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A.S. – Artificial Stupidity

E.A. - Estupidez Artificial

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Abstract

The recent spectacular advances of the so-called Artificial Intelligence (A.I.) have made many people say that we run the risk of underestimating its capabilities, first of all its capability for being truly intelligent. Yet, that machines are not intelligent is no longer a philosophical thesis with some theoretical implications, but a technological fact with many practical consequences. What made it possible the success of the “new” A.I., indeed, was precisely the decision of abandoning any attempt to reproduce human intelligence, to create instead systems entirely based on statistics, which therefore should more properly be called A.S. (Automatic Statistics). So, the risk we run is that of overestimating their capabilities, which could seriously affect our society. Avoiding this risk depends on our intelligence, and not on the (imaginary) intelligence of the machines.

Keywords: Artificial Intelligence. Automatic statistics. Standardized language. Unique thought. Digital unsustainability. Technological subsidiarity.

Resumen

Los recientes y espectaculares avances de la llamada artificial intelligence (IA, inteligencia artificial) han hecho que muchos digan que corremos el riesgo de subestimar sus capacidades, en primer lugar su capacidad para ser verdaderamente inteligente. Sin embargo, que las máquinas no sean inteligentes ya no es una tesis filosófica con algunas implicaciones teóricas, sino un hecho tecnológico con muchas consecuencias prácticas. Lo que hizo posible el éxito de la «nueva» IA, en efecto, fue precisamente la decisión de abandonar cualquier intento de reproducir la inteligencia humana, para crear en su lugar sistemas enteramente basados en la estadística, que por lo tanto deberían llamarse más propiamente AS (automatic statistics, es decir, estadística automática). Luego el riesgo que corremos es el de sobrestimar sus capacidades, lo que podría afectar

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gravemente a nuestra sociedad. Evitar este riesgo depende de nuestra inteligencia y no de la inteligencia (imaginaria) de las máquinas.

Palabras clave: *Inteligencia artificial. Estadística automática. Lenguaje estandarizado. Pensamiento único. Sustentabilidad digital. Subsidiariedad tecnológica.*

Introduction

Recent spectacular advances in the field of Artificial Intelligence (AI), especially due to the creation of Chat-GPT, have made many people say that we run the risk of underestimating the capabilities of these systems, first of all their capability for being truly intelligent.

In this paper I discuss this issue, by examining the real way of working of new AI systems, which are no more based on a cognitive approach, but on a statistical one, and their probable development.

My conclusion is that the concerns about the possible rise of a super-AI capable of dominating or even terminating humanity are not justified, but all AI systems and, more generally, all digital ICT (Information and Communication Technologies) can actually be dangerous, although in a rather different way.

The real risk, indeed, is that of *overestimating* their capabilities, and this could lead to a serious pauperization of our culture and knowledge.

Artificial intelligence and human stupidity

«I'm not worried about artificial intelligence, I'm worried about human stupidity». How many times have you heard this statement? A lot, for sure. I have repeated it very often, too, and, in a sense, I still agree with it. But in another, deeper sense, now it seems to me a misleading (and therefore dangerous) commonplace.

What people usually mean by this, indeed, is that, while AI, as well as any other technology, is not dangerous in itself, it could *become* dangerous if we use it in a stupid way. Even Luciano Floridi, in his *The Ethics of Artificial Intelligence* (maybe the best book currently available, and surely the most complete, about this subject), says that «we should be worried about real human stupidity, not about imaginary artificial intelligence»¹.

Now, what *is* true in this statement is that there is no risk that soon or later a super-AI could appear, overcoming or even terminating all of us, since, as we'll see in the following, AI systems are not really intelligent. But what is *false* is that AI hasn't *any* intrinsic dangers.

Generally speaking, technology gives us the power to change the world, which can be used for good or for bad. And this is why technology is usually considered "neutral" in itself, while only its usage could be good or bad, depending on our choices.

On the contrary, we should recognize that technology in itself is *good*, because to have the possibility of doing good things is better than not to have it, despite it also enables us to do bad things (otherwise, for the very same reason, we should also conclude that free will is not good in itself).

