

Technology and nature: a defence and critique of Marcuse

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Abstract: *In this paper I intend to discuss the relation of Marcuse's theory of technology to its grounding in the possibilities he believed lay inherent, but as yet untapped in nature. Marcuse was an early critic of what he considered to be the exploitative, predatory approach to nature brought about through the direction of technology, industry and science under consumer capitalism, however his alternative; a "new science" and "new technology" which would treat nature as an "ally" in the general struggle for liberation and emancipation, was not without its problems.*

Keywords: *Theory of Echnology, Marcuse, Nature.*

Introduction

As his Frankfurt School colleague Jürgen Habermas observed: «Long before the Club of Rome, Marcuse fought against “the hideous concept of progressive productivity according to which nature is there gratis in order to be exploited”».¹ However, although prescient in many ways, Marcuse's views on the topic of the exploitation of nature by our technologies were also problematic, and have subsequently faced criticisms from Habermas and others. The critique of the former consists of a two-pronged attack, one aimed at Marcuse's concepts of a new science and technology, the other directed toward his view of

nature. Over what follows, I will attempt to defend Marcuse's view from the first prong of Habermas' critique, with the remainder of the discussion to be directed toward Marcuse's vision of the inherent, semi-teleological potential of nature. Whilst Marcuse's connection between a philosophy of technology and a philosophy of nature was important and is still generally lacking in much modern philosophical work purportedly concerned with the technological phenomenon as a whole, it cannot be ignored that some of his reasoning in this context remains confusing and abruptly alters course away from his much earlier concern with “concrete philosophy” and praxis.

New Science? New Technology?

Although Marcuse had discussed technology throughout his career, by the late 1960^s and 70^s, he began calling not merely for a new approach to technology, but a “new science” and a “new technology” which would work alongside nature in order to fulfill its inherently liberating potentialities. These, he contended, were directly linked to our own potential for social change, and opposed to the predominant mindset consisting in plundering nature for reasons largely rationalised by consumer-capitalist economics. As will be noted a number of times in this article and contrary to many interpretations of Marcuse’s philosophy, the idea of nature’s potential being linked to our own is not a particularly radical idea. After all, long before the advent of capitalism, long before science, indeed, long before language itself, technics; the instrumental process by which nature’s potentialities are unlocked in order to secure and benefit the individual and collective, has been a historical constant.

It is likely unsurprising on this basis, that calls for a new technology should be greeted by most readers with some confusion, for does it not sound as if this is a call for a return to the old, the ancient? If, on the contrary, Marcuse was calling for some genuinely new approach, just what would this resemble? Unfortunately, Marcuse’s answers to such

questions were arguably not altogether coherent, hence, given their idiosyncratic tone, a brief indication of what he did *not* appear to be arguing seems necessary.

Firstly, by “nature” Marcuse was not always referring to the environment, biosphere, or “the wild” specifically, but usually uses the term as a common noun which includes his specifically Marxian view of human nature,² as well as “feminine nature” as discussed in such works as *Counterrevolution and Revolt*.³ Although he generally tended to distinguish “human” from “external” nature, he also often took the two concepts together. This can only be expected given the scope of his critique, however, it can also often be a source of confusion for the reader. Secondly, it should be pointed out that Marcuse was not making a nostalgic call for a return to “simpler times”, nor was he championing a worldwide retreat into medieval agrarianism. Specifically, he saw “nature” as

*A part of history, an object of history; therefore “liberation of nature” cannot mean returning to a pre-technological stage, but advancing to the use of the achievements of technological civilization for freeing it from the destructive abuse of science and technology in the service of exploitation.*⁴

Clearly, Marcuse was no more anti-science than he was technophobic; rather, he was highly critical of what he took to be a historically specific mode of production pri-

marily directed by the bottomless incentive of the profit-motive which had led technoscientific powers into irrational, predatory, and potentially self-defeating forms. As he claimed in a speech in 1968:

*the desublimation which is demanded today is not an undoing of civilization but an undoing of the archaic exploitative aspects of civilization. Far from undoing and regressing it is rather the reintegration into civilization of human faculties, needs and satisfactions which have been reduced, mutilated and distorted in the tradition of exploitative civilization.*⁵

Marcuse believed that a technologically mature society would involve the recognition of its contingency on nature. But this recognition did not imply simply leaving nature to its own devices. Rather, it would include the understanding that, despite ourselves being part of it, nature also served as the only means by which humanity might secure ourselves against its ultimate indifference to us. Hence, Marcuse's view was hardly anti-science or anti-technology as some commentators continue to claim, but against the predatory and exploitative manifestations of these forces as they are conditioned by consumer capitalism. The problem is that recently, the horizon of this noble and necessary end had been obscured, visible only in abstraction from the currently dominant direction of development.

