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REGIONE SICILIA
Assessorato Beni Culturali
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REGIONE SICILIA
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Ecology and Human Destiny in the Techno-Anthropological Circle

Dario Russo

1. The Three Factors

What are the three main ecological problems of our time? One might answer: climate change, biodiversity loss, and global pollution, including the accumulation of waste. These closely intertwined phenomena generate increasingly unmanageable economic and social crises. All of them are significantly aggravated by three factors: two widely recognised and one almost entirely overlooked. The two well-known factors are geopolitical competition and self-representational consumerism. The third – far less familiar – is what I call the techno-anthropological circle.

Geopolitical competition. The great powers, on which all states directly depend, struggle to reach agreement on common energy policies and the management of global resources. Each has developed its own civilization and its own worldview, often difficult to reconcile with the others. Bluntly put, these are empires – older or newer – that aim to project power. We can debate for hours about the rule of law, social justice, and universal rights – concepts largely derived from the Franco-American Enlightenment tradition – but the reality remains: geopolitical competition. If tomorrow a truly clean and perfectly renewable energy source were to emerge, produced on a global scale by a power capable of dominating its industrial supply chain – China in the case of solar panels, for instance – another power would immediately move to prevent that hegemony, with the United States first in line. Not for ecological reasons, but to avoid a strategic imbalance (*Il tempo della Cina* [*The Time of China*], Limes, 12/2025). The same applies to climate change. While many countries fear the melting of permafrost, in Russia some see opportunities: new arable land in Siberia, access to vast mineral resources and the opening of the Arctic route, which would connect the Atlantic and the Indo-Pacific far more rapidly (*A qualcuno piace caldo* [*Some Like It Hot*], Limes, 11/2024). When this happens – for it seems to be a matter of time – it will be a double disaster for us in the Mediterranean world, not only ecological, because the Mediterranean – which Braudel called «*espace liquide* [liquid space]» (1949/1999, p. 16) – will no longer lie at the center of trade routes. Hence Trump's interest in Greenland (*Morire per la Groenlandia* [*Dying for Greenland*], Domino, 2/2026). But this



Fig. 1



is not the focus of my contribution. I therefore leave readers to the excellent geopolitical journals now widely followed here in Italy as well, such as *Limes* and *Domino*.

Self-representational consumerism might seem, at first glance, a problem more within our reach as responsible individuals. After all, we could all avoid buying the latest iPhone model. But this is a simplification. The matter is far more complex, far more insidious. If we think about it for a moment, almost nothing we buy – at least in the West, and now increasingly across affluent parts of the world, from the Emirates to the Chinese coast – corresponds to what we actually need. Real, practical need. The greater part of our consumption corresponds instead to a symbolic need, a social need, one might even say a spiritual one. And this has enormous implications. Not only because the fundamental characteristic of human beings is the consumption of cultural practices, but also because our consumption habits are instruments of social relation: we communicate with our fellow humans – an activity we cannot do without – through products, services, and devices that reflect our aesthetic choices. It is no coincidence that Donald A. Norman, one of the key theorists of contemporary design, wrote a book significantly titled *Emotional Design: Why We Love (or Hate) Ev-*

everyday Things (2004). Note: we love or hate; we do not merely use or discard. In this book he identifies three levels of design's action: the behavioural, corresponding to use value; the visceral, which drives us to buy something without asking either what it is for or what it costs; and the reflective, by which we purchase what holds value for us. We find ourselves, then, in the realm of spirituality, however much this may coincide with plain marketing. Similarly, philosopher Fulvio Carmagnola, in *Il consumo delle immagini. Estetica e beni simbolici nella fiction economy* [*The Consumption of Images: Aesthetics and Symbolic Goods in the Fiction Economy*] (2006), has explained how products – material and immaterial – correspond today to embodied or imaginary symbols. And a form of product has spread that is distinctive enough to have become paradigmatic of our age: the hypercommodity (*ipermerce*), that is, the commodity elevated beyond itself (Carmagnola, Ferraresi, 1999). But this too is a relatively well-known phenomenon. We need not linger further, and may leave such delights to aestheticians, semioticians, and sociologists.

What I intend to address is the third factor aggravating ecological crises: the techno-anthropological circle; an interpretive framework for the human recently developed in philosophy by Maurizio Ferraris (2025a). It begins with nature, our animal soul; this is hybridized by technology; from there we ascend to the world of spirit (culture), distilling consciousness, which then descends back onto our nature in the form of reason [Fig. 1]. This expression – techno-anthropological circle – denotes a form of recursiveness and contains within it two key terms: technology and human. Both are, in fact, anything but uncontroversial. They can be interpreted in very different ways and carry behind them long and often conflicting theoretical traditions. It is therefore worth pausing on these two concepts – technology and human – and attempting to clarify, as far as possible, how they operate.

2. Technology and Its Discredit

Let me pose a question immediately: is technology a good or a bad thing? The question is not rhetorical. We live in an age in which decades of dystopian narrative – from Isaac Asimov's novels to *2001: A Space Odyssey* (Kubrick, 1968), from *Terminator* (Cameron, 1984) to *Blade Runner 2049* (Villeneuve, 2017) – have consolidated in the collective imagination a deep mistrust of the machine and of technological progress. This suspicion is not without historical and philosophical roots, but it risks leading to hasty conclusions.

