Technology and accounting: a purely ontic investigation?

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1. In the second part of Identity and Difference ("The Onto-Theo-Logical Constitution of Metaphysics"), Heidegger remarks of contemporary being that: "What now is is marked by the dominance of the active nature of modern technology. This dominance is already presenting itself in all areas of life, by various identifiable traits such as functionalization, systematic improvement, automation, bureaucratization, communications. Just as we call the idea of living things biology, just so the presentation and full articulation of all beings, dominated as they now are everywhere by the nature of the technical, may be called technology. The expression may serve as a term for the metaphysics of the atomic age".[1]

1.1 Let us be quite clear as to what is at stake here. What is on offer is no more and no less than a new discipline — technology — named as such. Its object is to be a sector of beings, just as biology takes living things as its object. Or rather, just as biology is the idea of living things, so technology will be the idea of "all beings" in so far as they are "dominated ... by the nature of the technical".

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1. Martin Heidegger, Identity and Difference, ed., trans. J. Stambaugh, New York, Harper and Row, 1969, pp51-52.

1.1.1 In her Introduction to this work, Joan Stambaugh goes further in one respect and not as far in another when she writes: "Technology isn't just something man has acquired as an accessory. Right now it is what he is".[2] This goes much further than Heidegger because it takes domination "by the nature of the technical" to a more conclusive point: to a point of complete identity between man today and technology. Yet her paraphrase is also less radical than Heidegger's own comments because it confines the kinds of beings "dominated ... by the nature of the technical" to those beings that happen to be men. The difference is important because it shows up what Heidegger himself may have intended with regard to what the discipline of technology should be the "presentation and full articulation" of. That is, in the passage from Heidegger, we are invited to imagine a discipline that would engage (present and fully articulate) "all beings", not just men. In that respect, the discipline of technology should rightly include plants and animals, inert "nature" (rocks and stones), technological artifacts (bombs and computers) as well as men. In addition to this, and again by contrast with Stambaugh's formulation, Heidegger does not assume a complete identity between such technological beings and technology itself; rather he writes of "domination ... by the nature of the technical". To be dominated by something, that is, does not entail identity with it.

1.2 At least in the passage in question, while some ears will hear Heidegger's reference to "functionalization, systematic improvement, automation, bureaucratization, communications" as a complaint about modern technologies, this need not be so. It is true that, elsewhere, Heidegger is barely able to conceal a certain amount of what we would now

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2. Joan Stambaugh, "Introduction" to Identity and Difference, p13.

call "technophobia" when it comes to the particular technologies of his own times.[3] It is also true that, towards the end of his essay, he appears to rue the possibility that "the rule of metaphysics may ... entrench itself, in the shape of modern technology with its developments rushing along boundlessly".[4] Yet, in the passage in question, it is just as easy to read the reference to "functionalization, systematic improvement, automation, bureaucratization, communications" as no more than a list of "identifiable traits" and therefore as among those characteristics of domination "by the technical" that the discipline of technology ought to present and fully articulate. That is, the passage can easily be read without recourse to moral judgments.

1.3 One possible ambiguity does arise from this otherwise crystal clear passage, however. When Heidegger refers to "biology", he glosses this as "the idea of living things". Now we must ask: is he in fact talking about the discipline of biology as such? For if he is not, then, by his own analogy, technology may not be a discipline either. Terms like "biology", "history", "chemistry" and so on have an in-built ambiguity. Each can refer to a particular discipline, or else to the sphere of beings that discipline engages with. This is less true of disciplinary names like "sociology" (cf. society) and "hermeneutics" (cf. text). And while this does not resolve the issue, it seems clear to me that when Heidegger writes of biology as "the idea of living things", he is referring to forms of thought — perhaps not just to formally constituted disciplines (such as one finds in university departments), and perhaps to literally any thinking about what is as happening to be a living

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3. Martin Heidegger, "The Question Concerning Technology", trans. W. Lovitt, in The Question Concerning Technology and Other Essays, New York, Garland, 1997, pp3-35.

