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Technology Serving Humanity: Philosophical and Ethical Reflections

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The myth of Prometheus illustrates well the problem of the human power to make artifacts. A brief passage related by Plato in his dialogue *Protagoras* points out this dilemma. The last line probably describes our problem in the most accurate way:

> Thus did Epimetheus, who, not being very wise, forgot that he had distributed among the brute animals all the qualities which he had to give – and when he came to man, who was still unprovided, he was terribly perplexed. Now while he was in this perplexity, Prometheus came to inspect the distribution, and he found that the other animals were suitably furnished, but that man alone was naked and shoeless, and had neither bed nor arms of defence. The appointed hour was approaching when man in his turn was to go forth into the light of day; and Prometheus, not knowing how he could devise his salvation, stole the mechanical arts of Hephaestus and Athene, and fire with them (they could neither have been acquired nor used without fire), and gave them to man. Thus man had the wisdom necessary to the support of life, but political wisdom he had not; for that was in the keeping of Zeus, and the power of Prometheus did not extend to entering into the citadel of heaven, where Zeus dwelt, who moreover had terrible sentinels; but he did enter by stealth into the common workshop of Athene and Hephaestus, in which they used to practise their favourite arts, and carried off Hephaestus' art of working by fire, and also the art of Athene, and gave them to man. And in this way, man was supplied with the means of life. But Prometheus is said to have been afterward prosecuted for theft, owing to the blunder of Epimetheus[1].

Technology is a remarkable gift, but it needs wisdom to manage it well. Its handling has become a real drama, if not a tragedy, in our days. In this paper, we will try to understand how we arrive at our current predicament and offer some orientation regarding how to administer technological power appropriately. Without any pretense of originality, we draw on the thoughts of three significant philosophers—Descartes, Heidegger, and Jonas.

Ancient Greek philosophers make a fundamental distinction between nature and human work. The word *physis* denotes nature while the term *poiesis* (from *ποιέω*, to make) designate human labor.

1. Greek philosophy

The Greeks understand nature as an explanation of the progressive changes of a subject as it develops towards some specific end. For example, an acorn becomes an oak tree. As Aristotle sees it, *physis* is an internal principle of change of a living thing that explains its capacity to undergo alteration while retaining its specific identity (*Phys.* 193b21-22). In *Physics* II.1 he differentiates natural objects from artifacts. Having a nature means having an *internal principle* of change that belongs to the thing in virtue

of itself (192b21-22). This internal law distinguishes plants, animals, and humans from non-natural artifacts which lack such a principle. In a word, *physis* is that which emerges from itself.

When Greek philosophy reflects on nature, it *discovers* that the structure of nature presupposed within itself an embedded essence, idea, or meaning. The essence of natural things includes a purpose, as the essence of artifacts, we will see in a moment. Reality is full of meanings and intentions. This conception of the world gives us a vision of humanity: humans are not masters of nature, but labor with its potential to bring meaning to his surroundings. Our knowledge of the world and our action are not arbitrary but are in some sense a completion of what lies within nature.

Poiesis, on the contrary, is the origin of artifacts. They are things that do not have an internal principle like *physis*. They are the products of art, crafts, and social conventions. The knowledge to produce these artifacts is called *techne* (*ἔχνη,* literally means craftsmanship), which is the origin of technology. But this science also includes a purpose and meaning for the artifacts it produces. So *techne* and knowledge come before the artifacts and informs us the proper way to make them.

In effect, both *physis* and *poiesis* have a similar structure. There are meanings in things!

The change of perspective with Descartes

Modern philosophy abandoned this conception of nature. One direct push in this direction came from Descartes, who has a very different understanding in the *Discourse on Method.*

Descartes divides man into mind and body, with no connection between the two. Likewise, the world is also radically dualistic. The human body operates mechanically like a clock which we can analyze bit by bit. The same applies to nature formed by simple structures building up to ever more complex systems. As one author explains:

> This metaphor evidently encourages a particular relationship between human beings and physis, giving the intelligent mind a preeminent position and charging it with the responsibility for finding out about nature. Gone is the traditional sense of human beings as privileged participants in nature, with responsibilities for respecting nature either as divine (the classical pagan view) or as a uniquely mysterious creation by God (the traditional Christian view). Descartes' picture of nature provides a license for human beings to probe, explore, experiment—in a word, to tamper with—nature in the search for knowledge, without having to worry about any spiritual qualities in the objects under investigation, because everything outside the human soul is a machine. This metaphor, more than anything else, accounts for the astonishingly aggressive attitude Western science quickly developed towards nature[2].

