeping alive the critical thinking and the verification approach
- Finding news and knowledge that are not self referentially generated in the media circus

It all comes from journalism as a discipline based on a simple but effective epistemology.

This can lead to radical innovations, generated with a new approach:

- Innovation with a direction
- Design of human-machine systems
- Personal data wallets
- Decentralized digital architecture
- Artificial intelligence for improving the productivity of humans and not design to substitute them.