

ARTIFICIAL INTELLIGENCE IS NOT A TECHNOLOGICAL ISSUE

The following is an automatically translated excerpt from the book *Artificial intelligence is not a technological issue* (in French: *L'intelligence artificielle n'est pas une question technologique*) by Laurent Bibard and Nicolas Sabouret (pages 15 to 27).

Chapter 2 — Why do machines bother us so much?

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The inconvenience of being born.

— Emil Cioran

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One of the very first questions we encountered in starting this reflection on the relationship of humans to artificial intelligence is to understand where this impression comes from that machines are “against” us.

Online services

Each and every one of us, as a user of technology, has one day or the other felt that ‘the machine does a little what it wants’ or, in any event, that we cannot get what we want from technology. The setbacks of the SNCF ticket booking application at the beginning of February 2022 are a very good example: the users complained of ‘not being able to consult ticket prices’ or ‘get a direct train’, even though they know it exists, since they take it every day.

We often feel trapped by the features of these tools and it’s usually quite annoying. We sometimes feel that the computer does not “want” to do what we would like it to do. However, as soon as we encounter this type of problem, we can no longer get a fare or we want to get a particular journey, we need a human interlocutor. And there, this is not possible... It is necessary to go through a pre-established “frequently asked questions”, which walks us through a set of web pages in which we do not find the answer to our question and we return to the starting point. We walk from page to page without ever finding what we are looking for.

We can cite the similar example of the Health Insurance website, Amelie, which recently replaced its contact form with a chatbot, a communication interface allegedly able to answer all of our questions. The contact form made it possible to write to employees of sickness insurance *via* internal messaging. The chatbot that replaces it often does not have the answer to our question. We go round and repeat ‘here is my question’, ‘I would like to know what is going on on my file’. But the chatbot walks us from question to question, without ever giving us a real answer. Finally, one fights with the tool instead of getting an answer, and there is no way to contact a human anymore.

These examples perfectly illustrate the sense of imprisonment or confinement in computer technology that users feel. This contributes to this belief that the machine decides what we can do and what we can’t do, or what answers we are entitled to expect or not from the service — here the SNCF or sickness insurance. But in fact, it’s not machines that decided this, it’s the programmers of these tools — the chatbot or the website. These tools, like any tool, were designed and programmed by humans who made possible use choices and who believed that they would, through these choices, answer all our questions. They then disconnected the possibility of saying “your system does not answer the question, I need another interlocutor”.

What these examples show is that designers chose not to allow the user to address a human being, and they chose the answers and questions that the machine was able to process. Apart from these questions, there is no other solution. And when there is a request to pass through other than the system which is planned, and therefore designed by the designers, the answer is ‘no, it is not possible, the machine does not do so’. As if it was the machine that had decided what is possible.

This is a design error, which stems from a misunderstanding of the relationship between users and systems due to the service providers concerned. This is not at all a problem of artificial intelligence but of systems design!

State aid for insulation

Another example in which technology is wrongly presented as responsible is state aid for energy and thermal insulation of homes. There is considerable emphasis on the relevance and importance of such aid in the context of the energy transition. But the systems that are intended to prepare the files for obtaining these aids are designed in such a way that there is no direct personal contact or by simple technological channels, for example, sending documents by email. You have to go through the site exclusively. However, these sites are mostly extremely difficult to understand, or even incomprehensible, with, what's more, interfaces that are difficult to read, for example, for visually impaired people.

And when we ask for help from human operators — we can still reach human operators — they actually have a completely untenable position: they can only answer: 'You have to go to the site'. Thus, even when human operators are kept in employment to be users' interlocutors, the only thing, almost, that remains to say to them, is 'I am useless to you', 'I am only here to tell you that I cannot help you and that it is necessary to do everything through the site to submit your file and to follow the processing'.

The difficulty we see has nothing to do with the technologies taken as such. It depends strictly on the human choices that have been made during the design of the systems.

It must be added that when an organisation decides to impose a passage by a system for the constitution of files, for example, and still maintains human operators who have nothing but to say "I am useless", it is a problem — if not a scandal! — strictly managerial.

The machine does not 'understand'

In the face of these systems that hinder us in our daily activities, we adopt an attitude of trying to "make the machine understand" our need. Here we are in the dynamics of the "anthropomorphisation" of technology, that is, all spontaneously maintain relationships with machines as if they were human, or as if they were endowed with faculties, skills, human qualities, as is the ability to "understand" something.

This attitude is spontaneous: when we interact with a system, we intend to make the virtual interlocutor, that is the system, software or machine, "understand" our need. But when the need in question is not foreseen, we find ourselves faced with general answers and this causes the kind of difficulties we have mentioned. The inevitable anthropomorphisation of systems does not help to get out of the problem, on the contrary! The reason is simply that we are mistaken as an interlocutor: machines are not our interlocutors, it is those who design them and imagine them who are.

It can be understood that designers prepare *a priori* general answers to general questions, imagined in advance. This is obviously both relevant and effective. But the difficulty comes from what we believe that in preparing these *a priori* general answers, we exhaust all the questions. This is never true and can never be true. There will always be unpredictable special situations in advance. The mistake is to believe that one exhausts the whole field of possibilities *a priori*. And since there is no alternative recourse to switching to a human and to finer questions, the design of the system blocks the operation it is supposed to serve.

The elimination of humans from services and its challenges

Let's imagine a very simple system that would only allow to buy tickets for a given destination, very specific, known in advance, with perfectly clear fares that would ask no question, without a complex mechanism with discount cards or variable rates. In short, nothing that can ask the user question. This is already very difficult to design, because you have to be sure that there is no possible uncertainty about the data provided to the machine. But let's imagine such a situation. In this case, it is for the user to perform a procedure by entering a set of specific parameters, well defined in advance in a machine that will then do the processing. There is no problem here: it's a mission that an engineer is able to fulfill.