The First Prong

The first prong of Habermas' critique argues, *contra* Marcuse, that modern technology is not part of a historically specific condition of civilization, but a generic enterprise, hence, there are reasons to doubt the coherency of the concept of a "new" science or technology. Coupled with this was a criticism of what he took to be Marcuse's «secret hope»⁶ of a «fraternal relation to nature.»⁷

Marcuse's position was that the technological mode of production is a specific form or set of conditions which our society has taken among other possible conditions, and it is this mode of production which plays the ultimate role in shaping technics, as well as directing their deployment and proliferation.⁸ What Marcuse considered was historically new about technology and the sciences in the modern epoch was that both had taken on controlling rather than liberating manifestations due to the mode of production which provides the framework and rationalization of their development. Borrowing a term from the existentialists, Marcuse contended that societies are always «a historical-social project: in it is projected what a society and its ruling interests intend to do with men and things.»⁹

The idea that technology and science are a neutral part of a historically generic enterprise is then, as Andrew Feenberg writes, «a special kind of ideological illusion.»¹⁰ The "illusion" consists in treating

technology and science as if they were unshaped or removed from their underlying foundations in social causes and dominant interests, and that they form a singular, separate universal, largely discernible from a merely *technical* perspective. But this arguably overlooks Marcuse's more nuanced distinction between technics and technology.¹¹ Nevertheless, Habermas' position tends to concur with theories of technology from sources as diverse as Marshall McLuhan to *Wired*, which tend to view it as a singular edifice, detached from its relative, prevailing cultural and economic incentives.

Habermas summarises this first aspect of Marcuse's position as follows:

*At the stage of their scientific-technical development, then, the forces of production appear to enter a new constellation with the relations of production. Now they no longer function as the basis of a critique of prevailing legitimations in the interest of political engagement, but become instead the basis of legitimation. This is what Marcuse conceives as world-historically new.*¹²

In a manner which has some similarities with Habermas's own "colonization thesis", Marcuse thought that this "technological rationality" had become formatively implicated within a tremendous dispersion of life-world domains which were previously technologically unmediated, and were now inappropriately imposed on them. But again: this

view should not be understood as being founded in some sentimental, nostalgic yearning; it arose from an obstinate conviction that such life-world domains and the ethical evaluations inherent to them were not subject to mathematical, economic, or "technological" quantification.

This is not to say that Marcuse was at all keen on the idea of the polar reaction to such a stance that is seen in various forms in Western society today: a pseudo-intellectual relativism masquerading as sophisticated "theory". After all, Marcuse considered that he lived at a time in history at which alternative forms of technological rationality were available, even those which may lead to something of a restoration of its essential end. *Ipso facto*, qualitatively different societies were available, just because of the riches, developments and advancements so lauded by the staunchest defenders of capitalism. So in short, despite what he considered the *artificial* suspension of the powers of technoscientific capacities in the service of the renewal of "business as usual", Marcuse's optimism regarding the prospects of a new science and new technology implied that there are always alternative ways in which the natural environment may be approached, treated, or used, and that these were ideally means which treated it in accordance with what he considered were its own inherent potentials. To paraphrase a recent discussion of aspects of the work of the earlier Frankfurt School critical

theorist, Walter Benjamin, Marcuse wished for a means by which society could grasp the «possibilities of technology so that it could be harnessed not to master nature but to master the relationship between humanity and nature.»¹³

Once again, although Habermas was critical of the «colonization of life world by system» or perhaps more specifically, the «technization of the life world»¹⁴ and shares with Marcuse a general suspicion regarding the spread of instrumental rationality into the realm of symbolic/communicative discourse, Habermas pays little attention to technics in his later works, and it does not feature as a category in his media theory at all.¹⁵ Aside from this, he appears to be in broad agreement with Marcuse's concern that the governing principles of "purposive-rational action" (i.e., those governing technics) are inappropriate if applied in the social realm, however he does not agree that they are inappropriate if applied to nature.¹⁶ As a form of purposive-rational action, there can only be one technological rationality in Habermas' estimation, so any invocation of a "new" technology, science or instrumentality are not simply suspect on the basis of their suspiciously romantic tone, but due to their outright philosophical incoherency. It appears in Habermas' estimation, Marcuse was simply making a category error or «boundary violation».¹⁷ As Steven Vogel summarises Habermas' position:

*there is no such thing as a new science, there is no alternative to the technology and science we have, because these are associated with a fundamental project of the human species, and not one that is socially variable.*¹⁸

In Habermas as in Weber, scientific-technical rationality is nonsocial, neutral, and formal. By definition it excludes the social [...] it is neutral because it represents a species-wide interest, a cognitive-instrumental interest which overrides all group-specific values. And it is formal as a result of the process of differentiation by which it abstracts from itself from the various contents it mediates. In sum, science and technology are essentially indifferent to interests and ideology and represent the objective world in terms of the possibilities of understanding and control.¹⁹

Once again taking up the argument from the basis of Marcuse's criticism of Weber, Feenberg questions Habermas' apparently blanket contention with reference to the concept of efficiency. If merely seen in abstract terms such as «the ratio of inputs to outputs», Feenberg contends such a concept «would apply in a communist or capitalist society, or even in an Amazonian tribe». This seems to be a strong argument showing that notions such as efficiency come to be embodied in different manners in different societies and cultures.