According to this point of view, nature loses its characteristic of wonder while usefulness and dominion take on the front stage. We set aside the moral framework that guides *physis* and its excellent *use* becomes the only criterion. We find meaning and purpose of things in what we create and not what we discover. We no longer ask *what* it is but *how* it works. We are not at home in the world; we must conquer it.

In this way, we feel that we are the owner and lord of nature, making us almost godlike. It is the beginning of the myth of endless progress. Descartes already suggests this with his hypothesis of the world's evolution.

2. Martin Heidegger

German philosopher Martin Heidegger expresses some of the consequences of this change of perspective and analyzes some of the dangers that accompansy this shift[3].

Heidegger begins by distinguishing the common understanding of technology which at first sight seems unproblematic, and then the

more profound understanding that reveals its dangers.

The ordinary person sees technology as a complex of contrivances and technical skills, put forth by human activity and developed as means to some ends. Technology appears passive itself; indeed, we perceive ourselves to be the ones who activate it. In this sense, technology presents no significant threats. We just need to use things wisely, like what Plato says in the Promethean myth. Besides, if a technical application is *useful* for so many commodities of our lives, how dare we speak of the need for morality, categorical imperatives, or control.

In modernity, technology does not have real essences inscribed in the universe as the way the ancients comprehend *techne*. It appears to modern man as purely instrumental, and therefore value-free. It does not respond to some internal purposes but is only used as a means, serving the individual goals we choose. Means and ends are separate. I make guns, and I'm not worried about who use them and why they need them. As the saying goes, "Guns don't kill people, people kill people." Technology as such is neutral.

The consequences are many. Nature becomes as a *resource* waiting for transformation into whatever we desire. We conceive the world mechanistically and no longer teleologically. We can control and use nature which is without any internal purpose. Besides, as Descartes proposes as a hypothesis, progress is limitless.

Furthermore, we can no longer inquire about direction. We cannot decipher where we are going anymore since everything now is a subjective, arbitrary choice[4].

If technology did no significant damage, we could allow this situation to continue without protest. Today we are more aware of where it can bring us.

Where can we go from here? The following table illustrates this dilemma.

	Technology is autonomous.	Technology can be humanly controlled.
Technology is neutral, with a complete separation of ends and mean.	**A. Determinism =** Modernization theory	**B. Instrumentalism =** Liberal faith in progress
technology is value-laden and means a way of life that includes the ends.	**C. Substantivism =** Ends and means linked in a system	**D. Critical theory =** There is a choice of alternative ends-means

Box B illustrates the standard view today of instrumentalism. Technology is value-free. We can control it and lead it to satisfy our needs.

Box A is a deterministic view. The driving force of history is through technological advance, which continually satisfies some new feature of our nature. It is not a question of adapting technology to us but of us adapting to technology.

Box C considers the case where technology is given a value and is used to foster such a benefit. In other words, a substantive value is attributed (e.g., religion). It contrasts with the other positions which consider technology as an instrument (like money, although it can also acquire substantive value). The substantive thesis says that once we accept technology, we take on a way of life. It is not just instrumental in our values. Technology carries with it specific benefits that have the same exclusive character as religious beliefs. Should a society go down such a path, it becomes a technological society dedicated to values such as efficiency and power.

Box D is what we consider the correct view. Technology does not determine us; we have choices and can take one path or another.

Heidegger sees in technology a very substantive reality (Box C). Accordingly, we erred grievously if we mistake technology for its weak, ordinary meaning. I fools us in the worst possible way when we regard technology as something neutral.

On the contrary, the essence of technology reveals something far from neutral or merely an instrument of human control. It is an autonomous organizing activity *within which humans themselves are organized*. If technology were a means to an end, everything depends merely on the correct manipulation of technology. But Heidegger offers another perspective. If *techne* is no longer just a means, who has the will to master it? How, indeed, can we control something that encompasses us with its organizational activity?

There is an underlying correctness in our view of technology as an instrument. As we have mentioned, the word proceeds from t*echne* which belongs to the general notion of bringing-forth, *poiesis*. *Techne* and *epistéme* are linked together, the latter refers to that which comes forth out of its nature, and the former is analogous to that which brings forth by our intervention on nature.

Modern technology, however, has evolved quite a bit since the days of Greece. It is allied with modern science rather than with the arts. While the fine arts and craftsmanship remain relatively consistent with *techne* in the ancient sense, modern technology advances in a radically different direction.

According to Heidegger, what characterizes modern technology is its "challenging" nature and the way it "stores" nature's resources. Modern technology *assaults* nature and "challenges-forth" its energies, in contrast to a *techne* which is always bringing forth in harmony *with* nature. We not only redirect nature but dominate it. In this sense, it has become a relation of violence and exploitation.