Where does the discredit of technology that ran through the twentieth century come from? One significant moment is the dawning



awareness, during the First World War, of a destructive capacity never seen before: machine guns, lethal gases, military aviation, devastating bombs. For the first time, entire populations – civilians, not only soldiers – were drawn into the massacre. Technology revealed its destructive, almost demonic potential; it seemed to turn against humanity itself (Ellul, 1954).

Perhaps the most significant moment came after the Second World War. I am not referring to the two atomic bombs dropped on Japan – Hiroshima and Nagasaki – but to the Nuremberg Trials, where Nazi leaders loyal to Hitler were tried and convicted of crimes against humanity. Twelve of the twenty-two were sentenced to death, but not all. Among those who escaped the death penalty was Albert Speer: the Führer's architect and Minister of Armaments, whose contribution probably delayed Germany's capitulation by a couple of years. In his final statement of 31 August 1946, he said something disarming: he accepted his share of responsibility but added that Hitler's dictatorship had been the first to make full use of modern technical means to dominate its own people. Radio and loudspeakers had deprived eighty million people of independent thought; telephone, teleprinter and radio allowed orders from the highest authorities to reach every level, where they were executed without any criticism. Every individual thus became an uncritical functionary of a gigantic techno-bureaucratic apparatus. Technology, in other words, was not merely a tool: it had become the very device of domination. Here was the argument of a highly intelligent man trying to save his own skin: the greatest guilt falls not on men, but on technology.

This suggestion was taken up, philosophically unpacked, and elaborated by Martin Heidegger, first in a series of lectures delivered in Bremen in 1949, then in the essay *Die Frage nach der Technik* [*The Question Concerning Technology*] (1954), in which he formulates the idea of technology as «Entbergung [unconcealment]» (Heidegger, 1954, p. 87) that risks reducing everything to «Bestand [standing-reserve]» (Heidegger, 1954, p. 85). The idea proved compelling and spread rapidly in Italy as well, through philosophers such as Emanuele Severino (1998) and Umberto Galimberti (1999).

To say that technology is guilty is like attributing the murder of Julius Caesar to the daggers rather than to Brutus and Cassius. It is like trying to teach etiquette to cutlery. The morality of the table knife – if one can speak of such a thing – lies only in the fact that its tip is rounded. As a technical supplement, however, the knife is structurally extra-moral (Ferraris, 2025a, p. 39) [Fig. 2].

Artificial intelligence – the most advanced technology of our time – is potentially lethal, but not as such. Only in the hands, or rather

Fig. 2



under the fingertips, of those who use it maliciously. Admittedly, by its very nature, it is more dangerous than the atomic bomb. Not because it is more powerful, but because it is infinitely more accessible. The atomic bomb requires specialized infrastructure that no one can build at home; it is the preserve of a few powers that keep each other in check. Artificial intelligence, by contrast, is within everyone's reach, under countless fingertips, and is already acting – even now – in a military direction: the new wars are also fought with smartphones and drones (Ferraris, 2025a, pp. 37–38).

The problem, however, is not to catechize technology. There is already far too much ethics in artificial intelligence systems, as the flourishing philosophical debate on the topic demonstrates, emblematically represented by Luciano Floridi's *The Ethics of Artificial Intelligence: Principles, Challenges, and Opportunities* (2022). Nonetheless, if someone were to go to a library to find information on poisons with the intention of committing suicide, they might perhaps carry out their plan. If instead they were to ask ChatGPT “what is the best poison to commit suicide with”, ChatGPT would express regret at learning they were going through a difficult time and suggest speaking with a therapist or a family member.



Fig. 3



The problem, then, is not technology; it is the use we make of it: our stupidity, our shortsightedness, the gross errors we commit against ourselves. Returning to the techno-anthropological circle, the task is to activate consciousness and reason, orienting human nature toward ecologically compatible needs and aspirations, toward genuinely effective solutions that do not end up backfiring on us; as happens all too often in the manner of Wile E. Coyote, Super Genius [Fig. 3].

3. Why Us, and Only Us?

To understand how to activate this consciousness and reason, we must first take a step back and ask: why have human beings – and not other animals – developed sophisticated civilizations and technical tools capable of exponentially multiplying their natural capacities? Why us, and only us?

Of course, if we believe we were created in the image and likeness of God, the problem does not arise. We were perfect, in a state of nature, in the Garden of Eden. Then Eve saw fit to pluck the fruit of sin from the tree of the knowledge of good and evil – the same fruit that, not coincidentally, appears bitten on the back of millions of smartphones – and from there, let us say, the his-

Fig. 4



tory of humanity took a rather complicated and, one might add, irreversibly transformative turn [Fig. 4].