But in our universe there are no free lunches. Every time we change the world, we *always* lose something; and this does *not* depend (only) on us, since it is (at least in part) unavoidable, because it is simply what “change” means. Furthermore, technology not only changes the world, but also *us*¹: and, once again, this does not depend (only) on us, since it is (at least in part) unavoidable, because what we are depends (at least in part) on the way the world we live in is. And it is not granted at all that what we gain will outweigh what we lose.

This is what I mean by “intrinsic dangers”. And this is why we should recognize that technology is *always* good in itself, but *never* in an absolute sense².

This implies that the problem with any new technology is not only *how* we should use it, but also (and maybe above all) *whether* we should use it, not only in general, but also in any specific application.

Unfortunately, during the last centuries an aprioristic faith in the intrinsic positivity of the progress, in any possible form, has become predominant. Nonetheless, despite its claim to be based on science, such a faith lacks any rational justification, as the present ecological crisis is clearly showing, so that it should be called more properly a superstition than a faith.

In recent times, an increasing number of people has begun to react stronger and stronger against it, but, unfortunately, usually in a way which is nothing but another form of superstition, symmetrically opposite, but equally irrational (e.g., radical ecologism, no-vax movements, conspiracy theories, etc.).

Even worse, in last 15 years, strongly fomented by the bad management of the financial crisis, of the Covid pandemic^{3,4}, and of the ecological crisis, such polarization between these two “opposite extremisms” has grown up more and more all over the world, completely reshaping the traditional political organizations⁵.

As a consequence, nowadays very few people are trying to evaluate new technologies (as well as any other problem) through a serious cost-benefit analysis (to be intended not only in the economic sense). Nonetheless, this is the only reasonable approach, since, as we as seen, *both* costs and benefits are *always* present and (at least in part) unavoidable in *any* technology. So, let’s apply it to AI.

But previously we should understand what AI really *is* (and, above all, what it is *not*).

Stupid is better

For a long time, the main problem about Artificial Intelligence seemed to be whether it was *really* intelligent, i.e., whether machines could *really* think. And to very most people it’s still so.

Now, this is understandable with respect to common people, who are strongly impacted by its spectacular advances and don't know how it works. But even most cultured people, including many AI experts, still think the same, despite they perfectly know (or *should* know) that it is not so. The success of "new" AI, indeed, is due precisely to the decision of *abandoning* any attempt of reproducing human intelligence.

This is not surprising. Many good arguments had been proposed in the past to show that AI intrinsically lacks a crucial factor of intelligence: intentionality, i.e., the capability for understanding meaning⁶⁻¹⁴. What *is* surprising is that so many people, for so a long time, had refused to accept this conclusion, despite its evidence.

But reality is more stubborn than humans, and AI designers finally had to admit that the cognitive approach was «a total failure»¹ and that stupid machines work much better than (supposedly) intelligent machines. So, nowadays the unique argument left in favor of the possibility of building a real AI is that a huge number of science fiction novels and movies take it seriously (including Spielberg's *A.I. – Artificial Intelligence*, which inspired me the title of this paper).

Artificial intelligence is not intelligent

New AI no more attempts to "understand" the stuff it is handling, but only cares to handle it "well", i.e., coupling every input with the correct output. Actually, it works just as John Searle's Chinese Room, where a person into a closed room gives correct answers to questions written in Chinese without knowing Chinese, simply following the instructions of a handbook written in a language known by this person¹¹.

As Floridi said, «AI succeeds in executing a task only if it can separate its execution from the need for being intelligent to execute it. [...] Therefore, AI is not about the capability for reproducing human intelligence, it's about the capability for not using it»¹.

It's surely paradoxical that the best argument ever *against* AI has become the best model ever *for* AI, but it is just so. And it means that AI is not really intelligent. Although many people still refuse to accept this conclusion, nowadays it is no more (only) a philosophical thesis, but (also) a technological *fact*.

Artificial intelligence is not artificial

In philosophical terms, what happened can be described as a shift from an intentional to an extensional approach. In fact, "new" AI doesn't choose the words it uses basing on their meaning, but on their statistical occurrence in certain contexts.

