

Philosophy and Technology

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The Questions Technology Raises

Today rationality's success is evidenced quite forcefully by technological success. There will of course be more reasons than just technology for doing science, but the tremendous gains in technology assure us that science – and its rationality – are in fact rational! “We live in an apparently endless series of technological revolutions – ‘the Industrial Revolution’, ‘the Electronic Revolution’ – which constantly remind us how momentous a force science is in shaping our lives.” (Hilary Putnam, *Reason, Truth and History*, Cambridge University Press, 1981, pp. 175-176)

Aristotle's position on whatever technology there was in his time remains tempting. He assigns ethics its place as he opens his treatise, the *Ethica Nicomachea*. He writes:

Every art and every inquiry, and similarly every action and pursuit, is thought to aim at some good; and for this reason the good has rightly been declared to be that at which all things aim. But a certain difference is found among ends; some are activities, others are products apart from the activities that produce them. Where there are ends apart from the actions, it is the nature of the products to be better than the activities. Now, as there are many actions, arts, and sciences, their ends also are many... But where such art fall under a single capacity... in all of these the ends of the master arts are to be preferred to all the subordinate ends; for it is for the sake of the former that the latter are pursuit. It makes no difference whether the activities themselves are the ends of the actions, or something else apart from the activities, as

in the case of the sciences just mentioned. (*Nicomachean Ethics, Book I, 1*)

This piece of wisdom alone would suffice for a philosophy of technology. Technology, it teaches, comes with humankind's quest for what is good. It is imbued with human purpose. It is both product – as is the computer – and process – as is computing. It appears to be a master art because technology has found its way into almost anything that persons do these days and thus enjoys the prestige Aristotle assigned such arts.

For better or for worse, however, we are a little harder to please these days, and we are more reticent about order and hierarchy. We shy away from centers and centralities. So, we engage Aristotle in a debate he would have had little patience for: 'Is technology the product of humankind, or humankind the product of technology?'

Much of organization these days involves flow-charting, following the very same course digital processes go. Our concepts of order are shaped by technology, and our lives follow its contours and angles. Human decisions submit to technological disjunction, and what it is we do is predicted by what it is we can do – what it is our technology allows us to do. So it is, I think, that what we have here is something more interesting than just a version of that pesky, malformed riddle about the chicken and the egg. What we have is a loop – that curious phenomenon so delightfully but provocatively treated in the Pulitzer Prize winning philosophy book disguised as an entertainment piece: Douglas Hofstadter's *Godel, Escher, Bach: An Eternal Golden Braid*. Loops and circles are of course not unknown to philosophy. We have, for good reason, distinguished between vicious and non-vicious circles, the hermeneutic circle being one of the more famous of the latter category. I know that there is the irresistible urge to rebut me at this point and to protest: "But computers cannot do more than you program them to do." And from Hofstadter himself, I will quote the riposte.

There is an old saw which says, "Computers can only do what you tell them to do." This is right in one sense, but it misses the point: you don't know in advance the consequences of what you tell a computer to do; therefore its behavior can be as baffling and surprising and unpredictable to you as that of a person... There is another sense in which this old saw is

rusty. This involves the fact that as you program in ever higher-level languages, you know less and less precisely what you've told the computer to do! Layers and layers of translation may separate the 'front end' of a complex program from the actual machine language instructions. At the level you think and program, your statements may resemble declaratives and suggestions more than they resemble imperatives or commands. And all the internal rumbling provoked by the input of a high-level statement is invisible to you, generally, just as when you eat a sandwich, you are spared conscious awareness of the digestive processes that it triggers. (*Godel, Escher, Bach: An Eternal Golden Braid*, New York: Vintage Books, 1979, pp. 306-307)

At one time, at an international symposium organized by the Taniguchi Foundation, and chaired by the revered Prof. Tomonobu Imamichi, I raised the question whether or not a technological object was *value-neutral*, and what I meant at that time was whether or not it had the same ontological – and axiological – status as, say, a tree. It was my view then that from inception to production, the technological object was so imbedded in human purposiveness that it could not be value-neutral. That, of course, is a position I would have to re-state today, although I do not feel inclined to abandon its basic allegiance. I am flattered, in fact, that the esteemed Prof. Jean Ladriere of Louvain-la-Neuve finds, in his historical review of the treatment of the technological object, something the likes of which I had claimed.