Or we might think that the human being is alien to this planet: the product of a bold genetic engineering experiment, whereby a particularly evolved ape – terrestrial – was hybridized with the genome of technologically advanced aliens, the so-called Travelers, or ancient astronauts. This thesis is advanced by certain authors of considerable appeal and by a great deal of science fiction (Sitchin, 1976; Biglino, 2011), starting from an observation that is in itself not unreasonable: the human being does not seem made for any habitat on Earth. If this were the case, the matter would be settled: we are not of this planet, and our intelligence would only confirm it.

If instead we hold that the human being evolved, like other animals, through a very long process of adaptation until becoming what it is, the question remains unanswered: why do we use glasses, video projectors, and armchairs, while other animals do not? Why have we developed this sophisticated and ever-growing multitude of techniques, while other animals have not?

One might then think that the reason lies in brain size: humans would simply be more intelligent because endowed with a larger



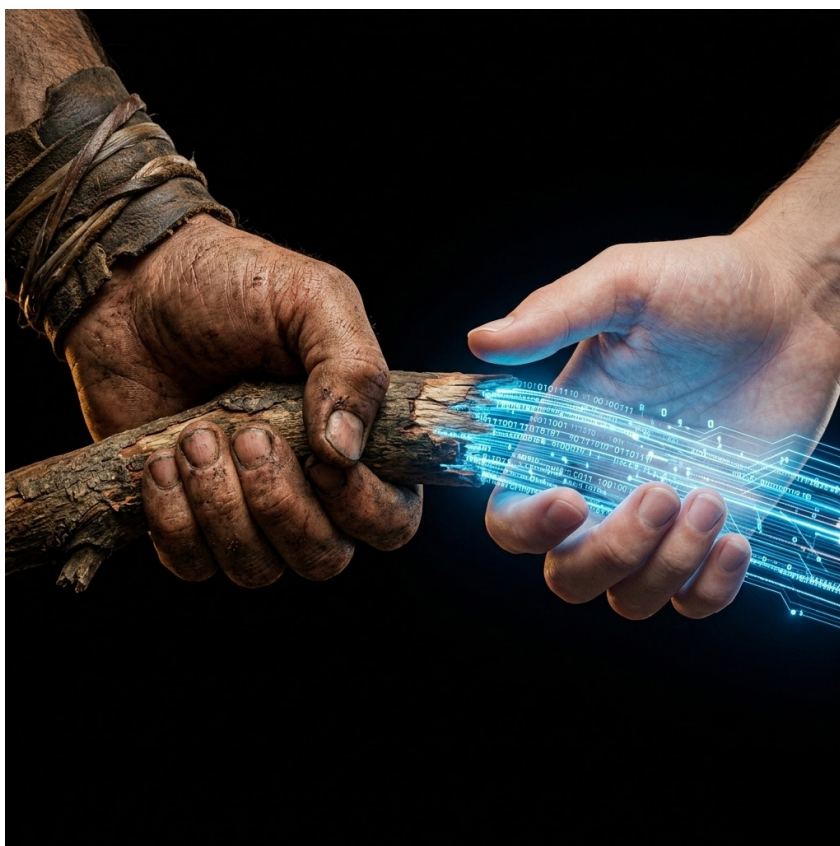
Fig. 5



and more powerful brain. But this is not the case. The bottlenose dolphin (*Tursiops truncatus*), the most studied dolphin species, has a brain mass greater than ours in absolute terms and only slightly inferior in relative terms; and yet its brain is capable of performances no human being could match. For example, differentiating the activity of the two hemispheres: while one keeps watch, the other dozes. A faculty that, on reflection, no one would mind having. So, if dolphins are so intelligent, why do humans hold conferences on dolphins while dolphins do not hold conferences on humans? Simple: we came out of the water; they did not. Unlike us, fins never developed prehensile capacity, which meant they could not manipulate objects, build tools, light a fire, sit around it to tell each other stories, invent myths...

Not only that. The dolphin is perfectly adapted to its environment. As is a tick, a spider, or a cat. The human being is not: it is a maladjusted, incomplete animal, «not yet stabilized as a type [das noch nicht festgestellte Tier]», as Nietzsche observed (1886/1968, p. 68). The featherless biped is born premature, slow to develop, and naturally ill-equipped: weaker, slower, and more fragile than most of the animals with which it must compete and from which it must defend itself, lacking fangs, claws, scales, armour, horns, or venom. An ideal candidate for species extinction [Fig.5].

Fig. 6



Here the real “miracle” occurs. Need drives the human being to compensate for its deficiencies through technical supplements. The first is most likely the stick: it digs, extends the arm toward forbidden fruit – long before Eve – and serves as weapon, club, or javelin. The stick, not the chipped flint, is probably the oldest technical supplement; it has simply not survived the millennia because the material is perishable. The chimpanzee also uses a stick to satisfy a need, but after using it, it leaves it there. The human does not: it takes the stick back to the cave and capitalises it.

It does the same with every other technical supplement, investing time in the construction of something useful, confident that the tool will repay it with interest. Thus, from a stick or a bone we arrive at the spaceship, as Kubrick recounts in *2001: A Space Odyssey* (1968); and then, looking to the most advanced technology of our time, at artificial intelligence [Fig. 6].