Once again, this is not surprising: as we have seen, intentionality, i.e., the capability for understanding meaning, is precisely what AI intrinsically *lacks*. So, if we want AI to work, obviously we

must make it work without the need for using intentionality. What *is* surprising, and sometimes even astonishing, is the *extent* to which this approach has proved to be able to work.

But... is it just so? Well, no.

After all, there *is* a difference between the Chinese Room and the new AI. In the latter, indeed, the “handbook” is not fixed, but continuously changing. This is the so-called “machine learning”, but, once again, the expression is misleading, since machines don’t “learn” anything (this would be, once again, a “cognitive” approach). What they *really* do is simply to change their choices according to the changes occurred in the data they are basing on.

Now, where are those data from? At the beginning, they are provided directly by the programmers, but later they come from the Web: and this is why we say that machines are autonomously “learning”. But, in reality, “from the Web” means “from the users”. And this means, in turn, that new AI is not actually doing without intentionality, since it is using real *human* intentionality (that of the users interacting with it through the Web) instead of imaginary machine intentionality.

In other words, nowadays what we call “Artificial Intelligence” is no longer a machine, but a complex system in which machines needs to continuously interact with human beings. Only when a certain phenomenon can be “gamified”, i.e., completely reduced to a finite set of rules, AI can become completely autonomous and progress on its own (and this is why AI is so good in playing games such chess or go). But in the real world a complete gamification can occur very seldom¹. In all the other cases, without the continuous contribution of the human users AI never could “learn” anything new.

So, not only Artificial Intelligence is not really intelligent, but it is not even really artificial.

Lost words

The main danger of AI is that it has an intrinsic tendency towards mediocrity, oversimplification, and, as its ultimate outcome, complete homologation.

Any automatic system shows such a tendency, since it is based on standardization, but in AI systems this is much stronger, because a statistical approach unavoidably tends to consider only the most widespread things, progressively ignoring the others, until they get completely forgotten. And this is precisely what’s already happening.

As I’ve personally verified, there are some English words which never appear in any proposal of translations made by Google Translate (GT), despite that they are included in its dictionary, as, e.g., “indeed”, one of the most “British” words, at such a point that, when in a novel written in another language the author wants to make it clear that somebody is an English gentleman, soon or later makes him say “indeed”. Despite this, and despite that if you search “indeed” in GT dictionary you find the word with all its grammatical and linguistic description, when making a translation the system *always* use “in fact” and *never* “indeed”. I’ve tried to change my texts in any conceivable

way, even translating them in Spanish and then from Spanish in English, but in vain: it is simply impossible to make GT use “indeed” in any possible translation of any conceivable text. And the same is occurring with other words, as anybody can easily check.

It’s important to understand that this does *not* reflect any change in the real world but is *completely self-referential*. Indeed, in the texts written by English speakers both terms were used, but GT always suggested in first instance the more common “in fact”. Since GT users usually accept the suggested translation, its statistical prevalence in the Web has increased more and more, until GT has passed from suggesting “indeed” only in second instance to not suggesting it at all. Yet, English speakers *still* use both terms. So, what GT *really* measures is not a change in their frequency in spoken English, but a change in their frequency in the texts translated in English with the aid of GT itself.

But there are also other bad tendencies following the same logic. For example, Word’s automatic corrector very often “suggests” you cancel some words because «more concise language would be clearer to your reader». But, actually, very often its suggestions don’t lead to a simplification, but to an *oversimplification*, which maybe would make clearer your text, but surely would make *less* clear its meaning.

This is due in part to the worldwide increasing ignorance, but in part also to the fact that oversimplification leads to a standardized language, which is good for AI programmers.

Unfortunately, a standardized language is not good *for us*, and not only for esthetic reasons. Anybody who has read Orwell should easily recognize that this process is just the same than that leading to the creation of the “New Speech” in 1984, although in our world it is not imposed by a unique power, like the Big Brother, but by many, very different and very often conflicting with each other, but all following a similar (and therefore convergent) logic. Therefore, also the consequences are likely to be the same.

Lost ideas

Even worse, what’s happening to words risks happening very soon to ideas, too, should statistical AI become the prevalent or even the only method of gathering information.