Concretely, when one actually gets down to applying the notion of

efficiency, one must decide what kinds of things can serve as inputs and outputs, who can offer and acquire them and on what terms, what counts as discommodities, waste, hazard, and so on. These are all socially specific, and so, therefore, is the concept of efficiency in any actual application.²⁰

It is not difficult to find many other examples which further endorse Feenberg's point, as any number of cultural forces can shape productive forays in various ways. Ritual, spirituality, and culturally varying standards of conduct and decency can come to play both instructional roles in the production and use of technical artifacts, as well as providing the incentives for their production and deployment. The principles of "scientific management" or Fordism may be more efficient per se in a society of mass-production, but this sort of efficiency is not necessarily the same as (say) the routines and rituals which played such an informative role in traditional Japanese swordcraft. Hence, Feenberg believes this aspect of Marcuse's thought attests to its continual relevance in the modern period. As Feenberg mentions, whereas Habermas' brief sojourn into the philosophy of technology was suited to the time of the "*neue Sachlichkeit*"; «a time when we tamed our aspirations», despite its perhaps excessive optimism, the pluralistic nature of Marcuse's account of technology appears to have stood the test of time better than the view

of his colleague.²¹ For Feenberg this seems at least in part due to its similarity with more recent work in sociological and philosophical approaches to technical development, such as social constructivism, (a set of approaches other philosophers of technology have not been so favourable towards),²² but in another sense, it also provides grounds for the sort of optimism Marcuse originally appeared to intend; not as a means to establish academic relevance or credibility, but in terms of his ongoing commitment to "concrete philosophy"; a means to exercise a actual practical import over the power and damage technological rationality has brought about to both human and non human nature.

So far, to the extent that other modes of production can be envisioned beyond the current stage of consumer capitalism, I contend Marcuse has the upper hand. For Marcuse's thesis of the historical novelty of the current established status quo, it is sufficient to note for now his contention that the given was always a state of affairs which could be subjected to change, and at the current apex of techno-scientific development and proliferation, there was never a better time than the present. Rather than the first, it appears to be the second prong of Habermas' criticism to have stood the test of time better than Marcuse's view.

The Second Prong

Rather than leaving it there, Marcuse takes his argument concerning a new science's relation to nature significantly further, and despite his reasoning for calling for the "subjectivisation" of nature being relatively clear, this element of his view cannot be defended so easily, and appears to be beset by a number of significant problems. My criticisms can be summarised as follows:

1. Marcuse appears to have an overly optimistic regard for human nature and contends that first nature contains inherently "liberating", positive qualities;

2. Habermas was generally correct to consider Marcuse's endorsement of nature as a "subject" a category error; and

3. by placing hope in revolutionary social change and replacing the current technologically rational incentives of production with those belonging to the environmental (or aesthetic) dimensions sidelines the practical necessity to confront the ecological crisis with an instrumental response, in short, a basis by which the incentive of the growth imperative can be replaced by an ecological imperative is arguably of foremost importance.

Firstly, Feenberg notes his agreement with «most commentators that there are insuperable problems in the dizzying multiplication of categories in which Marcuse attempted to cloth his position after *One-Dimensional Man*.»²³ Indeed, rather

than clarifying his position, Marcuse's conceptual apparatus arguably increases the gulf between theory and practice. As mentioned, his final major works: *An Essay on Liberation, Counterrevolution and Revolt* and *The Aesthetic Dimension* substantially differ from earlier writings in terms of their renewed optimism, but also in their almost playfully ironic tone and their bewildering categorial complexity. Within them Marcuse places a strong emphasis on nature (both human and non-human variants) and returns to the domain of the arts, especially literature, as a basis upon which to construct a renewed harmony between agents and things.²⁴ For example, he referred to the «rediscovery of nature as an *ally* in the struggle against the exploitative societies in which the violation of nature aggravates the violation of man», and described nature's potential role «as a vehicle for the liberation of man.»²⁵ As previously noted, he also calls for its treatment as a «subject»,²⁶ and, citing Theodor Adorno, pushes the point further by claiming that he wanted to help it «open its eyes». ²⁷ As will hopefully become clearer below, this implies more than merely allowing for the potentials of nature to be permitted release by humans in a more careful, less exploitatively instrumental fashion, but in conformance with what Marcuse took to be its intrinsic, life-enhancing aspects.

