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Technology as a Subject for Ethics

BY HANS JONAS

THAT ethics most generally speaking has a say in matters of technology, or that technology is subject to ethical considerations, follows from the simple fact that technology is an exercise of human *power,* that is, a form of *action,* and all human action is answerable to moral scrutiny. It is also a truism that one and the same power can be for good and for evil, and that in wielding it one can abide by ethical norms or violate them. Technology, as vastly enhanced human power, clearly falls under this general truth. But does it constitute a special case, requiring an effort of ethical thought different from that which befits every human action and has been sufficient for all its kinds in the past? My thesis is that it does indeed constitute a novel and special case, for reasons of which I will indicate five that impress me in particular.

A Special Case

1. In general, any capacity is good "as such" or "in itself" and becomes bad only through abuse. For example, it is undeniably good to have the power of speech, but bad to use it for deceiving or for seducing others to their ruin. Hence it is entirely meaningful to command: use that power, enhance it, but do not misuse it—the premise being that ethics can clearly distinguish between the two, between right and wrong use of one and the same capacity. But what if we move in an action context where *every* major use of the capacity, be it ever so well-intentioned, carries with it a growth vector of eventually bad effects, inseparably bound up with the intended and

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proximate "good" effects and in the end perhaps outdistancing them? If this is the case of modern technology, as we have good reason to believe, then the question of moral or immoral use of its powers is no longer a matter of self-evident, qualitative divisions, and not even of intentions, but becomes mired in, and put at the mercy of, quantitative guesswork about ultimate consequences. The quandary is this: not only when malevolently misused, namely, for evil ends, but even when benevolently used for its proper and most justifiable ends, does technology have a threatening side to it *which may have the last word* in the long run of things. And the "long run" is somehow implanted in technological practices. By its inherent dynamism which makes it thus "run," technology is denied the sanctuary of ethical neutrality, the consoling *adiaphoron* (indifference) of the Stoics. The risk of the "too much" is ever present, as the congenital germ of the "bad," that is, injurious, is nurtured and brought to term precisely by the successful promotion of the "good," that is, beneficial. The danger lies more in success than in failure, and yet the success is needed in the press of human affairs. A pertinent ethics of technology must immerse itself in this inherent *ambivalence* of technological action.

2. In general, faculties or powers can be possessed—by individuals or groups—without being exercised except on appropriate occasions and at the possessor's discretion. They can exist in the state of "potentiality" much of the time, in readiness for use, to be actualized on demand. The person endowed with speech need not talk incessantly and may well be on the whole taciturn. Not so with technological capacities. Once developed by doing in the small, they have a way of enforcing their employment in the large and ever larger and making that employment an incessant need of life. Thus not only the sanctuary of ethical neutrality but also the merciful hiatus between possession and exercise of a power is denied to technology, which is enhanced human power *always in actu.* Development of new capacities is here continuous with their injection and spreading in the bloodstream of collective action.

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Hence, already the acquisition of new capacities, any addition to the inventory of means, bears here an ethical burden which normally rests only on the single instances of their employment.

3. Moreover, there is an aspect of sheer *magnitude* of action and effect which acquires moral significance. The scale and causal range of technological practice, as a whole and in its single undertakings, are such that they insert a whole new dimension into the frame of ethical reckoning—a dimension unknown to all former kinds of action. We have spoken before of a situation where "every major use of a capacity" may carry with it a growth vector of eventually bad effects. We must now add that *every* putting-to-use of a technological capacity tends to become "major." Modern technology is inherently "big," and perhaps too big for the size of the stage on which its play is enacted—earth—and for the good of its enactor himself—man. That much is certain: it, or its works and their impact, spreads over the globe, and its cumulative effects reach potentially into countless generations to come. With what we are doing here and now, we massively affect the lives of millions, elsewhere and later, who have no say in the matter. We mortgage future life for present short-term advantages and needs—and mostly self-created needs at that. Perhaps we cannot avoid doing so in some way or other. But if so, then we must pay utter heed to doing so in fairness to posterity—namely in such a way that their chance of coping with that mortgage has not been compromised in advance. The point here is that the intrusion of distant future and global scales into our everyday, mundane decisions is an ethical novum which technology has thrust on us; and the ethical category preeminently summoned by this novel fact is: *responsibility*. Its now moving to the center of the ethical stage (where it was not before) opens a new chapter in the history of ethics, reflecting the new magnitudes of power with which ethics has henceforth to cope: the claims on responsibility grow proportionately with the deeds of *power*.