4. Identity and Difference, p72.

thing — and he is not therefore referring just to an object of investigation as such.

1.3.1 This suggests a reason for Heidegger separating "technology" from "the technical". Technology is to be an idea about something (possibly including, as with biology, professional, formally-constituted, "departmental" ideas). And what it is to be an idea about is domination by (not identity with) the technical. And how it is to be "about" that is via a "presentation and full articulation".

1.3.2 Nowhere in this specification — and this is important — does Heidegger say that the idea (and, for us, this includes the discipline) of technology should be critical of the technical or of domination by the technical. Nor does he say that actual technologies, or indeed any technological being, including man, should be subjected to criticism. No principles are adumbrated here whereby, by comparison with those principles, the technological age, the "atomic age", would be seen to fall short, to be inauthentic or just plain bad. And nowhere is there a mention of man specifically, only of beings; let alone is there a mention of some property of men called "humanity". Ergo: there can be no mention in this passage of the peculiar idea that modern technology somehow negates, diminishes or otherwise works contrary to some intrinsic humanity.

1.3.2.1 In fact, evidence from elsewhere in Heidegger's work, especially including that on the crucial concept of modernity — representation — suggests that the very idea of an intrinsic or "subjective" human property called "humanity" (that many today may think of as technology's foe) is co-

terminous with modernity and representational thinking.[5] To this extent, the very idea of a "humanity" may be nothing more than a particularly recent technology (or form of domination by the technical) in its own right. In this case, it too would be part of the "presentation and full articulation" proper to the discipline of technology.

1.4 At the end of the cited passage, however, Heidegger makes it clear that the idea of technology, albeit that it must now encompass more than just particular machines and devices (technologies), is, even if it is to be a discipline, a metaphysics. In fact it is to be "the metaphysics of the atomic age". But again, this need not be seen in a necessarily negative moral light. Almost all thought, for Heidegger, is either directly metaphysical or else imbricated in metaphysics. To say that a discipline is metaphysical is simply to say that it will treat of either the ontic (the sphere of beings) or the ontological (the sphere of Being as such) without recourse to the difference between the two — which Heidegger calls the ontic-ontological difference. And, as we have seen, the domain of the idea of technology is, clearly, on Heidegger's account, the domain of "all beings". Technology then is an ontic metaphysics, no doubt about it. But in this respect it is on all fours with, for example, the natural sciences, psychology and engineering.

1.4.1 To see where Heidegger himself might go, what path he might take, given that he is far from interested in taking up the ontic discipline of technology himself, we need to read on from the passage quoted in §1. Heidegger continues: "Viewed from the present and drawn from our insight into the present, the step back out of metaphysics into the essential nature of

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5. Martin Heidegger, "The Age of the Word Picture", trans. W. Lovitt, in The Question Concerning Technology and Other Essays, New York, Garland, 1997, pp 115-154.

metaphysics is the step out of technology and technological description and interpretation of the age, into the essence of modern technology which is still to be thought".[6] What this opens up is another area of investigation altogether: no longer technology as an ontically-constituted metaphysics but a philosophical inquiry into the essence (Wesen) of technology, modern or otherwise. And while his earlier essay, "The Question Concerning Technology" had made some inroads into this kind of inquiry, Heidegger now appears to think that this project is far from complete. Its details need not concern us here, in this purely ontic investigation: but it does signal the possibility of an important philosophy of technology as a resource for the discipline of technology as such.[7] In particular, such an inquiry may well furnish us with necessary and important insights into what the phrase "the nature of the technical" might mean.