First of all, indeed, for these systems everything that there is not on the Internet simply *does not exist*. Someone could argue that this is already the case, but this is true only at a certain extent and only in certain areas: fortunately, there are still many people who read books or search for information on the field. But statistical AI cannot do this, even if it wanted to (or, more precisely, if its programmers wanted to). As a result, the (already insane) today’s pressure to upload anything to the Internet could become, in practice, a real obligation.

But even being present on the Internet won’t be enough. Statistical AI, indeed, will tend to consider only the most widespread opinions, so multiplying the articles on the Web about them (produced by the AI itself) and starting the same self-referential mechanism we have already seen as

for the words, until completely ignoring all the ideas not aligned with the more widespread ones. And, unfortunately, the most popular ideas are not necessarily the best ones.

Not all the users are equally active, indeed, and the difference essentially depends on two factors: having the technical skills to interact effectively with the Web and dedicating a lot of time to it.

The first aspect is already distorting, because technical skills are not uniformly distributed in the population but are much more widespread among those who work in certain sectors. But what is really decisive is time: and this is even more distorting, because, apart from (obviously) those who do it professionally, it is not the brightest people who usually spend the most time on the Internet, but the mediocre ones.

Intelligent people, indeed, usually have exciting and demanding jobs and don't have much time for the Internet. Furthermore, they understand that the idea that through the Internet one can get in touch with the whole world is an illusion. Only very few users, particularly skilled and particularly lucky, succeed in having a large audience, while the vast majority, no matter how hard they try, only speak to a few dozen people.

But, since this is not as obvious as it would be to organize a conference and find the room empty, not intelligent people usually don't realize it. Furthermore, many of them *want* to believe that they are speaking to the world. So, they spend a lot of time on the Web, what makes their favorite ideas have a lot of followers, despite that the single user has very few.

This creates a distortion of reality that is already having very serious effects, as can be seen from the growing diffusion of pseudoscience, conspiracy theories and fake news, but also ideological fanaticism of all kinds and, even more, pure and simple ignorance.

Now, this distorting mechanism would unavoidably be amplified more and more by an uncontrolled use of statistical AI systems, with the risk of leading to the creation not only of a "unique thought of the Web", but of a "unique thought of the Web worst users".

But that's not all.

Lost reality

Statistical AI, indeed, also tends to prevent the emergence of novelty: every new idea, in fact, is by definition minority at the beginning. We can try to correct this mechanism by inserting a function that considers new opinions regardless of their diffusion, but if they fail to quickly obtain a broad consensus (what is largely independent from their value) they will inevitably be rejected. In the long run, the risk is that this ends up making us lose our relationship with reality itself.

This is described in a really prophetic 1909 sci-fi novel, *The machine stops*¹⁵, by Edward Morgan Foster. He imagined a world where people live in small subterranean rooms, spending your whole

time in giving lectures to one another through a system very similar to our Internet (something very similar to our world during the Covid pandemic), while an automatic system called The Machine takes care of all your material needs. When even the last, few opportunities to see in person the external world are forbidden, here is what happens:

The development was accepted quietly [...] when they found that a lecture on the sea was none the less stimulating when compiled out of other lectures that had already been delivered on the same subject. “Beware of first-hand ideas!” exclaimed one of the most advanced of them. “First-hand ideas do not really exist. They are but the physical impressions produced by love and fear, and on this gross foundation who could erect a philosophy? Let your ideas be second-hand, and if possible tenth-hand, for then they will be far removed from that disturbing element — direct observation. Do not learn anything about this subject of mine — the French Revolution. Learn instead what I think that Enicharmon thought Urizen thought Gutch thought Ho-Yung thought Chi-Bo-Sing thought Lafcadio Hearn thought Carlyle thought Mirabeau said about the French Revolution. [...] You who listen to me are in a better position to judge about the French Revolution than I am. Your descendants will be even in a better position than you, for they will learn what you think I think, and yet another intermediate will be added to the chain. And in time” — his voice rose — “there will come a generation that had got beyond facts, beyond impressions, a generation absolutely colourless, a generation ‘seraphically free from taint of personality,’ which will see the French Revolution not as it happened, nor as they would like it to have happened, but as it would have happened, had it taken place in the days of the Machine.”