4. That widened scope of human power, as it breaches the

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horizon of spatiotemporal neighborhood, also breaks down the *anthropocentric* monopoly of most former ethical systems, religious and secular. It was always the *human* good that was to be fostered, the interests and rights of fellowmen that were to be respected, wrongs done to them to be righted, their sufferings to be alleviated. Man was seen beholden to mankind, at the very most, and to nothing else on this earth. (Usually, the ethical horizon was much more narrowly drawn than that, as in "Love thy neighbor.") But now the whole biosphere of the planet with all its plenitude of species, newly revealed in its vulnerability to man's excessive intervention, claims its share of the respect owed to all that is an end in itself—that is: to all that is alive. The monopoly of man on ethical regard is breached precisely with his acquiring a near-monopolistic power over the rest of life. As a major planetary force, he cannot think of himself alone anymore. To be sure, the command not to leave to our descendants a depleted patrimony expresses this broadening of ethical scope still in terms of a human duty toward *humans,* as the injunction of an intrahuman solidarity of survival and utility, of curiosity, enjoyment, and wonder. Impoverished extrahuman life means also an impoverished human life. But properly understood, the inclusion of the existence of the plenitude as such in the human good, thus the inclusion of its preservation in man's duty, goes beyond the utilitarian and any anthropocentric concern. It allies the human good with the cause of life in general, instead of pitting the one against the other, and grants the latter its own right. Its recognition means that any wanton and needless extinction of species becomes a crime in itself, quite apart from the concurring counsels of intelligent self-interest; and to protect the most nonrenewable and most irreplaceable "resource" of all, the incredibly rich gene pool deposited by aeons of evolution, becomes a transcendent duty of man. It is his excess of power that confers this duty on him, and it is against this very power—that is to say, against himself—that his protection is asked. Thus it comes about that technology, this

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coldly pragmatic work of human cunning, installs man in a role which only religion has sometimes assigned to him: that of steward or guardian of creation. By enhancing his might to the point where it becomes palpably dangerous to the total scheme of things, technology extends man's responsibility to the future of life on earth, now exposed to, and defenseless against, the abuse of that might. Environmental ethics, really unprecedented, is the expression of this unprecedented widening of our responsibility, which in turn answers to the unprecedented widening of the reach of our deeds. It needed the visible threat to the whole, the actual beginnings of its destruction, to make us discover (or rediscover) our solidarity with it: a sobering thought.

5. Finally, the apocalyptic potential of technology—its ability to endanger the very existence of the human species, or to spoil its genetic integrity, or arbitrarily to alter it, even to destroy the conditions of higher life on earth—raises the *metaphysical* question never posed to ethics before: whether and why there ought to be a mankind? Why, therefore, Man as evolution has produced him ought to be preserved, his genetic heritage respected? Even why there ought to be life at all? The question is not so redundant as it seems (in the absence of a denier of all these "oughts"), since the answer to it has a bearing on how much we are allowed to risk in our grand technological bets, and what risks are entirely impermissible. If it is a categorical imperative for mankind to exist, then any suicidal gambling with that existence is categorically forbidden, and technological bets with even remotely this at stake are ruled out in their first beginnings.