If the stick is the first material technical supplement, the first technique of all is most likely the upright posture: the very foundation of the human condition. Around two million years ago, the human being, unlike the chimpanzee, made a definitive choice for the upright position: the oldest technique of all, predating even



fire. Far from painless: the upright posture is fraught with grave consequences. The organs are compressed downward, the spine suffers, and women are forced to give birth after nine months rather than eighteen. Hence the prematurity of human infants, who require parental care for an incomparably longer period than other animals: a cat is self-sufficient at four months; a human is not at four years, nor at forty, nor, for that matter, at eighty.

And yet the upright posture brings decisive advantages. It facilitates communication: one need only think how complicated it would be to hold a conference on all fours. It frees the hands from their locomotor function, allowing them to specialize in the manipulation of objects, the direct premise of technology. It relieves the mouth of its prehensile function, making it available for the emission of sounds conducive to language. An exaptation thus occurs: the phenomenon whereby an organ develops a function different from the one for which it originally formed. The vocal cords, which originally served to prevent pieces of food that were too large from obstructing the airways, acquire an entirely new vocation.

What would a human being be in a state of nature? A non-human, a not-yet-human. The human infant, to become such, must be educated. Indeed – as Kant (1803) affirms – it is the only animal that can be educated; and must be. Others, at most, can be trained. But in doing so one alienates them from their own nature, adulterating them: the circus lion jumping through the ring of fire, the elephant playing sadly with a ball. The uneducated human, by contrast, is a contradiction in terms: he must pass through technology to develop himself. Technology, therefore, makes us human. Not the other way around.

A striking example. The Massaco – a very rare population of the Mato Grosso, in the Brazilian Amazon – have never had contact with other ethnic groups, at least as far as we know, since their ancestors crossed the Bering Strait to reach the American continent. Some would not hesitate to call them savages: they live naked. If a human being in a state of nature were to exist, could it be even less technological than a Massaco? We cannot approach them – making one's way into the Amazon rainforest would not be prudent, and they would not take it well – so we can only observe them from above, at a distance. And yet: they are indeed naked. But all of them – men and women, adults and children – grip a stick, that is, a technical supplement. Furthermore, they walk on two legs and they speak – which is by no means obvious – meaning that someone taught them to do so, having in turn learned from someone else: cultural transmission. Without it, one might doubt that their ancestors would ever have crossed the Bering Strait. The

Fig. 7



moral: even the least technological human being that could exist is, as a human being, technological. And it could not be otherwise.

This may seem obvious, but it is not: at the origin of the human there is a technical supplement, in this case a stick. The riddle that the Sphinx poses to Oedipus recalls this with great effect: what animal walks on four legs in the morning, two at noon, and three in the evening? The human, obviously. Which means that the human being incorporates technology – the stick – already at the ontological level: the stick – that is, technology – forms part of the very definition of the human and distinguishes it from all other animals. It is indeed the only one that not only uses tools but is also able to capitalize them. It is no coincidence that the word “imbecile” derives from the Latin *in baculum*, meaning literally “without a stick”, that is unprovided, ill-equipped. In short, the human animal is not the one that uses tools; it is the one that cannot exist without them.

The thinker who most strenuously argued that the human being was good, pure and happy in a state of nature, contentedly basking in it, and was then – for some reason – corrupted by technology and society was Jean-Jacques Rousseau. Memorable are the words with which Voltaire commented on the *Discours sur*



l'origine et les fondements de l'inégalité parmi les hommes [*Discourse on the Origin and Foundations of Inequality Among Men*] (1755): «On n'a jamais employé tant d'esprit à vouloir nous rendre bêtes; il prend envie de marcher à quatre pattes quand on lit votre ouvrage [Never has so much ingenuity been employed in trying to make us all into beasts; reading your work makes one want to walk on all fours]» (Voltaire, 1755/1823, p. 47). Voltaire adds, however, that having lost this habit for some sixty years, he does not feel like taking it up again. But it does not end there: it would be very pleasant – Voltaire continues – to go to America and fraternize with the indigenous populations of Canada, but his poor health counsels against straying too far from European doctors. Voltaire's sarcasm ultimately says something very simple: returning to walking on all fours means slamming the door in the face of humanity [Fig. 7].

4. The Techno-Anthropological Circle

At this point it is worth asking: how does the techno-anthropological circle concretely work? We are born. We are newborns: we know nothing, we have no values or feelings; only drives, emotions, sensations, perceptions, exactly like other animals. And yet we evolve spiritually. Why? Because, as Erik Satie observed in 1924: «Je suis venu au monde très jeune dans un monde très vieux [We are born very young into a very old world]» (cit. in Lajonie, 1985, p. 373). That is: we are immersed from the very beginning in the techno-anthropological circle. At first, we are governed by elementary drives alone: eating and sleeping. Then come coloured ribbons, puppets, games, fairy tales, comic strips, cartoons. We begin to elaborate ideas, to transcend our first nature – the animal one – progressively assuming a second, founded on technology, culture, and civilization. Whether we like it or not [Fig. 9].