Our harnessing of energy sources is a sign of this new relationship. An example of the old technology is the windmill, which takes energy from the wind but converts it immediately into other tasks such as the grinding of grain. The windmill does not unlock energy from the wind and stores it for later arbitrary distribution. Modern wind-generators, on the other hand, convert the energy of wind into electrical power which can be stored in batteries or other forms[5].

Storage is significant because it places energy at our disposal. Once deposited, we can utilize the powers of nature in the future. The storing of energy is, in this sense, a symbol of our conquest of nature *as a potent object*.

In this and other examples, Heidegger demonstrates that we have passed from *cooperating* with nature to taking it by force. We no longer see nature as teacher and keeper. We no longer divert nature but fundamentally change it.

Nature becomes as a resource waiting for transformation into whatever we desire

3. Hans Jonas

Heidegger brought up the problem of dominion over nature and the dilemma of responsibility. His work was a stimulus for Hans Jonas who takes up this issue after World War II. With the atomic bomb, the question about the responsibility of scientist becomes urgent. He also discusses if technology is neutral.

Karl Popper has something to say about the issue of the making of war instruments. A scientist who makes such artifacts must also be responsible for telling people about their effects and labor to find countermeasures to avoid using them. We invent arms to prevent totalitarianism. We must also work to prevent political or social manipulation which is just a different face of the same. If everybody is responsible for what he does, even for the unintended consequences of his action, so does a scientist. In the case of the latter, there is also greater obligation: *sagesse oblige*[6].

Hans Jonas expresses this idea in *The Imperative of Responsibility. In Search of Ethics for the Technological Age* (1984)[7]. Coming out of the experience of the Second World War, he began to study the phenomenon of life and question the dualism in modern philosophy. His concludes that,

> The organism, with its insoluble fusion of inwardness and outwardness constituted the crucial counterevidence to the dualistic division and, by our privileged experimental access to it, the prime paradigm for philosophy of concrete, uncurtailed being—indeed the key to a reintegration of fragmented ontology into a uniform theory of being[8].

In this way, he forcefully argues for a reintegration of mind and body, humanity with nature, and ethics as part of the philosophy of nature[9].

For Jonas, the nature of human action has changed so much with technology that traditional ethics is no longer sufficient. Traditional ethics examines human activity in the present tense. But with the possibility of intervening even on the very human nature itself, we must question the effects of future human actions carefully. In the past,

> all dealing with the nonhuman world, that is the whole realm of techne was ethically neutral. Ethical significance belonged to the direct dealing of man with man, including man dealing with himself: all traditional ethics are anthropocentric. The entity of man and his basic condition was considered constant in essence and not itself an object of reshaping techne. The effective range of action was small, the time span of foresight, goal-setting and accountability was short, control of circumstances was limited[10].

According to Jonas, we must accompany the growth of technological power with a commensurate increase in responsibility. It is especially necessary if we consider the accumulative effect of human impact on the world. We are obliged to foresee as much as possible these consequences. The guiding principle which he calls the "imaginative heuristic of fear" will inform us about the issues at stake that we should be aware.

It presupposes a metaphysics of man to discover his duties to himself and his posterity. For this technological world, Jonas gives the following norms for responsible action.

- Act so that the effects of your action are compatible with the permanence of genuine human life.
- Act so that the effects of your action are not destructive to the future possibility of such life.
- The point of departure for ethical discourse is our responsibility for causal power, that our actions are within our control and that we can foresee the consequences to some extent.

It is an ethics based on our responsibility for the future and on the apparent preference of being over nothing, of finality over purposelessness. Being is not indifferent; we must affirm life over death.

Another important aspect of this philosophy is that we are responsible without demanding reciprocity. As future human and nonhuman beings do not yet exist, they do not have such rights. Our duties towards them are in this sense non-reciprocal.

Responsibility can be natural or contractual, and Jonas uses the examples of the parent and the politician. The principal characteristics of their ethics are totality, continuity and future orientation.

> Responsibilities encompass the total being of their object. The pure being as such, and then the best being of the child, is what parental care is about. The statesman's responsibility is for duration of his office or his power, is for the total life of community, the public weal. Neither parental nor governmental care can allow itself a vacation or pause, for the life of the object continues without intermission, making its demands anew, time after time[11].

More important still is the concern for the continuity of the cared-for *existence*. We have a responsibility for the future of life, be it individual or communal, beyond the immediate present. An agent's *real* moral obligation at the time of action does extend further than to its proximate effects.

