

# One or many AIs?

## Representations about, and relations with, AI

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**Abstract:**

A simple question — “One or many artificial intelligences?” — makes us realize the complexity of our relation with the very idea of artificial intelligence. As in the case of people, there is no single form of machine intelligence. It thus turns out to be hard to define this concept. The well-known Turing test for deciding when machines will be as smart as people has come under ever more criticism. Offering no definition, it makes, at most, a comparison and an analogy. However the focus of this article is not on the concept itself but on the ways that our cognitive representation of AI influences our use of, and relation to, technology.

A simple question — Is there one or more forms of artificial intelligence? — introduces us to the complexity of our relation with the very concept of AI. As in the case of people, there is, of course, not just one form of intelligence. So, defining the concept already turns out to be difficult. The famous Turing test for detecting when AI is on par with human beings has become increasingly controversial. It provides no definition and proceeds, at best, by making a comparison and analogy. This article focuses less on the concept of AI than our representation of it, which affects our uses of this technology and our relations with it.<sup>1</sup>

Let us start by examining the technical or artistic representations that unconsciously skew our ideas about AI (or rather about what AI can do). These representations shall then be compared with AI as it now exists. In the construction of these forms of AI (or of other material or conceptual tools), several human structures intervene to shape how AI acts on, or interacts, with the world. The reality of AI as it is being developed is a plurality of forms. This leads us to adopt a view of this technology quite different from the usual depictions. The question of interactions between these forms of AI crops up. How to imagine exchanges between several forms of AI? What would this mean for interactions between people and AI? Finally, my argument leads to the question of all interactions, not only between or with forms of AI, but also between human beings. The changes in these relations will probably be deeper than those wrought by the Internet and social networks, even though they are not yet evident. For sure, choices will have to be made.

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<sup>1</sup> This article has been translated from French by Noal Mellott (Omaha Beach, France).

## Representations of artificial intelligence

Talk about AI systematically uses the singular form. The arts have proposed several images of this singular AI — usually without consideration for human beings (HAL in the movie *2001: A Space Odyssey*) or even with open, aggressive hostility toward them (Skynet in *The Terminator*), or sometimes, paradoxically, with a smothering protective stance toward people (as in *Colossus: The Forbin Project*). The use of the singular begets the idea of a concentration of power (omniscience and omnipotence) that will throw the world off tilt. This is a very conventional way to construct a narrative. The point I would like to make is that these fictional representations suffuse our perception of reality, very often unconsciously. AI fascinates us owing to its omnipotence.

When looking at trends over the past decades, we are surprised to come upon the very attributes that we assign to programming: languages, formal calculations, expert systems, deep learning. Words are important in relations. The words we use to describe advances in AI are loaded with very intense expectations. However the facts turn out to be somewhat different, and scientists working in this field have never been so naive as to believe in what their own words suggest. “Deep learning” arouses the idea of profound knowledge, whereas it merely refers to the depth of an artificial neural network, *i.e.*, the number of layers in the network, which is a simplistic representation of the brain. Machine learning consists in optimizing the parameters of various functions (which form an artificial neuron) in order to align the neural network’s predictions with data from a very big database. We are, rightly so, impressed by the advances resulting from these techniques; but they are still a far from actually being an “intelligence”. Typically, these programs are able to effectively detect people in images or videos, but they fail to understand that an image on a poster (or in an advertisement) is not a human being. We imagine the problem when AI is to steer a car! The point to be borne in mind is that the technology sustains, owing to the words used about it, a representation that draws attention to AI’s power.

I would like to point out two other important attributes of current forms of AI related to big data and computing power — how magic this use of the word “power”! Machine learning draws its effectiveness from gigantic databases (representing millions of books and billions of images). Big data are used to optimize the machine’s responses during its learning period, which is extremely time-consuming and data-hungry. We might suspect that this learning would tend to be a bonus for the very few players who own the data and can train AI to be omniscient, and that this bonus is boosted by the need of extreme computing power. This leads us to make an association with Big Brother and, once again, orients us toward an artificial intelligence in the singular.

## Structures and interactions

In a clear break with the previous paragraphs, let us now turn to the forms of AI that are being rolled out, specifically the products and services that rely on these techniques. What first comes to mind are the chatbots that the pioneers of AI (Siri, Google Voice, Alexa, etc.) have massively brought to market. They are centralized services that, based on profiling users, can both process questions in natural language (a notoriously complicated problem on which AI has made major advances) and manage associations between “ideas” in order to answer queries. These considerably variable services (banking, movies, etc.) are usually linked to products in line with a now well-controlled business model. Not all of them are provided by the high tech giants. Besides, we would be reluctant to describe some of these services (*e.g.*, photography) as “intelligent” or “smart”, even though they rely on AI techniques. We normally talk about “filters” to refer to the neural networks that have been taught to turn plain images into images that please us. Now that such a network exists in every recent smartphone, we can talk about the plural forms of AI.