And to begin with, we truly do not like it. The education we undergo is a long and anything but spontaneous affair: we must learn to sleep at night, to eat at regular hours, to walk, to speak. The education of a human infant is more complex than the training of an astronaut! This is made possible – and necessary – by a remarkable characteristic of *homo sapiens*: neoteny, that is, the retention of juvenile traits in the adult, which manifests itself in a prolonged period of growth. Compared to other animals, we remain “children” for an exceptionally long time, which allows us to explore learning in the most varied and not strictly programmed forms: an evolutionary window without precedent in the animal world (Lorenz, 1963). It was by no means easy to acquire what we today take for granted; and had no one taught us, we would never have learned it: we would not speak and would still be groping about somewhere in the world. Never mind the Massaco.

The reasoning holds. The human develops technology to compensate for its natural inadequacy, capitalizes a growing quantity of technical supplements and increases its power, far surpassing all other animals, to the point of becoming a danger to a great number of species, and for some time now to itself as well. We will return to this point. First, however, it is worth asking: what does all this have to do with spirit? What does spirituality have to do with technology? Why should the ensemble of technical supplements be the very condition for the emergence of the world of spirit, from which consciousness and reason descend?

The world of spirit is the sedimentation of the prolonged encounter, over very long stretches of time, between the animal soul and the panoply of technical apparatuses – the human capital that defines our second nature. Spirit is not the fruit of a Pentecost, nor the Creator's trademark, nor a set of faculties deposited in us by a nature that would have equipped us with neurons for language, literature, cordiality, and the bump for mathematics. It is a hybridization. Without technology it is not possible to access the spiritual level. We are what we are because we are what we inherit from learning and culture, which is the sedimentation of technologies in becoming. Where does that delicate monster we call "consciousness" come from? From the hybridization of soul and automaton and the consequent birth of spirit; not like a mushroom springing from the ground, but from language, education, rites, and libraries.

When we speak of technology, moreover, we are not referring solely to the computer, the wrench, or artificial intelligence. Technology is what the human produces by hybridising its own first animal nature – a purely theoretical condition, that of the human in a state of nature –: everything that would not exist in nature without human ingenuity driven by need. This encompasses not only material objects, such as the mobile phone or the microphone, but also immaterial ones, such as the passport or the law: social objects of which no other animal would know what to make, from which we distil values, aspirations, and worldviews. To put it in Ferraris's words: technology «non è solo picchiare su un chiodo per appendere un quadro, ma dipingere il quadro, e poi tutto ciò che compone lo spettacolo di arte varia dell'umanità: maledire, benedire, promettere [is not only hammering a nail to hang a picture, but painting the picture, and then everything that composes the variety show of humanity: cursing, blessing, promising]» (Ferraris, 2025a, p. 157).

From the world of spirit, we distil consciousness and reason, understood as the faculty of attributing purpose. Thus, we attribute meaning to things in a world around us that is, by its very nature, chaotic and objectively meaningless. The meaning we attribute



varies from culture to culture and from individual to individual within the same culture. Because there is in it a subjective element – significant to varying degrees – not reducible to perfectly repetitive and immutable patterns. Spirituality is simultaneously moral and amoral: it is not in itself either good or bad; it ranges from pure philanthropy, the desire to care for one's neighbour, to the mafia association, up to genocide. It forms in the human mind when, mastering increasingly complex techniques during the long phase of education and learning, one begins to savour adolescence. «È in questo contesto e sotto questa pressione che potrà coltivare aspirazioni come diventare “qualcuno” (ammiraglio o pornostar, influencer o cartomante, stalker o eremita), compiere viaggi esotici, vestirsi appropriatamente: tutte ambizioni inconcepibili per un castoro, e invece sin troppo prevedibili in un umano [It is in this context and under this pressure that one may cultivate aspirations such as becoming “someone” (an admiral or a porn star, an influencer or a fortune teller, a stalker or a hermit), undertaking exotic journeys, dressing appropriately: all ambitions inconceivable for a beaver, and yet all too predictable in a human]» (Ferraris, 2025, p. 164). Spirit thus reacts back upon the first nature, determining new purposes and new needs, satisfiable through ever more refined technical supplements.

The circle entails that, once a stage is reached, one feels the need to access the next. If someone manages to make a fur coat to protect themselves from the cold, they must then refine the techniques of hunting and hide-working, so as not to be the only – and hated – fur-wearer on the planet. And perhaps, centuries later, their descendants, having developed new sensibilities, will have to resort to synthetic furs, which in turn imply further knowledge and further techniques. The techno-anthropological circle turns in one direction only: it is not possible to go back by reducing one's technical capacity. That would run counter to the second nature: the one that emancipates us from the animal world and characterizes us as human beings.

And it is here that design may intervene, called upon to give technology an ethical direction in an ecological key. «È quanto meno opinabile» – Ferraris observes (2025, p. 279) – «che l'evoluzione segua una marcia trionfale, e l'unica consolazione è che l'involutione e la decrescita sono ancora peggio [It is at the very least debatable that evolution follows a triumphal march, and the only consolation is that involution and degrowth are even worse]». But to understand concretely in which direction to orient this evolution – and why the techno-anthropological circle risks backfiring on us precisely on the ecological front – it is worth considering two emblematic cases: the automobile and plastic, often cited as the principal agents of planetary pollution.