Jonas summarizes the *imperative* of *responsibility* as follows. "The concept of responsibility implies that of an ought—first of an ought to be of something, then of an ought-to-do

of someone in response to the first." This imperative is most evident in the case of a *new-born baby* "whose mere breathing uncontradictably addresses an ought to the world around, namely, to take care of him." Not only the new-born calls us in this way but "the unconditional end-in-itself of everything alive and the still-have-to-come of the faculties for securing this end"[12].

Conclusion

The human spirit has a peculiar capacity to produce instruments that can enhance our lives, also a strange ability to allow them becoming more than mere tools. This paradox is expressed in the famous aphorism, "Money is a good servant but a bad master." In the same way, the Gospel tells us that, "No one can serve two *masters*… you cannot serve both God and mammon." (Lk 6:13) Whatever the different *nuances* of the word "mammon," they all belie the idea of "security." Money, which is an instrument, can somehow become a master. The analogy with technology is striking. Authors like Rousseau and Marx popularize this phenomenon with the term "alienation." It always supposes an inversion between cause and effect, object and subject, means and end. It is worth quoting what a social encyclical of John Paul II said about this phenomenon in West:

> Marxism criticized capitalist bourgeois societies, blaming them for the commercialization and alienation of human existence. This criticism is of course based on a mistaken and inadequate idea of alienation, derived solely from the sphere of relationships of production and ownership, giving them a materialistic foundation... The historical experience of the West, for its part, shows that even if the Marxist analysis and its foundation of alienation are false, nevertheless alienation—and the loss of the authentic meaning of life—is a reality in Western societies too[13].

In the case of technology, the solution must be that every action of man must be conducive to his integral development and especially to the actualization of his transcendence. This transcendence is expressed in his capacity of being free and in his ability of self-giving. Technology certainly gives us an increase in our possibility of freedom, but we can ask if we enjoy the freedom it provides. As for the capacity of self-giving, the encyclical points out:

> Man is alienated if he refuses to transcend himself and to live the experience of self-giving and of the formation of an authentic human community oriented towards his final destiny, which is God. A society is alienated if its forms of social organization, production and consumption make it more difficult to offer this gift of self and to establish this solidarity between people[14].

We conclude with a practical question: How can we offset the harmful effects of technology and enjoy the positive ones? A comparison with the esthetical experience can help us to formulate an answer. When a subject contemplates a work of art (an object), it accomplishes its end when it enriches the observer's subjectivity. The subject first reaches out to the object of contemplation, the esthetical object, in turn, stimulates the subject's spirit, enriching it. Applying this analogy to a ubiquitous instrument of our modern technology, we can ask ourselves in this example. Does our use of the mobile phones (an object) multiply our contact? Have our relationships and communications indeed become richer? If not, it means we have capitulated our dependence to the phones. This is the test for our responsible use of technology[15].

NOTE

[1] Plato, *Protagoras* in http://www.gutenberg.org/dirs/etext99/prtgs10.txt (accessed Nov. 31, 2017).

[2] I. Johnson, On René Descartes *Discourse on Method*, in http://www.mala.bc.ca/~johnstoi/descartes/descarteslecture.htm (accessed Nov. 31, 2017).

[3] See M. Heidegger, *The Question Concerning Technology*, in D. F. Krell (ed.) *Basic Writings*, HarperCollins, San Francisco 1993. 311-341; Idem, *Only a God Can Save Us* in R. Wolin (ed.), *The Heidegger Controversy*, MIT Press, Cambridge 1992. 91-116.

[4] Many other factors form this modern and contemporary worldview. Maciej Bazela claims that "It was not only the modern philosophy of science itself to tarnish and commodify the environment. My research shows that at the basis of that epochal change there was a particular amalgamate of the modern concept of science with Protestant theology, the enlightenment emphasis on individuality and reason, and the utilitarian ethic. Initially, the Platonic vision of nature prevails in Protestantism over the Aristotelian view. It percolates into modernity through Augustinian thought and nominalist philosophy. Plato believes nature to be the weakest expression of the Spirit. The natural world is one manifestation of the Spirit, but limited and very imperfect, for it is the sphere of the accidental and the necessary. Moreover, the medieval nominalist claims that the world exists accidentally and contingently. God wants the world to exist as an essential part of the history of human salvation, but at the same time, God's nature is completely different from the essence of the world. God is incommunicable to the cosmos. The Creator is alien to the world of matter, so we cannot know him by the investigation of the ecosystem. Eventually, Protestant theology saw nature as being a residuary of the Fall and moral corruption. Man hoped that by using his transformative force, he would be able to redeem himself from the effects of the Fall. Protestantism underlined the value of human work and creativity. It was legitimate then to use natural resources for any project that was designed to improve the human lot and multiply wealth" (*manuscript*).