L'objet technique, par contre, ne vient pas au jour a partir de lui-meme. Il est faconne dans une action qui met en oeuvre, en definitive, des elements fournis par la nature, donc qui prend appui sur une genese qui a deja eu lieu. La vertu propre de cette action n'est pas celle d'un originaire, c'est celle d'une operation de synthese, qui rassemble des elements ve vue de produire un certain type d'effet. L'objet ainsi fabrique a bien une unite, mai ce ne'st pas celle qui est engendree par une auto-production, c'est celle qui advient a un assemblage par le fait d'une intervention exterieure qui le finalise en fonction de certains objectifs, qui sont des perfomances a realiser. (Jean Ladriere, "Difference ontologique entre l'objet nature! et l'objet technologique", *Revue Internationale de Philosophie Moderne*, Volume 9, 1991, 39-40)

The problem of course takes on a new shade of complexity when we deal with such novelties of biological technology as genetically altered plants or even cloned animals, for these, it seems, is that zone of ambivalence between nature and manufacture – a zone deliberately colored gray. Here then without doubt there is relevance in the medieval – even Aristotelian concept of “final cause” for while not everyone is convinced that the question “Why did evolution produce the chicken?” can be meaningfully handled by philosophy, the question “Why did we done Dolly?” has been raised, and has been efficiently handled.

This has been, in essence, the typical objection to one brand of what I will conveniently – if misleadingly – call “historical materialism” that accounts for the superstructure of human consciousness by the infrastructure of technological advance. The thesis of course will never be posited in as simplistic a reduction, but the objection cannot be trivialized. A technology associated with the preconscious, or the unconscious, is neither too coherent nor too useful a concept.

Of virtual reality, I know very little, except that bit with which I have had same passing acquaintance. But it is *virtual* by virtue of opposition to “reality” that is supposed to be real, and yet it is *real* because it does have same form of objectivity. The suggestion has been made, of course, that we have not been careful in our treatment of “reality.” While values are not real to the geometer, they are real to the sociologist. “Reality” then, it is proposed, is not univocal. It is rather contextual and referential. Then, probably, “virtual reality” is not that new a development after all. That model of the cell as a micro-solar system at the center of which is a nucleus around which orbit electrons is “virtual”; so are the numerous representations of heavenly bodies in science books that send every elementary school child’s imagination into a flight of extraterrestrial fancy. The configurations and models of chemical compounds are also virtual reality, and so are the interesting and mind-boggling curvatures of space, Lobachevskian or otherwise that result from alternatives to Newton’s celestial mechanics. But for the scientists who deal in these virtualities, there is “real” involvement, and there are “real” questions and concerns. Any suggestion that the issues are “virtual” would be a slight!

My Derridean hang-over comes upon me once more as I dare ask: If the virtual is so in contrast to the real, then it is the virtual that marks off the real as real, and if so, where exactly is the divide between the virtual and the real? I am therefore advancing a (non) ontological claim: That the virtually real is real, and the real is virtual and neither will be any more the real or the virtual for it!

I will end this section by returning to my first question: Are we technology's creators or its creatures? Some years ago, the very lucid philosophy author John Caputo paraphrased Heidegger's *Aus-trag* (dif-ference). He wrote:

The differing (*Austrag*) holds Being and beings apart, but it also holds them together, so that while Being grounds beings, beings in turn ground Being. Thus original *logos*, which was sent to the early Greeks as the 'gathering of what unifies', gives itself to onto-theo-logic as the unity of the most general and as the unity deriving from the highest being. The coming over and the arrival, coming on, mutually determine one another and constitute a circle, the circling of Being and beings around one another...The onto-theo-logical nature of metaphysics originates out of an understanding of Being as the ground of beings, and of being – i.e., the highest being, God – grounding other beings.