As previously noted, Marcuse's philosophy of nature owes much to

the philosophical anthropology outlined in Marx's *1844 Manuscripts*, in which humanity's supposedly «essential» capacities; its «musical ear» and its «eye for the beauty of form»²⁸ can be released in accordance with the currently contained aesthetic qualities of nature:

*The emancipated senses, in conjunction with a natural science proceeding on their basis, would guide the "human appropriation" of nature. Then, nature would have "lost its mere utility", it would appear not merely as stuff – organic and inorganic matter – but as life-force in its own right, as subject-object; the striving for life is the substance common to man and nature. Man would then form a living object.*²⁹

Although Marcuse aimed to re-establish the common ground between the "life affirming" aspects of human and non-human nature, he attempted to qualify that his view was not teleological and did not require a plan to be ascribed to nature, but, perhaps in a broadly Kantian sense, asserted a "postulate" of its objective status:³⁰ «the idea of the liberation of nature stipulates no [...] plan or intention in the universe; liberation is the possible plan and intention of human beings, brought to bear upon nature.»³¹ However, Marcuse's view does appear to assume the "potentialities" of nature are fundamentally *positive*.³² For example, he described nature as «receptive», and «opposed, not to productive activity, but to

destructive productivity», and, playfully tempting criticisms from an anthropomorphic context, that «nature, too, awaits the revolution!».³³ He ascribes «gratifying forces and qualities» which can potentially be «uncovered and released», and that nature contains «life enhancing, sensuous, aesthetic qualities.»³⁴ As he admitted himself, his approach is «outrageously unscientific»,³⁵ but nevertheless, despite it being existential (in a socio-political rather than ontological sense),³⁶ these remain broad, sweeping claims which apprehend nature as inherently positive and life affirming and would therefore appear to be open to a number of rather obvious criticisms. Further, given the highfalutin feature of his ideas in this context, it is hard to see how it would be convincing in practice, rather than of merely philosophical interest.

Many of the problems Marcuse's philosophy of nature faces appear to derive from his appropriation of Marx's early philosophical anthropology. From this source, Marcuse reads a means by which humanity might «understand nature as a universe which becomes the congenial medium for human gratification to the degree to which natures own gratifying forces and qualities are recovered and released.»³⁷ As Feenberg mentions, «Marcuse never distinguished his idea of nature from Marx's. Instead, he tried out a whole series of unsatisfactory explanations for the concept of nature he derived from Marx.»³⁸ It must be mentioned

that, amongst these unsatisfactory explanations, Marcuse's attenuation of the Marxian view of nature with recourse to Freudian depth psychology is merely the most obvious, however, this avenue of criticism will be passed over here in order to make a case for a more plainly philosophical criticism of inconsistency.

Simply put, Marcuse's view of nature appears beset with confusing antinomies. As noted previously, on the one hand he advocated a view of nature as an "external" realm upon which human survival crucially depends on.³⁹ Yet he also offered a view roughly in accord with the thesis that nature must be understood as a historical category, a concept which veers closely toward the assumption of it being a «social construction».⁴⁰ As such, this appears to be in direct conflict with Marcuse's other contention that nature contains *inherently* liberating and positive properties. However, it also raises tensions between Marcuse's almost Heideggerian-sounding recommendations to let nature be and allow it to flourish «as a life force in its own right.»⁴¹

Marcuse says that "nature is a historical entity" and eloquently insists that the role of a new science and a new technology is to rebuild the world; but on the other hand he constantly writes as though the model for this rebuilt world is to be found somehow in a noumenal nature's "own" "objective" or "inherent" qualities.⁴²

Furthermore, Vogel adds that the influence of the views of the early

Marx on Marcuse's theory of nature compound the problem, that «it is not the active character of knowledge that the new science is supposed to emphasize but rather (and quite inconsistently) its *receptive character.*»⁴³ These are not the only difficulties which arise due to Marcuse's reliance on Marx's philosophical-anthropological view of human nature in which nature's inherent properties become objectified through the transformative powers of labour and technics. As Feenberg summarises Marcuse's position: «in a free society labour both humanises nature and liberates it to the free development of its own potentialities.»⁴⁴ Hence, it appears Marcuse owes the reader an explanation as to how the prospect of a "human appropriation" of nature can be enacted which at the same time leaves nature to pursue its own ends. If "ends" or "functions" can be ascribed to nature in toto, at all, they are either in the service of the methodological procedures of the sciences, or, in the case of natural selection, say, simply to reproduce, pursue opportunity, and avoid the threat of pain and death. But to characterise this latter in terms of "ends" or "goals" is merely an artifact of the functional language by which nature is apprehended within biology. As goals and ends belong to agents and subjects (which natural selection most certainly isn't), then this appears to represent further problems for Marcuse's view.⁴⁵ The earlier Marxian response preferred