The science of non-linear (or “chaotic”) systems has studied in depth this phenomenon (usually called “lock-in”), where a little initial competitive advantage, which can be not very significative or even completely casual, can be progressively increased, without any real reason, by a spontaneous process of “bad” self-organization. And we have also learned that it is almost impossible that such a process could be reverted by the people who are involved in it, since for the individuals acting in counter tence would cause them serious problems without producing any significant change into the system¹⁶.

Even States, in some respects, may not be able to govern the situation without a global agreement, which at the moment appears unlikely, due to the military implications of AI systems.

However, paradoxically, an unexpected help could come to us from the last major problem afflicting these systems and, more generally, the entire digitization process: their intrinsic ecological unsustainability, which could force governments to reach an agreement.

Digital unsustainability

It is difficult to precisely evaluate what percentage of the global energy consumption is currently due and will be due in the future to the ICT, because the matter is very complex and currently available studies often consider different parameters. But one thing is sure: it is huge. *Very* huge. And it is going to become huger and huger in the future. And AI is a very relevant part of it.

Floridi's Digital Ethics Lab at the Oxford University has estimated that «a single training session of GPT-3 [the first version of ChatGPT] could produce 223.920 kg of CO² [...], i.e., as much as 49 cars in a year»¹. And to develop such systems millions or even billions of training sessions are needed, no to speak of the energy that will be needed when they become of common use. So, it's not surprisingly that, according to the International Energy Agency, in 2022 «the global energy consumption of the data centers [is] 1% of global electricity demand»¹.

It could seem not so much, but we must consider that this is just the beginning and «since 2012, the amount of compute used in the largest AI training runs has been increasing exponentially with a 3.4-month doubling time (by comparison, Moore's Law had a 2-year doubling period). Since 2012, this metric has grown by more than 300,000x (a 2-year doubling period would yield only a 7x increase)»¹⁷.

Nobody knows whether this trend will go on in the same way also in the future, but it is likely to be so, since, as we have seen, statistical AI progress is essentially based on the use of a continuously increasing amount of data.

The most reliable estimates^{18,19,20,21} of the 2022 overall ICT energy consumption converge towards a value of around 14% of the total (Floridi¹ says that it is 1,4%, but it seems a typographic error, since it would imply that in 2022 AI would have been 5/7 of the overall ICT consumptions, which is clearly absurd; furthermore, his estimate is based on the above quoted texts, which agree that the value is about 14%). that in 2030 it is likely to become more than 20%.

Andrae and Elder¹⁸ consider possible that in the worst scenario in 2030 ITC could even consume more than 50% of the electricity produced all over the world.

More optimistic estimates, as, e.g., Malmödin, Lundén²², depend on that they are not calculating ICT energy consumptions, but ICT carbon footprint, also making unreasonably optimistic assumptions about the energy amount which could be produced by renewable sources.

But things are even worse, since all that only refers to the ICT *usage*. In fact, «projections don't include the manufacturing contribution»¹⁹, which is *very* huge, since ICT devices have a much shorter life and a much higher energy density than any other kind of hardware (for example, the energy needed to produce a given mass of smartphones is 100 times greater than that needed to produce the same mass of cars²³).

Furthermore, current projections usually don't include the impact of the enormous increase of video conferences all over the world after the Covid pandemic, nor that of the upcoming adoption of the blockchain technology, already programmed by many States to carry out the tasks of the Public Administration in the next future, which are both *very* energy-intensive technologies.

It's true that AI in many cases could reduce energy consumption, helping us to make our systems more efficient, but we should be very careful not to overestimate this effect. Is it *really* likely to be greater than the increasing energy demand that the increasing AI use will cause (for sure, and not only hypothetically)?

Usually, experts say “yes”, but, unfortunately, all the AI system experts are also AI system *sellers*, or, in any case, people whose career, prestige, and prosperity depend on the growth of the AI system market. And it is not necessary to be a fan of conspiracy theories to agree with Floridi when saying that «the last people to whom we should ask whether something is possible are those who have strong economic reasons to grant us that it’s so»¹.