Now it is clear that metaphysics cannot itself comprehend what has been said here about metaphysics, for we have entered the region from which metaphysics has itself originated. (John Caputo, "Heidegger's 'Dif-ference' and the Distinction Between *Esse* and *ens* in St. Thomas", *International Philosophical Quarterly*, XX:2, June, 1980, 161-181)

Being gives itself in be-ings – always epochally. The giving creates the epoch. Ours has been – and is – an epoch of technology. *Es gibt*. Thus we have been given! Technology is then the event of the giving of Being, that which constitutes, creates us and our times. There is good Heideggerian justification for the almost mystical conviction that technology has "come" upon us.

Technology and Rationality

Early in his philosophical career, Jurgen Habermas advanced a theory of interests. Against the brand of positivism that insulated

the empirical sciences from the grasp of values, Habermas insisted that the scientist – whether theorist or technologist – was as “interested” as was any other earthling. There is a relation that technology itself confirms between values and interests. (Rudger Bubner, *Modern German Philosophy*, Cambridge: Cambridge University Press, 1981; pp. 125-128) The empirical sciences obey a “technical” or “instrumental” cognitive interest. This interest is knowledge-constitutive because “it determines the mode of discovering knowledge and whether knowledge claims can be warranted.” This interest then gives rise to a whole gamut of questions, a system of inquiry, a language and norms of acceptability.

Technology then arises from an interest – that of controlling the causal processes of nature, that of getting things done, that of bringing about desired results in things. Its rationality is the rationality of the interest. What an interest is, Habermas himself best explains.

The concept of ‘interest’ is not meant to imply a naturalistic reduction of transcendental-logical properties to empirical ones. Indeed, it is meant to prevent just such a reduction. Knowledge-constitutive interests mediate the natural history of the human species with the logic of its self-formative process... I term ‘interests’ the basic orientations rooted in specific fundamental conditions of the possible reproduction and self-constitution of the human species, namely work and interaction. (Jurgen Habermas, *Knowledge and Human interests* Boston: Beacon Press, 1971, p. 196)

The rationality of technology then is the rationality of manipulation, of causal efficacy, and of work. At base, it is the rationality of the self-constitution of humankind. We constitute ourselves technologically, as we reproduce ourselves biologically and culturally. It can make no claim at a privileged status, however, for it does not enjoy that detachment from “vested interests” that some of its less reflective spokespersons have often proclaimed in be its superiority. It arises from an interest, and it is driven by an interest. The empirical sciences and technology are therefore as interested – and for that reason as involved in the project of human self-reproduction – as are the historical-hermeneutical sciences and the emancipatory sciences. Aside from manipulating objects, we also want human effort to be coordinated. Basically, we wish to arrive at an understanding

with each other. This interest is hermeneutic. The third interest – emancipatory – is a little bit more involved, for it is the interest of unearthing or confronting the ideological (and neurotic and psychotic) hang-ups that encrust knowledge and understanding.

Habermas, along slightly different lines, takes up the problem of rationality in his “magnum opus” *The Theory of Communicative Action*. The rationality of the modern mind consists in its ability to disengage itself from the huge mirror that the *primitive* mind makes of itself and of the world. The *Primitive* mind sees its proceedings in the workings of nature. Its forces and processes can be dealt with by appropriate subjective dispositions and projects because there really is no distinction between subject and non-subject, between self and world. (J. Habermas, *The Theory of Communicative Action*, Volume I, London: Heinemann Educational Books, 1984, pp. 75-78) Thus did the primitive mind process information. The mass of data it had – from observing the heavens, the flora and the fauna, the land and the sea – it organized in such wise that with one appearance paralleled and contrasted with every other. The result of course was that nature was outfitted with anthropomorphic features, while culture was naturalized and reified.

Modern rationality, in contrast, recognizes three worlds: the world of physical objects, the world of the subject, and the world of norms. Technology emerges when I recognize boundaries between myself and the world: when nature is de-socialized and society is de-naturalized. Put otherwise, technology presupposes the bifurcation of worlds. Before technology produces, it assumes an *attitude* towards the objective world: inquiring into causes, observing, manipulating, dealing efficiently. In fact, the differentiation must go deeper. It must separate *language* from *world*, lest the facility with language be taken for efficient and productive intervention. (*ibid.*, pp. 83, if.) This confusion manifested itself in the magical relation between *names* and *designated objects*. To name was to dominate, to control. Thus the *internal connections of meaning* were also taken as *external connection of objects*.