5. Two Emblematic Cases: The Automobile and Plastic

Let us begin with the automobile: a curious case of the heterogeneity of ends. This vehicle took shape at the end of the nineteenth century, when a far from trivial ecological problem arose. The streets of major American cities were an open sewer: submerged in manure, constantly traversed by horse-drawn carriages whose “emissions” had come to be regarded as a serious public health problem. The health authorities of the largest American cities actively encouraged the replacement of horses with automobiles; and relative to this sanitary urgency, the difference between an electric car and a petrol car seemed entirely secondary (Nosengo, 2008, p. 85). For ecological reasons, then, the automobile was promoted; and it effectively cleaned up the cities. And yet, a century later, that same automobile would become one of the principal defendants in the environmental disaster it had been meant to avert.

But the curious case of the automobile is less paradoxical than that of plastic: a material that over time has taken on such unforeseeable contours as to lead us to turn to Roberto Mercadini, a theatrical storyteller who makes paradox his privileged instrument, and to his monologue *Attenti agli androidi* [*Beware of Androids*] (2018).

In 1492, when Christopher Columbus set sail from Palos heading west, he was firmly convinced he would reach Asia. Instead, it turned out that between Europe and Asia lay another continent: America. This is precisely the discovery of America.

In the same way, if today we were to set sail from the Californian coast heading west, we might expect to reach Asia. Instead, between America and Asia a new “continent” has been discovered, since the 1980s. It is called the Great Pacific Garbage Patch. An immense island – roughly six times the size of France – made of refuse, mostly plastic, kept trapped and relatively compact by the currents of the Pacific subtropical gyre. A continent no one would ever have wished to discover.

This is not merely a matter of the destruction of oceanic flora and fauna, intolerable as it is. Our very survival is at risk: not that of the planet, which can get along perfectly well without us, but that of human beings as a species. And this is not a natural calamity: it is entirely of our own making, the fruit of technology and industrial production. How could we have let this happen?

The paradox of this story lies precisely here: it all begins as a game; or rather, because of a game: billiards. We are around the



Fig. 8



middle of the nineteenth century, when billiard balls were made of ivory, obtained from elephant tusks. Their production entailed a considerable cost, not only monetary but ecological: the killing of approximately 12,000 elephants every year. So, an American billiard manufacturer offered a prize of 10,000 dollars to the chemist who could synthesize an alternative material. The result: in 1869 celluloid was produced, the first plastic material in the world. Yes, plastic was invented for ecological reasons.

And then? Then it was all an enthusiastic and irresistible progression. In 1907 Bakelite was born; in the 1920s, polyvinyl chloride, the so-called vinyl, used to make records; in 1933, polyethylene; in 1935, nylon (polyamide); then polyethylene terephthalate (PET), used to make plastic bottles; in 1954, polypropylene, and so on. By the 1950s we were already in the age of plastic, just as it was entering Roland Barthes's *Mythologies* (1957), proliferating and transforming itself into the most astonishing objects, all wrapped in that «étonnement perpétuel [perpetual wonder]» one feels observing them (Barthes, 1957/2014, p. 188) [Fig. 8].

In a very short time, plastic was used to reconfigure a great number of products, contributing to a profound renewal of lifestyles. It insinuated itself into homes and utility spaces, initially taking the

Fig. 9



form of modest everyday objects, before colonizing entire living rooms and giving free rein to ever less conventional forms: from the *Safari* sofa (Archizoom, Poltronova, 1966) to the far better known *Sacco* Zanotta (Gatti, Paolini e Teodoro, 1969), on which Paolo Villaggio reclines in *Fracchia la belva umana* (Parenti, 1981). Without plastic – expanded polyurethane in particular – neither Pop nor Radical design would exist. It was plastic – not sinuous steel nor noble marble – that conferred auratic surface on the polychrome Memphis furnishings, such as the *Carlton* bookcase (Sottsass, 1981), later auctioned for several tens of thousands of euros (cf. Russo, 2012, pp. 153–182).

There is no doubt that plastic is a precious material: it should be used with care, not squandered. No other material possesses a comparable metamorphic capacity, and it is so malleable that it can give form to human dreams. Yet these dreams have turned into nightmares, in a sea of troubles that founder on that same immense island of refuse (Gabrys, Hawkins, Michael, 2013). How is it possible that a material conceived for ecological purposes is today responsible for a planetary disaster? The answer is very simple, as Mercadini (2018) observes: human stupidity. How else to define a production system in which plastic – a material that takes centuries or millennia to decompose – is used to make disposable objects? [Fig. 9] It would be like inventing a fluorescent fabric



Fig. 10



and then using it to make camouflage suits. Equally stupid, if less paradoxical, is the behaviour of the individual who, after using a plastic object, instead of placing it in the recycling bin, prefers to throw it in the street, in parks, in the sea. Simply because it is more convenient.

