

Editorial

Artificial Intelligence vs. Natural Stupidity

PIERANDREA LO NOSTRO

Department of Chemistry “Ugo Schiff”, University of Florence, 50019 Sesto Fiorentino (Firenze), Italy
E-mail: pierandrea.lonostro@unifi.it

The number of articles, contributions, TV reports and tweets, squeaks and cheeps on the social networks that deal with the emerging and invasive role of artificial intelligence (AI) in several aspects of our life is increasing enormously, day by day.

Like for other hot issues, the use of AI has bright and dark sides. Some are sincerely excited by the potential beneficial outcomes of its applications, others are scared by the potential drawbacks, including some challenging limitations to human freedom. Others are just making their wallet fuller and fuller with AI.

Apparently it is the same story depicted so amusingly in the movies “Frankenstein junior” (1974) or “Blade Runner” (1982). Humans create their own creatures – usually to make them work hard at very low costs or to commit criminal activities – that in turn revolt and threaten their makers. The literature is replenished with similar stories.

This time with AI of course the situation is pretty different.

AI is an incredibly powerful machine. It can make calculations and infer conclusions starting from huge datasets and with such a speed that is absolutely inconceivable for a human being. However the history of technology teaches us that the problem is always in the mind and in the hands of the user and, particularly in this case, of the developer.

It is not necessary to be sluggishly reluctant to accept innovations and changes to advance serious doubts on the consequences of AI. Some of these effects are, at the moment, unforeseeable.

Some applications are certainly very useful and valuable. For example AI helped find a new drug to cure drug-resistant infections [1]. *Acinetobacter baumannii* is a very nasty bug that often colonizes hospitals and can lead to pneumonia, meningitis, and other potentially

deadly infections. Well, a machine-learning model was able to identify a new drug starting from a set of 7,000 potential compounds. The machine-learning model was trained to evaluate whether a chemical compound would inhibit the growth of *A. baumannii* [1].

AI can be convenient in other very different cases: assisting a doctor in diagnosing a disease (especially with rare diseases), in remote medical visits, for first (non specialized) assistance in call centers, in assisting elderly people, and several others.

AI is also helpful in writing and texting. Most of us use T9 or other more recent chatbots when composing a Whatsapp message to friends or colleagues. And Gmail uses a similar learning system for anticipating the words we are about to type in an email. It is certainly useful to save time and to avoid typos, but probably this habit will lead to an even lower level of knowledge of a language: teenagers will not need to know how to spell words any more, as AI will do it for them. As they will probably use a calculator to calculate $\text{Log}(10)$.

So, AI will make us lazier, more ignorant and superficial. That’s for sure.

Apparently, according to an ACS publication, AI is particularly poor in chemistry, so it is quite uncertain whether AI could help students in studying chemistry or not [2].

AI will use a rather boring and monochromatic language, certainly politically correct, flavorless and soft. I don’t believe it can reach the infinite complexity of human expressions with double meanings and ambiguities.

On the other hand, AI will certainly be a very tough and valid opponent in a chess play.

In this intricate muddle of Pros and Cons we cannot forget the production of fake news. About 50 news websites are generated by AI: an interesting article published

in *The Guardian* wonders whether we would be able to find out promptly it is just garbage [3].

It has to be recalled that AI may also help fight fake news, although this process is more complicated and slower than creating misinformation, and requires also a vigilant filter from the targets of the information release [4].

But I would like to stress here the few positive and the many negative aspects of using AI in scientific publishing.

Some big publishers started using AI during the different stages of publication [5]. By using some machine-learning algorithms to “replicate” human intelligence, AI can actually replace or assist the journal editor in reading the submitted manuscript, identifying the reviewers, compile the received reviews, text analyze the paper, decide whether the content “sells” or not (to increase views, downloads and citations), detect plagiarism and self-plagiarism, detect false statistical analyses, and get a final decision on the suitability of the paper for publication.

I believe we all agree that the selection of reviewers is probably the most important and delicate step of the entire publication process. When we accept and perform a review we willingly become part of a huge database from which some algorithms catch the data they want. A similar thing happens with conference invitations: we all receive hundreds of invitations to strange conferences, some of which do not even address our scientific interests. No surprise the invitation often starts with the acknowledgement of one of our most recent papers. Well, in these cases the learning machine is really stupid and would invite me to a geology conference mentioning one of my papers on soft matter...

With *Substantia*, we are proud of our willing, reliable and skilled reviewers. With them we built a strong sense of the journal’s purpose. In a relatively short time (only 8 years) we established *human* relationships with authors and reviewers that represent the real pillar of our journal.

The pervasive introduction of AI within editorial systems reflects also an awful ontological prejudice that entails the belief that human judgment in the publication process is a polluting player, a source of bias and inefficiencies. While AI is supposed to provide an impartial evaluation of research quality. This is a trivial nonsense, as we don’t know how the algorithms are made.

In the perennial opposition between quality and quantity, AI can only adopt the latter for its own assessments. This means for example that in the selection of a reviewer parameters like the H-index, number of publications, number of citations, IF of the journal, etc. will be considered (probably using the ORCID, the Scopus identification number or the Clarivate code), with the potentially dangerous consequence to perpetuate the *status quo*

and breed inbox thinking, preventing new contributions from younger or other scientists in a specific field.

As an author: my personal private opinion is that writing a paper is an extraordinary, exciting and absolutely creative activity I do with my set of data that my coworkers and I collected in the lab. Then, why should I let a learning machine write even a draft of my paper [6]? Human creativity must be fueled and not depressed. Different scientists will probably discuss and even interpret the same set of data in different ways. Why should we abandon this pleasure and sophisticated capability we have to represent and describe reality?

In the end, cloud computing, IoT (Internet of Things), Big Data, and the most advanced artificial intelligence algorithms are nothing but the result of our attempts to improve computation execution time and data availability [7]. If you are interested, follow up on the developments of the new “algorhetics” [7].

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