Critical Mass

These, then, are some of the reasons that make technology a special and novel case for ethical consideration, indeed for a descent into the very foundations of ethics. Let us follow some

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of the pointers furnished by these reasons. Most promising perhaps is a combination of reasons 1 and 3, of the arguments of "ambivalence" and "bigness." At first glance it seems easy to distinguish between beneficial and injurious technology by just looking at what the instruments are for. Plowshares are good, swords are bad: in the messianic age, swords will be beaten into plowshares. Translated into modern technology: atom bombs are bad, chemical fertilizers, which help to feed mankind, are good. But here, the vexing dilemma of modern technology leaps to the eye: *its* "plowshares" can be as disastrous in the long run as its "swords"! (And the "long run," remember, is endemic with technological tools.) But in that case *they,* the beneficent "plowshares" and their likes, are the true problem. For we can leave the sword in its scabbard but not the plowshare in its shed. An all-out atomic war would indeed be apocalypse at a stroke, but although it can happen at any time and the nightmare of this "can" may darken all our future days, it *need* not happen, for here the saving hiatus between potentiality and actuality, between possessing the tool and using it, still holds and gives us hope that the use will be avoided (which indeed is the paradoxical purpose of having it). But there are innumerable other, entirely nonviolent things that pose their own apocalyptic threat and which we just *must* do and must keep doing in order to keep afloat. While bad brother Cain—the bomb—lies leashed in his lair, good brother Abel, the peaceful reactor, undramatically goes on depositing his poison for millennia to come. Even there, if luck is with our earnest effort, we *may* find in time less harmful alternatives to quench the growing energy thirst of a global civilization faced with the dwindling of conventional sources. We may even manage to lower the level of voracity itself and revert to doing with less, before a catastrophic exhaustion or pollution of the planet forces us into worse than austerity. But it is morally unthinkable, for example, to stop biomedical technology from holding down infant mortality in "underdeveloped" countries with high birthrates, even though the mis-

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eries in the wake of overpopulation may be more horrible still. Any number of other initially beneficent ventures of grand-scale technology could be adduced to illustrate the dialectics, the two-edged nature, of most of them. The point is that the very blessings and necessities of technology harbor the threat of turning into curses. Their innate trend to immoderateness makes the threat acute. And clearly, mankind has become much too numerous, thanks to these same blessings of technology, to be still free to revert to an earlier stage. It can only go ahead—and must extract from technology itself, with a dose of moderating morals, the remedies for its ills. This is the hub of an ethics of technology.

These brief reflections were meant to show how the "ambivalence" of technology is bound up with its "bigness," the supersize of technological effects in space and time. What is "big" and what is "small" is determined by the *finitude* of our terrestrial environment, which must never be absent from our mind. Precise boundary values of tolerance are not known in any of the many directions assailed by man's expansionism. But enough is known to assert that some of our technological action trains—and vital ones among them—have entered at least the *order of magnitude* in which those boundary values lie, and others will join them there if allowed to go on growing at their present pace. There are signs that we are in the danger zone. Once a "critical mass" is reached in one direction or other, matters may be out of our hands: a positive feedback could take over and start a runaway process in which costs devour benefits in a rising and perhaps irreversible crescendo. This is what long-range responsibility must try to prevent. As the bright side of technological achievement dazzles the eye, and proximate gains bribe the judgment, and the very real needs of the hour (not to speak of its greeds) clamor for priority, the claims of posterity entrusted to that responsibility will have a hard time.

In this connection, one further aspect of the technological syndrome assumes ethical significance: the quasi-*compulsive*

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element in its progression, which hypostasizes as it were our own modes of power into a kind of independent force by itself, to whose self-acting we become somehow subservient. This impairment of human freedom by the reification of its own deeds has, to be sure, always existed, in individual lives and in collective history. Mankind has always been in part determined by its past, but this has generally acted more as a braking than a moving force: the power of the past was that of inertia rather than propulsion. The creations of technology act precisely in the latter way and thereby add a new twist to the tangled history of human freedom. With each new step we force our own hands and those of posterity, which eventually must foot the bill. In any case, the *tyrannical* element in contemporary technology, which makes our works our masters, even compelling us to multiply them further, presents an ethical challenge by itself, quite apart from whether those works in particular are good or bad. For the sake of human autonomy, the dignity of owning ourselves and not letting us be owned by our machine, we must check the technological stampede.

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