1.4.1.1 As far as this "nature" is concerned, one clue in particular arises in the earlier "Question Concerning Technology". There Heidegger writes of technology as such, as opposed to particular technologies (and, in particular, as opposed to those of the "atomic age"): "[t]echnology comes to presence [west] in the realm where revealing and unconcealment take place, where alétheia, truth, happens".[8] This arises from a closer etymological attention to the Ancient Greek, techné, a term more akin to our word "art" and taking in all craft, handiwork and, conceivably, the general equipmentality that Heidegger finds so critical to Dasein's ordinary

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6. Identity and Difference, p52.
7. Part of the investigation of the essence of technology is taken up in my paper "Cybernetymology and ~ethics", shortly to appear in Postmodern Culture (September 1998).
8. "The Question Concerning Technology", p13.

everydayness in Being and Time.[9] In this light, it is possible to see that our contemporary domination by "the nature of the technical" is but an inflexion (whether fortunate or unfortunate does not matter here) of a much more general condition — one in which whatever is is effected by techné-equipmentality (by the ready-to-hand-ness of Dasein) as such, including such things as "nature" (the stuff of the sciences), "culture" and "art".[10]

2. Later in "The Onto-Theo-Logical Constitution of Metaphysics", Heidegger differentiates and relates the thinking of beings (including, presumably that of those beings dominated by "the nature of the technical" already mentioned in §1) from/to Being as such, in the following way: "... how can 'Being' ever come to present itself as 'thought'? How else than by the fact that Being is previously marked as ground, while thinking — since it belongs together with Being — gathers itself toward Being as its ground, in the manner of giving ground and accounting for the ground".[11]

2.1 Right away we need to know that Heidegger is describing a standard metaphysical procedure. This passage, that is, is not part of his famous "step back out of metaphysics" already encountered. He is dealing, rather, with a tendency in metaphysics to equate Being with thought. In particular he is

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9. Martin Heidegger, Being and Time, trans. J. Macquarrie and E. Robinson, Oxford, Blackwell, 1962. See especially Division I and the commentary on it in Mark Okrent, Heidegger's Pragmatism: Understanding, Being, and the Critique of Metaphysics, Ithaca, Cornell University Press, 1988.

10. On science, see Martin Heidegger, “Science and Reflection”, trans. W. Lovitt, in The Question Concerning Technology and Other Essays, New York, Garland, 1997 pp155-182. On culture, see "The Age of the World Picture". On art, see Martin Heidegger, “The Origin of the Work of Art”, trans. D. Farrell Krell, in Basic Writings, London, Routledge, 1993 pp143-206.

11. Identity and Difference, p57.

referring to Hegel, but also to a whole tradition that may start as early as the pre-Socratics and Parmenides' εστιν γαρ ειναι (estin gar einai).[12] Accordingly, we have here a succinct account of what may be the metaphysical picture. Now since the discipline of technology is, as we have seen, to be an ontic metaphysics, this connection of thought and being may give us a clue to at least one of the ways to begin to construct such a discipline.

2.2 To help our endeavour, Heidegger's translator offers the following important clarification of the terminology used by Heidegger here: "There are three closely related terms in the German text: 'begründen' (to account for), 'ergründen' (to give the ground), and 'gründen' (to ground). In a consultation Heidegger clarified the relation of these terms as follows: 'Begründen' has to do with beings and is ontic. 'Ergründen' belongs to Being and is ontological. 'Gründen' is the relationship of 'begründen' and 'ergründen' and encompasses both".[13]

2.2.1 If technology is to be primarily an ontically-involved discipline, then it becomes clear that one of its topics my well be "begründen" — the whole business of beings accounting for the grounds that Being provides ('ergründen'). So while ontologically-involved disciplines might turn to the question of 'ergründen' (the provision of grounds) — and philosophical metaphysics would be a case in point — and while Heidegger's interest in the ontic-ontological difference might point down the track towards 'gründen' (grounding as the relation of 'begründen' and 'ergründen'), a discipline of technology would confine itself to the ontic question of 'begründen'. This suggests a centrality, for us, of accounting, and

12. Identity and Difference, p73.

13. Identity and Difference, p57.

particularly of the ways technological beings are necessarily involved in accounting practices.