The truth is that nobody knows, but, at least in the worst scenarios, it doesn’t seem very likely. So, we should seriously consider even the possibility that the best thing AI could do to help us to reduce energy consumption and, therefore, global warming is just to do *nothing*, i.e., not to be used at all.

All that leads to a unique possible conclusion: *AI and, more generally, all the ICT “as we know them” are not ecologically sustainable* and will be even less in the future. Without substantial changes in their use, including serious limitations to their unnecessary use, the obsessively repeated slogan “digitalization and green economy” is condemned to remain just that: a slogan, and nothing more.

A “principle of subsidiarity” for technology

Circular economy is nothing but a dream, or, better, a utopia. No matters how strong we believe in it, our faith never will be stronger than the Second Principle of Thermodynamics, the most fundamental law of nature, which forbids a complete recycling of both energy and matter.

There are no cycles in our universe, but only spirals, all increasing their entropy with each turn. All we can do is making the spirals described by our production processes as similar as possible to perfect cycles, always remembering that we will never succeed completely.

Not even Nature, which has had billions of years more than us to attempt, has been able to create perfect cycles: living beings age and die, seas are getting more and more salty, the core of the Earth is getting more and more cool, the light and heat of the Sun a day will run out, etc. Nonetheless, natural spiral processes are much more similar to cycles than ours: so, we should imitate them as much as possible. And sometimes the best way of imitating Nature is not imitating it at all, but simply allow it to do its job.

This does not mean that we should not use technology at all, but it *does* mean that we should use it only when is really useful. In fact, if every time we discover a way to do something with a less consumption of energy and/or matter we use it not to do the same things in a more sustainable way, but to do much more things (most of which unnecessary and often even noxious), we’ll never be able to reach a real sustainability, no matter how much we could advance from a technological point of view.

An example both clear and significant is that of electronic money. Despite all the silly rhetoric on the so-called “dematerialization”²⁴, in fact, the truth is that electronic money is *much more material* than traditional money, given that for every 2 megabytes we send via the Internet we consume on average as much as a 60 watt light bulb kept on for an hour.

Traditional money, instead, requires a (very limited) consumption of matter and energy only at the time of its production, after which it can be used for decades consuming only the energy needed for its transport, which is a lot only over long distances, while over short distances it is negligible, since it corresponds to the muscular energy necessary to transport the wallet, open it, close it, and pass the money to our counterparts.

Therefore, making a bank transfer via the Internet is certainly better than physically sending money from one bank to another, but using a credit card to pay the restaurant or supermarket bill could be easier for us and allow greater control by the State (which, however, has also its negative aspects), but from an ecological point of view it is pure nonsense.

This is particularly evident in the field of ICT, but it holds in general, for *any* kind of technology. So, maybe it is time to enunciate a new principle: the Principle of Technological Subsidiarity. In analogy with the classic Principle of Subsidiarity, this Principle states that: *“A higher-level technology should not be used to do something that can be done by using a lower-level technology, or without any technology at all”*.

This is the only way we can hope to have a real ecological transition. If, on the contrary, we'll go on with our current ideas, which are almost all based on ideological assumptions, we'll end up making the situation worse and worse.

Artificial stupidity vs Automatic statistics

If now we come back to the problem of AI alone, we should recognize that its first (and worst) danger is represented by its very name. «Bad science, bad ethics», as bioethicists said, and it holds not only for bioethics: if we have a wrong concept of something, indeed, we hardly will be able to treat it properly.

So, the first precondition to have a reasonable approach to the whole matter is to use no more the expression “A.I.”, which is completely misleading, and therefore not only wrong, but really irresponsible¹ (as well as other related expression, as the above mentioned “machine learning” and “dematerialization”), since it prevents us from having a correct idea of what really the matter stands, and, therefore, from choosing the correct way of matching with it.

My proposal is to replace it with “A.S.”, which can stand for both “Artificial Stupidity” and “Automatic Statistics”. Which one of the two meanings will become prevalent depends on how we'll manage A.S. technology in the future.

Conclusions

A substantial part of our current activities is aimed to undo what we have done in the past: from plastic to CFC, from the “eco-monsters” to the space debris, from deforestation to the worldwide diffusion of personal cars, etc.