by Marcuse⁴⁶ appears to deviate from his later comments that the end of capitalism was not just a matter of political or psychological renewal, but of survival.⁴⁷ Furthermore, in *Capital* at least, with the exception of its role as a tool in human progress, Marx is not necessarily so attentive to the inherent value of nature in any case. As he writes: «[Man] develops the potentialities slumbering in nature, and subjects them to the play of its forces to his own *sovereign power*.»⁴⁸ Once again, in advocating the liberation of the supposedly suppressed potentials of nature, Marcuse clearly stated that he was not arguing civilisation should be abandoned to the weeds, but in advocating letting nature be what it might like to be a significant antinomy arises.

The call for a new sensibility which could allow for the «emancipation of the senses»;⁴⁹ a profound, global raising of consciousness which in his words would have the effect of making individuals «physically and mentally incapable of creating another Auschwitz», though inspiring, lacks practical efficacy.⁵⁰ Such a prospect may at least be philosophically conceivable, but is extremely difficult to envision in the context of the daily business of the consumer society, staunchly defended as it is by deeply-entrenched politico-economic practices which tend to be aligned with the uncritical pursuit of growth for the sake of growth.

Aside from these concerns, Habermas' criticism of Marcuse's

philosophy of nature are rather more straightforward. In a related manner to his criticism of the coherence of a new science and technology, Marcuse's invocation of a subjective approach to nature flows from this original category error. Habermas' position differs from Marcuse's insofar as the latter retains a basically monological outlook in regard to the anthropological centrality of labour, a position Marx made clear in the *1844 Manuscripts*. Yet Habermas famously splits action, initially into the separate contexts of "work" and "interaction", and later into "communicative" and "instrumental" domains.⁵¹ Vogel summarises Habermas' position as follows:

*Whereas scientism on the one hand takes categories appropriate to nature and misapplies them to the social realm, what happens in Marcuse is that categories appropriate to the social realm get misapplied to the natural one. Thus it is simply a category mistake, Habermas argues, to talk about "dominating" nature or "liberating" nature. Domination and liberation are ethical categories that have to do with relations between people, and nature is not a person.*⁵²

In defence of Marcuse, there is a hint of the Straw Man in this passage, as although he called for the treatment of nature as a subject, to my knowledge, he did not argue that it ought to be treated as one would a person or a moral agent as such.⁵³ Yet, Vogel persists with this characterisation. For him, Marcuse's

view of nature and the new science is a «romantic dream» which posits a «nature with whom we could speak, a nature that is itself a moral agent and with whom a reciprocal moral relation is a possibility.»⁵⁴ However, despite his use of subjective terminology in describing the close correspondences between the treatment of human and non-human nature under the technological mode of production being problematic in themselves, in all fairness, Marcuse often appears to be speaking metaphorically. For example, he wrote that «the pollution of air and water, the noise, the encroachment of industry and commerce on open natural space have the *physical weight* of enslavement, imprisonment.»⁵⁵ Marcuse was not arguing here at least that nature is *literally* imprisoned, implying an entrapped subject with the desire for release, but speaking figuratively by drawing a comparison between the reduction of human and non-human nature into the status of mere resources in a manner strongly reminiscent of Heidegger's critique of modern technology.⁵⁶ As always for Marcuse, there was nothing inevitable about this situation; control, production, or management per se were not inherently aggressive or exploitative, rather, the repressive elements were the result of a particular socio-historical condition or mode of production, one which he held could be subjected to qualitative change. As unlikely as it may sound, the

emergence of a “new sensibility” could allow the threateningly materialistic animating incentives of modern technological production to be replaced by alternatives, specifically those of imagination and creativity found within works of art.⁵⁷ Despite phrases such as “mastery of nature” no doubt connoting domination, perhaps also aggression and exploitation, as ever for Marcuse, there were other dimensions in which such terms could be understood; there can be dominating, exploitative forms of mastery, or there can be liberating ones.⁵⁸ As he pointed out, these apply to control and management in a number of contexts:

If it were demonstrable that the abolition of domination is biologically impossible, then I would say, the idea of abolishing domination is a utopia. I do not believe that anyone has yet demonstrated this. What is probably biologically impossible is to get away without any repression whatsoever. It may be self-imposed, it may be imposed by others. But that is not identical with domination. In Marxian theory and long before it a distinction was made between rational authority and domination. The authority of an airplane pilot, for example, is rational authority. It is impossible to imagine a condition in which the passengers would tell the pilot what to do. The traffic policeman is another typical example of rational authority. These things are probably biological necessities, but political