2.3 Now there is an irony here, because, as we have seen (right from §1) technology itself is to concern itself with "the presentation and full articulation" of beings dominated by the technical. But what else can this "presentation and full articulation" be other than, itself, a form of accounting? This leaves technology as primarily an account of accounts, a meta-accounting. There is then no hope of ideally separating technology's resources (its forms of accounting) from its topics (the forms of accounting of technological beings). Even the descriptive accounts it gives — and we have already seen in §1.3.2 that technology will be a descriptive rather than a critical discipline — will be part of the very order of affairs the discipline would seek to describe. In this area then, the distinction between "data" and "analysis" will be hard to make. To put this another way: theories of technology will not be able to avoid becoming technologies.

2.3.1 Heidegger describes this circle as inevitable: "Being grounds beings, and beings, as what is most of all, account for Being. One comes over the other, one arrives in the other. Overwhelming [coming over] and arriving appear in each other in reciprocal reflection [reflexivity?]. Speaking in terms of the difference, this means: perdurance is a circling, the circling of Being and beings around each other".[14] The circle, in this case, is redolent of Nietzsche's Eternal Recurrence of the Same, dealt with at length by Heidegger in another place.[15] But what this account of the circling relation

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14. Identity and Difference, p69.

15. Martin Heidegger, Nietzsche, Vol. II: The Eternal Recurrence of the Same, trans. D. Farrell Krell, New York, Harper & Row, 1984. For a commentary with respect

shows is that, no matter how much the discipline of technology may try to confine itself to the purely ontic, no matter how much it might want to deal solely with beings' accounting, what it is that is accounted for will always be Being itself, ultimately. No purely ontic investigation, then, is possible. The difference between Being and beings must, as Heidegger found, always assert itself, no matter how "empirical" or, indeed, how "speculative" the investigation.

3. From §2 (especially with the useful clarification in §2.1), we can begin to see that what may well come to characterise beings, with respect to their grounding relation to all Being, as "accounting for the ground". For just as Being provides the ground for beings, so beings account for the ground that Being provides (see §2.3.1). And in addition to this, given §1, we are led to a question concerning technological beings: what is specific to the nature of their particular accounting (for the ground that Being provides)? Or: what is the form of accounting of technological beings?[16]

3.1 Today, one almost classic instance of technological beings would be the so-called cyber-forms (cybernetics, cyberspace, cybernauts and so on). Significantly, these encompass both men, other biological systems, and machines — even to the point where we can find such terms as "cyborg", derived from "cyber" and "organism". Our question, then, might be translated into the question of the forms of accounting of cyber-

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to culture and technology, see my "Five Theses on Culture", under consideration by Research in Phenomenology.

16. With respect to cyber-technologies, the question of accounting is taken up in my "Cybernetymology and ~ethics" (see above). Much of the following discussion is based on a section of that paper.

technologies, as just one case in point. (Another important instance would be genetics, genetic engineering and genetic modification.)

3.1.1 Traditionally, the idea of the cyber is associated with Norbert Wiener who, in Cybernetics: Or Control and Communication in the Animal and the Machine, described his own fledgling discipline as follows: "We have decided to call the entire field of control and communication theory, whether in the machine or in the animal, by the name Cybernetics, which we form from the Greek χυβερνητησ or steersman. In choosing this term, we wish to recognize that the first significant paper on feedback mechanisms is an article on governors, which was published by Clark Maxwell in 1868, and that governor is derived from a Latin corruption of χυβερνητησ. We also wish to refer to the fact that the steering engines of a ship are indeed one of the earliest and best-developed forms of feedback mechanisms".[17]

3.1.1.1 Note here that, right from the start, from the title of the book and from the definition of the discipline, cybernetics is interested in a property of systems: whether animal (including human) or machinic. No distinction is drawn at this level. Instead, the critical idea is that some beings can self-control or self-steer via feedback mechanisms. Wiener's goal is the understanding of those mechanisms whether they be neural, social, mechanical or located in hardware/software assemblages. Might this idea of feedback be significant for our question of accounting and technology?