To produce the workable and the operable, technology must first acknowledge *validity claims* and yield to their imperatives. “Water is two parts hydrogen and one part oxygen”. There is – more

accurately, are – validity claims here that invite examination and criticism, which the scientist and the technologist advances, while recognizing the demands such claims make on their readiness to defend them. The technologist engages in formal world-concepts that presuppose a world identical for all observers. The validity claims he then makes and on the basis of which he constructs and operates are open to criticism.

It is understandable that names are associated with dramatic steps in the march of technology – Turing with the computing machine, and Fermi and Oppenheimer with putting the atom to work, for example – but what we deal with in technological advance is not the rationality of an individual reality, but the rationality of society, the rationality of a life-world. After all the *life-world* is not only the storehouse of the interpretive achievements of preceding generations. It is also the horizon against which subjects – whether speaking or technologizing – come to an understanding. Quite interestingly, Habermas calls on the developmental epistemology of Piaget. What takes place is then characterized as a “systematic change of world-views” a transition in the system of basic concepts, and resultant new levels of understanding. In his evolutionary scheme, the modern is what emerges after civilizations pass from the mythical to the religious-metaphysical. (*ibid.*, p. 68 ff) The advent of the technologist was also the demise in the centrality of the office of the priest and shaman. There then are social, epistemic and contextual presuppositions of technology. In turn it presages transitions in conceptual levels and world-views.

Habermas adopts Popper’s three-worlds which become the worlds of *physical objects*, of the *subject* and of *norms and values*. Modern rationality recognizes these worlds and the differences between them. It is discriminating rationality that reflectively stays dear of that which the *primitive mind* confounded. Correspondingly, Habermas considers the rationality of action. Clearly the most elemental form of action in which technology makes its appearance is *teleological action*. An agent brings about a desired end by choosing effective or promising means. According to this scheme, technology consists both in the teleological attainment of a desired end, as well as in the choice of means towards its attainment (Habermas, pp. 84-101).

It is an agent against an objective world – understood as the totality of states of affairs – that is the basic setting of teleological action. Possessed of a cognitive-volitional complex, the agent forms beliefs about the way things are (e.g., that water is to be found somewhere beneath the ground) and makes decisions on bringing about desired effects (e.g., digging a well to get at the water). The ontology of teleological action is then comparatively simple: It presupposes one world – the world of physical objects. Either of two things happens – and both can: the agent brings his perceptions and beliefs into agreement with what is the case (thus making true or false assertions), and the agent brings what is the case in the world into agreement with his desires and intentions (carrying out intentions that succeed or fail). Clearly, however, the technological posture demands of the subject that distantiation that allows the world to be an objective world against which statement can be true or false, and actions, efficient or futile!

With *strategic action*, technology takes a different form, in large measure because the agent takes on a slightly different attitude. Action is strategic when at least two goal-directed agents achieve their ends by attempting to influence each other's decision. History's treasure-house of technological advances will yield abundant examples of products and processes designed to "get there first", "beat him to it". On a more disturbing note we have technology devised expressly to influence the decisions of others, and a missile silo falls under this category.

It is not difficult to see, however, that in *normatively regulated action*, technology can be situated. Agents who not only form beliefs about how things are, but also endeavor to bring their actions and choices in conformity with the expectations, values and norms of their communities act normatively. I submit that what law and ethics do today in large measure is moving technology and technological action from the merely teleological to the normatively regulated. Thus special penal laws proscribe the tapping to telephone calls and conversations, and in the wake of hackers who have wreaked havoc on the web, I am sure that laws on the subject will be readily enacted. In ethic, debate accompanies the emergence of such technologies as life-support systems, cloning, etc. There is growing support for the proposition that norms do not only regulate the employment of technology but its pursuit and development.

Insofar as *communicative action* is concerned – that action that has different subjects seeking common understanding so as to arrive at a common definition of the situation – I find technology most prominently in aid of the medium of uncurtailed communication that language is. It is not difficult to appreciate what the explosion of Information Technology has allowed communicative action to achieve. There is, however, another appearance of technology: this time as part of that situation that stands in need of common definition and approach. Technology then is part of the *problematique* of communicative action!