*domination, domination based on exploitation, oppression, is not.*⁵⁹

Hence, Marcuse's view, although confusing at times, makes more sense once it is realised that he was not collapsing technics and science in their entirety into "domination", but drawing our attention to the contingent incentives which currently prevail over their direction and proliferation. Of course, technical development itself can only but be directed toward a mastery of various elements of nature; those that are mastered in the production of the artifacts themselves, as well as those ends which they are set to perform.⁶⁰ Indeed, to save nature (and therefore potentially ourselves) from the continuing history of predatory human exploitation, certain levels of mastery over it, such as scientific knowledge of its workings, obviously remain necessary. Hence, as Marcuse continually emphasised, the advance of technoscience as a means of uncovering nature's secrets remain amongst the most important of human activities. It is not sufficient that technics should merely be remodelled with nature in mind or made "sustainable", (which always already contains the caveat: "economically viable") but informed by very different social incentives and attitudes than those currently in play. In his view, the reduction of wild and human nature were parallel; the former viewed as a collection of resources to be plundered for profit, the latter narrowly defined by economic models such as

"rational choice theory" as a self-interested and largely amoral agent, consumed by the conflation of material acquisition and happiness in their view of the Good Life and therefore conveniently quantifiable.

In a certain sense, this is confusing as Marcuse was a philosopher who had long stressed his concern for philosophy to have practical ("concrete") as well as theoretical worth; to address and critique the lived experience of modern life in advanced industrial nations.⁶¹ Of course, he could not necessarily have envisioned how soon concerns such as resource depletion, mass extinction, pollution and environmental degradation in general would come to pose dangers to civilisation on a global scale, despite his ardency that qualitative change was now a matter of survival, but as such concerns are now at the forefront of an increasing number of discourses, both scientific, technological and social, it seems likely that were he alive today, they may have played a different, perhaps more significant, role in his philosophy and social critique. Indeed, addressing the question of technology in an environmental context is today of the utmost importance, however, again, it seems vanishingly likely that established economic motivations and incentives could be replaced by those from within nature, or the aesthetic realm any time soon, unless, that is, the worst were to occur.

Note

- ¹ J. Habermas, *Afterword. The Different Rhythms of Philosophy and Politics for Herbert Marcuse on his 100th Birthday*, in H. Marcuse, *Towards a Critical Theory of Society: Collected Papers of Herbert Marcuse*, D. Kellner (ed.), Routledge, London and New York, 2001, vol. 2, p. 236.
- ² This view is chiefly owed to the philosophical anthropology of the “young” Marx, presented in the *Economic and Philosophical Manuscripts of 1844*, which Marcuse was one of the first to discuss in an enthusiastic early paper. See: his *New Sources on the Foundation of Historical Materialism* (1932), in Id., *Heideggerian Marxism*, R. Wolin and J. Abromeit (eds.), Nebraska University Press, Lincoln and London, 2005, pp. 86-121.
- ³ See: H. Marcuse, *Counterrevolution and Revolt*, Beacon Press, Boston, 1972, pp. 59-78.
- ⁴ *Ibid.*, p. 60.
- ⁵ H. Marcuse, *Beyond One-Dimensional Man* (1968), in Id., *Towards a Critical Theory of Society: Collected Papers of Herbert Marcuse*, D. Kellner (ed.), cit., p. 115.
- ⁶ J. Habermas, *Technology and Science as “Ideology”*, in Id., *Toward a Rational Society*, trans. J.J. Shapiro, Beacon Press, Boston, 1970, p. 86.
- ⁷ A. Feenberg leaves this quotation unreferenced in his *Questioning Technology* (Routledge, London, 1999, p.156). However, it appears arguable that Habermas’s use of the concept of a “fraternal” relation to nature is invoked in order to illustrate a potential *implication* of the way nature may be treated in the advent of a “new technology”, not as a way of characterising Marcuse’s view as a whole. See: J. Habermas, *Toward a Rational Society*, cit., p. 88. However, Habermas *does* use this phrase in *A Reply to My Critics*, in *Habermas: Critical Debates*, J. B. Thompson and D. Held (eds.) Macmillan, London, 1982, p. 241.
- ⁸ This should not be confused with more recent and familiar sociological ideas which appear to accomplish little more than calling attention to the fact that the design of technical artifacts have diverse socio-cultural origins, as such views remain historically abstracted, thereby rendering instruments and artifacts as ethically neutral. Such views do not touch on what Marcuse contended was the more pressing overall context in which artifacts have come to have definite political, ethically normative content because of the historically novel condition of technology being directed by capitalist economic incentives of perpetual growth.
- ⁹ H. Marcuse, *Industrialization and Capitalism in Max Weber*, in Id., *Negations: Essays in Critical Theory*, S.G. Bohm (ed.), trans. J.J. Shapiro, Beacon Press, Boston, 1969, p. 224.
- ¹⁰ H. Feenberg, *Questioning Technology*, cit., p. 160.
- ¹¹ Marcuse uses the term “technics” to describe the artifacts, instruments and machinery themselves which are ethically neutral. The term “technology” refers to the mode of production or the wider “social forces” in which they currently arise