Therefore, anyone who thinks the plastic problem can be solved by calling for its abolition should reflect on one point: the problem is not plastic itself, but the wrong use we make of it. We are the cause of the ecological disaster in which we find ourselves immersed, not plastic. We, and our stupidity. Mercadini (2018) concludes: it is perfectly fine to find new materials to replace plastic, cleaner forms of energy. But we must remember that alongside this technological evolution, we need to bring about an intellectual, mental, cultural, ethical evolution. Otherwise, these technologies will be nothing but new cyborgs ready to sweep us away. Otherwise, we are merely designing our own catastrophe. Otherwise, we are taking aim to deliver the shot that will sink us. [Fig. 10]

The techno-anthropological circle is therefore not a condemnation, but a responsibility. The three ecological problems with which this contribution opened – climate change, biodiversity loss, global pollution – are not the poisoned fruit of technology as such, but of the use we make of it: shortsighted, wasteful, lacking the

long-term vision that the circle itself would make possible. Human destiny is not written in technology, but in the consciousness and reason that emerge from it. It is up to us to decide whether to use them.

Notes

1 This liquid space, in more recent geopolitical analyses ((*L'Italia al fronte del caos. Il Medioceano conteso erode la Penisola* [Italy on the Front Line of Chaos: The Contested Medioceano Erodes the Peninsula], *Limes*, 2/2021), takes on the term *Medioceano*, meaning not (so much) a medium of connection between the land-masses of Europe, Asia, and Africa (*Mediterraneo*: literally, the sea in the middle of the lands) but a medium of connection between the oceans, the Atlantic and the Indo-Pacific (*Medioceano*: literally, the middle ocean).

2 Design objects are configured as goods whose primary destination is rhetorical and social, goods that are simply embodied symbols (Carmagnola, 2006): material forms capable of condensing and conveying cultural meanings. Carmagnola re-reads this symbolic dimension in the light of the imaginary, showing how the value of objects resides in their capacity to activate shared narratives, expectations, and desires. The embodied symbol thus becomes a «simbolo immaginario [imaginary symbol]» (Carmagnola, 2006, p. 5): a node in which the object inserts itself into what the author defines as a *fiction economy*: an economy founded on the production and consumption of images, stories, and symbolic values.

3 The hypercommodity (*ipermerce*) is thus configured as a highly desirable consumer product: a commodity that transcends itself, exceeding its use function and its material status to become charged with values, expectations, and narratives capable of shaping and orienting desire.

4 Albert Speer's final statement at the Nuremberg Trials (31 August 1946) is reported in his autobiography (Speer, 1969).

5 The example is taken from Ferraris, 2025b.

6 With the upright posture, gravity acts vertically on the entire column of abdominal and pelvic organs. This explains the frequency of prolapses (uterus, bladder, rectum), inguinal hernias and prostate problems: pathologies extremely rare



in quadrupeds, where the weight of the organs is distributed horizontally and supported by the ventral abdominal wall. The spinal column of our ancestors was arched, as in quadrupeds, structurally suited to bearing a horizontally distributed load. With the upright posture, it becomes a vertical load-bearing column, forced to withstand stresses for which it was not originally designed. Hence its “S”-shaped curvature (lordosis and kyphosis), which distributes loads more effectively but nonetheless generates hernias, protrusions, sciatica, and arthritis: pathologies almost exclusive to the human species. If we measure the degree of neurological and motor development with which other primates are born, an “equivalent” human infant should remain in the uterus for approximately 18 to 21 months. The zoologist Adolf Portmann spoke of an “extrauterine year”: the first year of a newborn’s life would still be a gestation, only external. The problem is that the upright posture has narrowed the female pelvis – for biomechanical reasons related to bipedal locomotion – while the human cranium has enlarged enormously (Portmann, 1944). Birth after nine months is therefore an obligatory evolutionary compromise: if it lasted longer, the foetal skull would be too large to pass through the birth canal. The result is a neurologically immature infant that completes its development outside the womb.

7 Exaptation applies to living organisms and technical apparatuses alike. It accounts for both the evolution of dinosaur scales into bird feathers and that of the telephone (a machine for speaking) into the mobile phone: a multifunctional object, far more than merely a speaking device, even *smart*, that is, intelligent. Just as dinosaur scales had no purpose related to flight, so the mobile phone was not designed to incorporate a constellation of entertainment-related activities such as photography, music, and social sharing; cfr. Ferraris (2025a, pp. 102–107, 208–210).

8 The Sphinx’s riddle does not appear explicitly in Sophocles’ *Oedipus Rex*, which presupposes it as known to the Athenian audience. The canonical version is transmitted by Pseudo-Apollodorus, *Bibliotheca*, III, 5, 8.

9 The etymology of “imbecile” is nonetheless contested. Alongside the derivation from *in baculum* (“without a stick”), some scholars propose *in bacillum* (“without a small rod”, with reference to physical weakness) or a derivation from *beccus* (beak, with reference to the mouth). The Treccani dictionary accepts the derivation from the Latin *imbecillus*, composed of *in-* (privative) and *baculum* (stick), in the sense of “one who cannot hold a stick”, hence weak, incapable. The modern meaning of “person with cog-

native deficit” is relatively recent and dates to nineteenth-century psychiatry.