You will not fail to observe, of course, that following in Habermas' trail, I have moved the discussion from the efficiency of technology to the ethics and norm-conformity of technology. I want to return to Putnam at this point who quite correctly labels as question-begging the rejection of non-scientific rationality on the grounds that it is non-scientific. (Putnam, p. 200) The fact is that we do make value-judgments many of which we are fairly consistent about. All this is meant to suggest of course that technology has gone very far – very far indeed that it can relevantly be discussed in the context of an inquiry into what it still means to be human!

Technology and the Word

Paul Ricoeur's *Work and Word* is an essay I used before. I used it to propose "word" as the redemptive moment in the technopolis. (R.Aquino, "Neighbor and Word in the Technopolis" *Revue Internationale de Philosophie Moderne*, Volume 9, 1991, 189-197) Of the machine, Ricoeur, citing Mounier, has this intriguing piece: "But above all, it is the spoken word which effects the passage from the tool to the machine. As Emmanuel Mounier said in *La Petite Peur du Xxe siècle*, the 'machine is not, as is the tool, a mere material prolongation of our limbs. It is of another order: an annex of our language, an auxiliary language of mathematics to penetrate, stamp out, and reveal the secret of things, their implicit intentions, their untapped possibilities'" (Paul Ricoeur, *History and Truth*, Evanston: Northwestern University Press, 1965 pp. 200-202)

While, traditionally, the machine has been considered a more mature form of technology than the hand-axe, there is much to commend Ricoeur's hermeneutic of work and word. By the word,

man constitutes himself and the things that are his, other than by working. Not only, however, does the word contrast itself with work. It anticipates it, directs it and shapes it. Technology, as we have it today, is the off-spring, the incarnation of the word. Technology then verily indicates the magnitude of the word, in fact, its *transcendence*

While it is technology then that shows forth the word in its splendor, the word does put technology in its place, even if it should anticipate and structure it. The word surpasses technology, because on its account a piece of technology becomes *passe*. What Ricoeur calls the dubitative word awakens the word, and spurs it, so that the word finds new embodiment in emergent technology. (Ricoeur, 207)

The word, Ricoeur says, performs for work four functions. These, for obvious reasons, it does for technology.

First, the word is *corrective*. It is the word that gives technology and technological operation perspective. I mention the suffering patient's name, and I endow the CAT Scan with perspective. It is the word that binds the diverse operations that constitute technological operation. At a meeting of personnel at De La Salle University, the computer programmer assigned to deal with the university's fiscal concerns hears of its ideals and its philosophy, and the aspirations of its students for whom, we hope, "the future starts here"! It is the word that endows technology with a social meaning, for it is ultimately the word that allows technological engagement to lead to political involvement.

Second, the word is *compensatory*. It is the word that compensates for the isolation of the diesel engine, and restores its connection to the sea into which is dumped refuse and waste. But it is also the word that interrupts the hum and rhythm of a machine to crack a joke, pose a puzzle, raise a doubt, pass on news, or ask a question.

Third, the word is *foundational*. Technology belongs to praxis, but praxis is not all. All attempts at denying basic questions any legitimacy have only made them resurface with urgency. It is the word that moves us to the realm of *theoria* where utilitarian concern yields to the demand for answers to the questions of the educated heart.

Fourth, the word is *creative*. While technology announces the present state and responds to its demands, the poetic word intro-

duces what is new – even that which is fantastically so. After all was the airplane not conceived in the poetry of man in flight, like bird and angel? Did not the telephone, the telegraph, and ultimately e-mail arise from the womb of the poetry of human thought and sentiment defying distance and separateness?

I have not offered a theory of technology. It was not my purpose to do so. But I hope you have found it worth your while to allow It to raise questions to the philosopher, to wonder about its rationality, and to realize that it does incarnate the human word, even as it must submit to it. It is this very same human word that allows us to enunciate the realization that ours is the epoch of technology, and at the same time to express the reticence about spinning yet one more metaphysical epic! □