- and are deployed. See: his 1941 essay, *Some Implications of Modern Technology* (in Id., *Towards a Critical Theory of Society: Collected Papers of Herbert Marcuse*, D. Kellner (ed.), cit., pp. 41-65) for a discussion of the distinction, which appears significantly influenced by the classical economic distinction between means and modes of production.
- ¹² J. Habermas, *Toward a Rational Society*, cit., p. 84.
- ¹³ P. Thompson, "The Frankfurt School, part 5: Walter Benjamin, fascism and the Future", in «The Guardian», 22 April 2013, <https://www.theguardian.com/commentisfree/belief/2013/apr/22/frankfurt-school-walter-benjamin-fascism-future>, accessed on 1 September 2016.
- ¹⁴ See: A. Feenberg, *Questioning Technology*, cit., p. 167.
- ¹⁵ A lacuna Feenberg attempts to remedy in his revised version of the media theory and his concept of "technical codes". See: *Ibid.*, pp. 87-89.
- ¹⁶ *Ibid.*, p. 167.
- ¹⁷ S. Vogel, *Against Nature: The Concept of Nature in Critical Theory*, State University of New York Press, Albany, 1996, p. 111.
- ¹⁸ S. Vogel, *Marcuse and the New Science*, in *Herbert Marcuse: A Critical Reader*, R. Abromeit and W.R. Cobb (eds.), Routledge, New York, 2004, p. 242.
- ¹⁹ A. Feenberg, *Questioning Technology*, cit., pp. 159-160.
- ²⁰ *Ibid.*, p. 160.
- ²¹ *Ibid.*, p. 157.
- ²² For a critique of social constructivist approaches to technics, see: L. Winner, *Social Constructivism: Opening the Black Box and Finding it Empty* (1993), in *Philosophy of Technology: The Technological Condition*, V. Dusek and R.C. Scharff (eds.), Blackwell, London, 2005, pp. 233-242. For a critique of Winner's essay and his response, see: M. Elam, *Anti-anticonstructivism or Laying the Fears of a Langdon Winner to Rest*, in *Philosophy of Technology: The Technological Condition*, V. Dusek and R.C. Scharff (eds.), cit., pp. 612-616.
- ²³ A. Feenberg, *Questioning Technology*, cit., p. 83.
- ²⁴ See: H. Marcuse, *Counterrevolution and Revolt*, cit., p. 59. Marcuse's long-standing interest in the liberatory aspects of the arts is significant, however it is beyond our scope to address it in any detail here.
- ²⁵ *Ibid.*, p. 60 (my emphasis).
- ²⁶ *Ibid.*, p. 60.
- ²⁷ S. Vogel, *Marcuse and the New Science*, in *Herbert Marcuse: A Critical Reader*, R. Abromeit and W.R. Cobb (eds.), cit., p. 244.
- ²⁸ H. Marcuse, *Counterrevolution and Revolt*, cit., p. 64.
- ²⁹ *Ibid.*, p. 65.
- ³⁰ *Ibid.*, p. 65.
- ³¹ *Ibid.*, p. 66.
- ³² *Ibid.*, p. 60-61.
- ³³ *Ibid.*, p. 74.
- ³⁴ *Ibid.*, p. 67.
- ³⁵ *Ibid.*, p. 65.
- ³⁶ See: H. Marcuse, "Existentialism: Remarks on Jean-Paul Sartre's *L'Être et le Néant*", in «Philosophy and Phenomenological Research», n. 3, March 1948, vol. 3, pp. 309-336.
- ³⁷ H. Marcuse, *Counterrevolution and Revolt*, cit., p. 67.
- ³⁸ A. Feenberg, *Heidegger & Marcuse: The Catastrophe and Liberation of*