The difficulty is that, in real life, you are never in this situation. There are always user requests that fall outside the scope of what the system designer has planned. Obviously, this is a minority of users, that is, the majority of people will fit in. System designers are happy because they responded to

95% of requests. But what we have to look at is not that 95%, it is the remaining 5%, these unforeseen events for which we must admit that we will not be able to respond through a fully automatic system, because such a system does not have the capacity to adapt to the unforeseen situations created by users. It is imperative, if we want to do things right, to foresee the place and the role of a human in the device. The agents must be allowed to say ‘yes, the machine cannot handle your request, but I will be able to process it’.

The problem facing engineers and system designers is that they are asked, or even ordered, to create a system that will work without humans. This is technically impossible: a system that operates without a human can only function properly when the frame is completely predictable.

A political problem that is nothing new but is likely to get worse

The demand from organisations that are managed by humans, therefore human demand, is now dominant that there is no need for humans anymore. This is not impossible as such, but it is necessary to define in a very precise manner the cases where it can work and be useful: these are the cases where the particular demand fits perfectly with the general demand. Everything is predictable, but this is both extremely rare and always local, temporary, fragmentary, as we saw on the example of the train ticket. In general, there are always special cases. A general feature therefore encounters exceptions most of the time sooner or later.

The equivalent in political philosophy is to say that a law is always potentially ‘tyrannical’, in the sense that the law refers in principle to the general. And of course, there are always exceptions to the law and, therefore, if one sticks strictly to the application of the law without considering the particular cases, there is injustice.

The technology problem is comparable to this: technology can only respond to specific situations, but welcomes the general in the specific context that is being addressed. This is also the case in the legal field: a law is made for a specific object and it welcomes the all-encompassing in the specific case. Society then relies on (human) judges to manage the particularity of each case in this general framework of the law. Where, for technologies, this can become really problematic (if not dramatic), is that unforeseen situations lead to exclusion of users. For example, when sites prevent visually impaired people from surfing the Internet. Many are excluded from the net for economic, social, cultural reasons...

The example of the Boeing 737 MAX

Unfortunately, these reasons lead to the exclusion of adequate use of a system intended to serve the interests of users. This can sometimes be even more problematic.

Let us take the case of the infamous Boeing 737 MAX, very revealing of this problem. The Boeing 737 MAX is equipped with a system called MCAS (Maneuvering Characteristics Augmentation System), which is an automatic system installed on the aircraft to avoid stalling in manual flight. When a plane pitches up, its wings carry it less and it may start to fall: it’s the stall. This is what happened in 2009 on the Rio–Paris flight.

Therefore, there is a good intention of system designers to say: when the aircraft’s nose rises abruptly and is likely to stall, and if the pilots do not realise it and do not react early enough, we will ensure that, automatically, the system plunges the aircraft down to allow it to resume speed and recover its ‘plate’, i.e. the normal flight position. But what is not expected is that the system can malfunction. However, the two disasters arriving in 2018 and 2019 on two Boeing 737 MAX, three months apart, are disasters that took place during take-off. In each case, the aircraft was obviously cabded, since it was in the ascension phase. On both occasions, the MCAS system ‘calculated’ that the aircraft’s nose was unduly up and had the aircraft dived in order to recover speed incorrectly.

In the first case, the pilots were not even informed of the installation of the system in the aircraft. *A fortiori* they could not do anything and understood nothing about what happened to them. In the second case, pilots were informed that the system existed, but they had not been trained to deactivate the system in the event of failure. And so they saw the automatic start-up of this totally untimely dive without being able to do anything either.

Apart from the directly ethical problem that arose in Boeing management at that time, we see here that there was a problem relating to the culture underlying the implementation of an automatic on-board system, and not at all a strictly technical problem. The intention to build a system that promotes aviation safety is excellent! But we are in the presupposition that drivers don't even have to know that the system is installed because there will never be a failure, which is a total error, ultimately quite similar to what we described for ticket buying websites, for example. In the case of pilots, users are not trained to disconnect the system and to take over the situation. In the case of websites, there is no human alternative to obtain the desired service. Human operators are only there to say 'I can do nothing for you'.

The road to hell is paved with good intentions

What these examples show us is that it is important that designers do not decide alone what the user will do with the system.

This happens either out of technological fantasy or in order to save money by any means, which is a real problem. It is imperative that the decision-makers of the organisations, who are the sponsors, do not ask engineers to manufacture any way in any context of systems that one would (wrongly) imagine that humans could be completely absent.

As we will see later, these design errors lead to the construction of two antagonistic points of view in our societies. On the one hand, there is the manager's 'technophilic' point of view, who imagines that technology will be able to do everything and predict everything, and solve problems on its own. On the other hand, there is a 'technophobic' position, which is increasingly adopted by users who feel that technology runs counter to their own will, their demand, that it is there to enslave them, to prevent them from being and to live well... These two points of view have long been found in literature, with dystopian or utopian novels, showing, on the one hand, situations where technology has allowed humanity to rise to an incredible level and, on the other hand, situations where technology would have imprisoned and reduced all humanity into slavery.

It is essential to get out of this debate! As long as we are in this opposition between 'technology is going to do well' or 'technology is going to do wrong', we forget the important element: it is not the technology that makes it, it is the designers of the technology who make it and, behind the designers, the strictly human decision-makers of companies, organisations, services.

As long as we maintain the idea that there is a debate between technophilic progressives and reactionaries or technophobic conservatives, we will paralyse the discussion that must be overcome in the direction of the right question, which is how we use technologies in an adjusted way. The core of the problem is our relationship to technology, it's not technology itself.