For the AI techniques that offer users aggregated services that match their needs, the key is, obviously, to know what users want and have access to the data needed to predict their demands, whence the success of business models based on predictive advertising. Depending on the circulation of these data, the resulting business models will be individual (if all these data are centralized) or plural (if they remain local, on a smartphone for instance). Plans have been made for deploying these forms of AI on smartphones, which now have the requisite capacity. This means that our personal data will be processed “on the user’s own premises” but that this AI will reach out for external data (purchases, reservations, questions, etc.) onto the Internet. This business model is pleasant enough but wanting in comparison with the services pushed by the Web giants. It is, however, noteworthy that the plurality of AI is for real and has interesting consequences.

Besides the plurality of the location of data and of computing power, we observe a specialization of AI as a function of our own expectations. What do I expect from the AI at my disposal? This answers are quite varied, ranging from the “agent” planning my trip, budget or work (so as to draw the most benefits from my time) to the “coach” whose advice stimulates and comforts me. As current forms of AI are perfected, they will learn and adapt to quite different situations. After all, AI’s capacity depends on its ability to learn. So, we will have as many forms of AI as there are human beings (maybe even more), and multiple forms of AI for all sorts of activities (movies, restaurants, cars, busses, robots...). Each form of AI will have to cultivate its differences, and the data used for its evolution will not be shared. There will be many, ultimately heterogeneous, forms of AI.

Despite this diversity, the underlying techniques will, we suppose, tend to be the same. Neural networks are organized in an architecture (layers, links between layers, etc.) that is very often related to the objectives we want to reach. The brain is a much more complex, dynamic organ than any imaginable artificial neural network.

Beyond these considerations, let us admit that these forms of AI will have heightened capacities. As has been pointed out, “human structures” (e.g., natural language or memory) intervene, implicitly or explicitly, in constructing these forms of AI and their learning processes (data feeds). These structures should be reflected in interactions (the data requested or produced by AI). Since these forms of AI will initially be improved by optimizing their responses to our queries, there should not be too large a distance between the interactions that these forms will have with us or have between themselves.

## **Relations between forms of AI**

There are, as we know, very strong relations between language, thought structures and intelligence in general. We would be going too far to assume that this also applies to machines as such, without any adjustment. Drawing from what has already been said, a realistic assumption is that several forms of AI will be interacting with each other. Planning a birthday party in a restaurant, setting the date and choosing the menu will require several round trips between the forms of AI that will be used to organize the event and take account of the preferences of each entity, guest and restaurant. How this will take place is not yet clear, but it will probably involve a mix of natural language (which AI will have to acquire) and data exchanges. What is certain is that diverse forms of AI will have to interact.

What will these forms of AI do while interacting? It is hard to say. From an optimistic viewpoint, the outcome should be cooperation; but from a pessimistic viewpoint, such interactions might lead — even faster than among human beings — to domination between forms of AI. Reality will probably lie somewhere in between, depending on our determination and influence. It is very hard to set the limits since the concept of “number”, the key to these interactions, is so different for AI and for us. With how many other forms of AI will a given form interact? How will this change the very structure of AI2AI relations? The answer is hanging. Nevertheless, this domination within the realm of AI will obviously have an impact on relations between AI and people.

## **Conclusion**

For sure, AI will evolve, and this has led to two different theories. The one, borne by transhumanism, focuses on the “technological singularity”: this evolution will gain momentum and at some point — a unique moment with no going back — the two worlds will be disconnected. Although believers in this theory foresee the victory of AI, other interpretations can be made. The second theory is coevolution: people and AI “will live together” in symbiosis. Both theories rely, it seems to me, on fictional representations. Man-made tools and concepts have undoubtedly deeply altered humanity. We can, therefore, conclude that AI, by interacting more strongly with us than we interact with a hammer or even a social network, will seriously transform us. However seeing this as an ultimate phase of evolution — as the apocalypse or the advent — is more a matter of faith than analysis. Many pundits have predicted the coming of a superhuman, through evolution or revolution; but, with all due respect to believers, this being is keeping us waiting.

In conclusion, I would like to add that we must reckon with the plurality of forms of human and artificial intelligence. This direction has already been taken; but only the first very few steps have been made on it. Without imagining that AI tomorrow will be more than it will be, let us admit that it will be a mirror held up to ourselves. This evolution passes either through the uses of AI — uses that could lead to strong relations (We need but look at what is happening with the social networks) — or through society (which will regulate or direct uses). Since we want to avoid concentrating all power in a single entity, let us ponder how to appropriately distribute the roles of AI and how to learn to have healthy relations to it without being captive to our misconceptions.