10 The fur example (animal/synthetic) is taken from Ferraris, 2025a, pp. 127–128.

11 The case of plastic – framed within the history of design and developed from Mercadini’s creative prompt – has been addressed previously by the present author in a text not coincidentally titled “Il paradosso della plastica” (Russo, 2021, pp. 43–53).

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Captions

Fig. 1: The techno-anthropological circle – Nature. Technology. Spirit. Reason. And again.

Fig. 2: The knife is not to blame.

Fig. 3: The new wars are also fought with drones. The difference from the atomic bomb? Anyone can get it.

Fig. 4: Wile E. Coyote, Super Genius – technology turned against those who use it.

Fig. 5: The forbidden fruit, today.

Fig. 6: No fangs, no claws, no venom, no horns – an ideal candidate for extinction.

Fig. 7: Technical supplement – from the stick to AI.

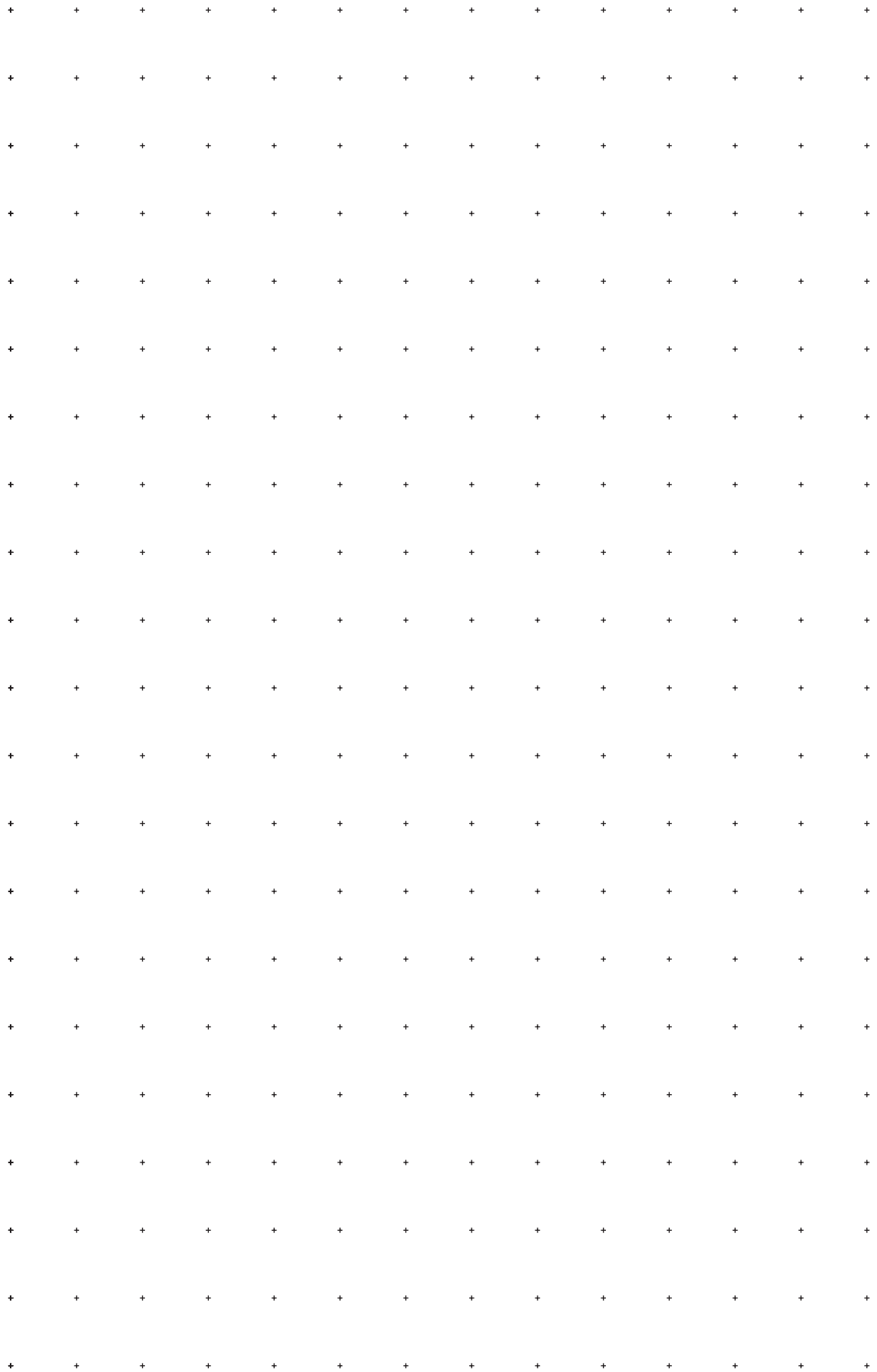
Fig. 8: Voltaire, having read Rousseau, gets down on all fours – to the great satisfaction of the dogs present.

Fig. 9: Perpetual wonder.

Fig. 10: Everything around decomposes. The cup does not – it resists for centuries.

Fig. 11: The shot that will sink us.





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