Maybe we'll be successful (maybe...), but surely it will be an enormous waste of time and resources, and even in the best scenario we won't be able to completely recover all the damages we have caused to ourselves and to our planet.

Why are we in such a situation?

Then answer is simple: because in the past we let ourselves be dazzled by the positive aspects of the “new technologies” of that time (which – be clear – were *real*), without considering the negative ones (which, unfortunately, were *also* real), believing that technological progress would have solved on its own any problem that it could eventually cause.

Now we have (more or less...) understood our errors, but, it seems, not their causes, since we are making the very same errors with the “new technologies” of this time, like AI and ICT.

We still have time (but not so much...) to change direction. But to do so we must use *our* intelligence, and not to expect a magic solution by the imaginary artificial intelligence of our machines.

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References

1. Floridi L. The ethics of artificial intelligence. Principles, challenges, and opportunities. Oxford University Press. Oxford, UK, 2022.
2. Agazzi E. Il bene, il male e la scienza. Rusconi. Milano, Italy, 1992.
3. Ricolfi I. La notte delle ninfee. Come si malgoverna un'epidemia. La nave di Teseo. Roma, Italy, 2021.
4. Musso P, Milone S, Parolisi L. Covid, la lezione del Pacifico. Come i paesi avanzati di Asia e Oceania hanno contenuto il virus e perché noi non li abbiamo imitati. Mimesis. Milano-Udine, Italy, 2022.
5. Ricolfi L. La mutazione. Come le idee di sinistra sono migrate a destra. Rizzoli. Milano, Italy, 2022.
6. Rosenbloom P. Elements of Mathematical Logic, Dover. New York, USA, 1950.
7. Kemeny G. A philosopher's look at science. Van Nostrand. Princeton, USA, 1959.
8. Nagel E, Newman JR. Gödel's proof. New York University Press. New York, USA, 1958.
9. Lucas JR. Minds, machine and Gödel. Philosophy 1961;36: 112-127.
10. Agazzi E. Introduzione ai problemi dell'assiomatica. Vita e Pensiero. Milano, Italy, 1961.
11. Searle, J. Minds, Brains and Programs. Behavioral and Brain Sciences 1980;3:417-457.
12. Gödel K. Some basic theorems on the foundations of mathematics and their implications. Gödel K, Collected Works, vol. III, Oxford University Press, Oxford, UK, 1986, pp. 304-333.
13. Agazzi, Evandro. 1991a. Operazionalità e intenzionalità: l'anello mancante dell'intelligenza artificiale. In Intelligenza naturale e intelligenza artificiale, ed. Biolo Salvino, 1-13. Genova: Marietti.
14. Musso P. Maths, God and the immortality of the soul. Agazzi E. (Ed.), Science, metaphysics, religion. FrancoAngeli. Milano, Italy, 2014, pp. 201-218.
15. Foster EM. The machine stops. The Oxford and Cambridge Review 1909;November:1-25.
16. Musso P. La scienza e l'idea di ragione. Scienza, filosofia e religione da Galileo ai buchi neri e oltre. Mimesis. Milano-Udine, Italy, 2019.
17. Amodei D, Hernandez D. AI and compute. 2018. Available at: <https://openai.com/blog/ai-and-compute/>. Consulted 10 Aug 2023.
18. Andrae A, Edler T. On global electricity usage of communication technology: trends to 2030. Challenges 2015;6(1):117-157.
19. Belkhir L, Elmeligi A. Assessing ict global emissions footprint: trends to 2040 & recommendations. Journal of Cleaner Production 2018;177: 448-463.
20. Jones N. How to stop data centres from gobbling up the world's electricity. Nature 2018;561(7722):563-567.
21. Hintemann R, Hinterholzer S. Energy consumption of data centers worldwide. Proceedings of The 6th International Conference on ict for Sustainability (ict4s). Lappeenranta, Finland, 2019.
22. Malmodin J, Lundén D. The energy and carbon footprint of the global ict and e&m sectors 2010-2015. Sustainability 2018;10(9): 3027.
23. Smil V. Energy and civilization: a history. MIT Press. Cambridge (Mass.), USA, 2017.
24. Smil V. Materials & dematerialization: making the modern world. Wiley. Hoboken, USA, 2013.