[5] See http://www4.hmc.edu:8001/humanities/beckman/PhilNotes/heid.htm (accessed Nov. 31, 2017).

[6] K. R. Popper, *The Moral Responsibility of the Scientist*, in Idem., *The Myth of the Framework. In Defence of Science and Rationality*, Routledge, London 1994, 121-129.

[7] H. Jonas, *The Imperative of Responsibility. In Search of Ethics for the Technological Age*, University of Chicago Press, Chicago IL/London 1984.The original German edition: *Da Prinzip Verantwortung* Versuch einer *Ethic fur die Technologische Zivilization* 1979. It is a response to M. Heidegger's essay *The Question Concerning Technology* 1977. Heidegger was also concerned about the impact of technology on man, the reduction of man to a resource.

[8] H. Jonas, *Philosophical Essays: From Ancient Creed to Technological Man*, Prentice Hall, Englewood Cliffs, N.J. 1974, xiii.

[9] See H. Jonas, *The Phenomenon of Life: Toward a Philosophical Biology*, Dell Publishing Co., Michigan, 1966.

[10] H. Jonas, *The Phenomenon of Life*,… 4-5.

[11] H. Jonas, *The Imperative of Responsibility,...* 101-102.

[12] *Ibid,* 130, 131, 134.

[13] John Paul II, Encyclical *Centesimus Annus*, 1991, n. 41.

[14] John Paul II, *Centesimus Annus*, n. 82. Other documents have expressed similar concerns. Here is a very articulated quotation from *Redemptor hominis*, n. 15. "*The man of today seems ever to be under threat from what he produces*, that is to say from the result of the work of his intellect and the tendencies of his will. All too soon, and often in an unforeseeable way, *what this manifold activity of man yields is not subjected to "alienation", in the sense that it is simply taken away from the person who produces it, but rather it turns against man himself, at least in part,* through the indirect consequences of its effects returning on himself. It is or can be directed against him. This seems to make up the main chapter of the drama of present-day human existence in its broadest and universal dimension. *Man therefore lives increasingly in fear.* He is afraid that what he produces—not all of it, of course, or even most of it, but part of it and precisely that part that contains a special share of his genius and initiative—can radically turn against himself; he is afraid that it can become the means and instrument for an unimaginable self-destruction, compared with which all the cataclysms and catastrophes of history known to us seem to fade away. This gives rise to a question: Why is it that the power given to man from the beginning by which he was to subdue the earth turns against himself, producing an understandable state of disquiet, of conscious or unconscious fear and of menace, which in various ways is being communicated to the whole of the present-day human family and is manifesting itself under various aspects?

This state of menace for man from what he produces shows itself in various directions and various degrees of intensity. We seem to be increasingly aware of the fact that the exploitation of the earth, the planet on which we are living, demands rational and honest planning. At the same time, exploitation of the earth, not only for industrial but also for military purpos-

es and the uncontrolled development of technology outside the framework of a long-range authentically humanistic plan often bring with them a threat to man's natural environment, *alienate him in his relations with nature and remove him from nature.* Man often seems to see no other meaning in his natural environment than what serves for immediate use and consumption. Yet it was the Creator's will that man should communicate with nature as an intelligent and noble "master" and "guardian," not as a heedless "exploiter" and "destroyer."

The development of technology and the development of contemporary civilization, which is marked by the ascendancy of technology, demand a proportional development of morals and ethics (emphasis mine).

[15] For further reading on this topic, see AA.VV., *Etica e trasformazioni tecnologiche. Atti del 57°. Corso di aggiornamento cultural dell'Università Cattolica, Arezzo 20-25 settembre 1987,* Vita e Pensiero, Milano 1987; E. AGAZZI, *Il bene il male e la scienza. Le dimensioni etiche dell'impresa scientifico-tecnologica*, Rusconi, Milano 1992; T. BECKMAN, *Martin Heidegger and Environmental Ethics* in https://www.academia.edu/33837535/MARTIN_HEIDEGGER_AND_ENVIRONMENTAL_ETHICS (accessed Nov 17, 2017); G. GISMONDI, *Etica Fondamentale della scienza. Fondamenti e principi dell'impegno tecnoscientifico*, Cittadella, Assisi 1997; S. JAKY, Ética *científica y ciencia* ética, in ID., Ciencia, Fe, Cultura, Palabra, Madrid 1990.