- History*, Routledge, London and New York, 2005, p. 126.
- ³⁹ For example, see: H. Marcuse, *Ecology and Revolution* (1972), in Id., *The New Left and the 1960s: Collected Papers of Herbert Marcuse*, D. Kellner (ed.), Routledge, London and New York, 2005, vol. 3, p. 175.
- ⁴⁰ György Lukács appears to be the first Marxist thinker to explicitly describe nature as a social construct in his *History and Class Consciousness*, (MIT Press, Cambridge, 1968, p. 234). See also: N. Smith, *Uneven Development: Nature, Capital and the Production of Space*, Blackwell, Oxford, 1990, pp. 64-65; S. Vogel, *Against Nature: The Concept of Nature in Critical Theory*, cit. For a critique of postmodern views of nature as a social construct, see G. Sessions, "Reinventing Nature, The End of Wilderness?: A Response to William Cronon's Uncommon Ground", in «The Trumpeter: Journal of Ecosophy», n. 1, 1996, vol. 13, pp. 33-38.
- ⁴¹ *The New Left and the 1960s: Collected Papers of Herbert Marcuse*, D. Kellner (ed.), cit., p. 65.
- ⁴² S. Vogel, *Against Nature: The Concept of Nature in Critical Theory*, cit., p. 136.
- ⁴³ *Ibid.*, p. 136.
- ⁴⁴ A. Feenberg, *Heidegger and Marcuse: The Catastrophe and Liberation of History*, cit., p. 124.
- ⁴⁵ For an excellent account of the topic of the language of functionality and the biological sciences, see: T. Lewens, *Organisms and Artifacts: Design in Nature and Elsewhere*, The MIT Press, Cambridge, 2004.
- ⁴⁶ «[...] that man is not *in* nature; nature is not the *external world* into which he first has to come out of his own inwardness. Man *is* nature» (H. Marcuse, *New Sources on the Foundation of Historical Materialism* (1932), in Id., *Heideggerian Marxism*, R. Wolin and J. Abromeit (eds.), cit., p. 97.)
- ⁴⁷ H. Marcuse, *Ecology and Revolution* (1972), in Id., *The New Left and the 1960s: Collected Papers of Herbert Marcuse*, D. Kellner (ed.), cit., p. 174.
- ⁴⁸ K. Marx, *Capital* (1867), Penguin Classics, London, 1990, vol. 1, part 3, ch. 7, p. 283 (my emphasis). In the *Grundrisse*, Marx goes further: «for the first time, nature becomes purely an object for humankind, purely a matter of utility; ceases to be recognized as a power in itself; and the theoretical discovery of its autonomous laws appears merely as a ruse so as to subjugate it under human need.» (Cited in P. Hay, *Main Currents of Western Environmental Thought*, UNSW Press, Sydney, 2005, p. 294.)
- ⁴⁹ H. Marcuse, *Counterrevolution and Revolt*, cit., pp. 64-65.
- ⁵⁰ Marcuse, "Ecology and the Critique of Modern Society", in «Capitalism, Nature, Socialism», n.3, vol. 3, 1979, p. 38.
- ⁵¹ See: S. Vogel, *Against Nature: The Concept of Nature in Critical Theory*, cit., p. 107.
- ⁵² S. Vogel, *Marcuse and the New Science*, in *Herbert Marcuse: A Critical Reader*, R. Abromeit and W.R. Cobb (eds.), p. 243.
- ⁵³ See: A. Feenberg, *Questioning Technology*, cit., p. 156.

- ⁵⁴ S. Vogel, *Against Nature: The Concept of Nature in Critical Theory*, cit., p. 111.
- ⁵⁵ H. Marcuse, *Counterrevolution and Revolt*, cit., p. 61 (my emphasis).
- ⁵⁶ See: M. Heidegger, *The Question Concerning Technology* (1954), in Id., *Basic Writings*, D.F. Krell (ed.), Harper and Rowe, New York, 1977, pp. 287-317.
- ⁵⁷ See: H. Marcuse, *The Aesthetic Dimension*, Beacon Press, Boston, 1978.
- ⁵⁸ See: Marcuse, *One-Dimensional Man*, Routledge, New York, 1964, p. 240.
- ⁵⁹ Marcuse, (1967) "The End of Utopia", a lecture delivered at the Free University of West Berlin in July, 1967, trans. J.J. Shapiro and S.M. Weber, <https://www.marxists.org/reference/archive/marcuse/works/1967/end-utopia.htm>, accessed on 26/07/2016. Also published in H. Marcuse, *Marxism, Revolution and Utopia: Collected Papers of Herbert Marcuse*, D. Kellner and C. Pierce (eds.), Routledge, London and New York, 2014, vol. 6, pp. 249-263.
- ⁶⁰ Perhaps oddly, this remains a topic of considerable debate in the philosophy of technology. Of course: technical artifacts can also be used to carry out functions that may be unintended by their designers, but this obvious point appears to have taken on a life of its own in certain circles.
- ⁶¹ For an early example of this intention, see: H. Marcuse, *On Concrete Philosophy* (1929), in R. Abromeit and R. Wolin, *Heideggerian Marxism*, cit., pp.34-52.
- ⁶² H. Marcuse, *Ecology and Revolution* (1972), in Id., *The New Left and the 1960s: Collected Papers of Herbert Marcuse*, D. Kellner (ed.), cit., p. 174.

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