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17. Norbert Wiener, Cybernetics: Or Control and Communication in the Animal and the Machine, 2nd edition, Cambridge, MIT Press, 1961, pp11-12. Wiener's reference to the Maxwell paper is as follows: "Maxwell, J.C., Proc. Roy. Soc. (London), 16, 270-283, (1868)". Note Wiener's spelling of χυβερνητησ. The more usual spelling begins with kappa rather than chi.

3.1.1.2 Accordingly, what is crucial to the field of cybernetics — what marks out its distinct objects — is the feedback that produces recursion. State s' becomes state s" by virtue of an operation which (in either an identical or a modified form) is reapplied to s" to generate s"', and so on. In this case, the act of steering oneself is a case of governing and being governed, reflexively, in the same instant. There is no strict active-passive distinction in a situation of feedback, recursion or re-iteration. (This is part of the usual definition of a reflexive verb.) The cybernetic is, then, in its brutest form, the field of self-governance.

3.1.2 What cybernetic machines have in common with cybernetic organisms — and all organisms, on Wiener's, definition (§3.1.1), must be cybernetic in so far as they are self-governing in their self-propulsion — is that they govern themselves (and are governed) reflexively. And here the term "reflexive" (again, as in "reflexive verb") is intended to capture all the properties of self-re-iteration, feedback, recursivity and self-governing self-propulsion. This, we might say, is the ethos of organisms. And, with the advent of cybernetic machines, we now have to say that there are some machines that share this ethos.

3.2 Even this very limited look at Wiener's initial statement shows that the various public moralities about cyber-technologies are utterly misplaced. I mean, for example, cyberphobic reactions to the idea that machines might replace people or their functions — a deep and abiding fear of a necessary equipmentality, supplementality or prosthesis. While we can hear this lament everywhere today, one lasting monument to it is E.M. Forster's short

story, "The Machine Stops".[18] Here, the machine comes to remove that most apparently human of all needs: to see the sky. In cyberphobic texts, it is either this, the relation of the organism to nature, or else its relation to an inner psyche or soul, or both, that is apparently removed by the machine. It is not insignificant that the same reception has greeted handwriting, the printing press, street lighting, television, and now, among other things, computers.

3.2.1 On the other hand, the public morality of cyberphilia simply reverses these values. We can find this in such places as the stories of H.G. Wells, Wired magazine or in thousands of sites on the Internet. In this idealistic inversion of cyberphobia, all things cyber are thought to enhance natural or psychological human capacities: the sky becomes clearer as it is digitised, the workings of the mind become more open and available as they become "artificial", and so on and so forth. The picture is well known today.

3.2.2 What both the -philic and -phobic positions mistake is precisely what we have found to be the ethos of cybernetic beings (organisms, people, some machines): namely, self-control or reflexivity (§3.1.2). This is neither a natural nor a mental capacity. It is not constituted out of a relation between the organism and nature, or a relation between it and its putative department of internal affairs. Rather the ethos is Wiener's own cybernetic principle: the self-organising and self-governing self-propulsion that is reflexivity.

3.3 The question of a cyber-ethos (§3.2.2) is not as far away as we may think from the question of ethics-proper. As Deleuze, after Spinoza, has pointed

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18. E.M. Forster, "The Machine Stops", in his Collected Short Stories, London, Penguin, 1954, pp109-146.

out, ethics (as opposed to mere morality or moral judgmentalism) is a matter of ethology.[19] It is a matter of what a body can do; its affects. That is, it is not as if a body acted and then, upon a later consultation of its internal states, its "intentions" or "motives", it decided whether or not the action was good or bad. And, a fortiori, the ethical cannot be a matter of absolute values of Good and Evil. These pertain only to moralisms such as cyberphobia and cyberphilia themselves. Cybern-ethics, then, does not come super-added to cyber-bodies. What a self-organising, self-governing, self-propelling (that is reflexive) body does is its ethos, its ethics. What is good for a body is whatever it does to enhance its powers of self-organising and self-governing self-propulsion. The good is an increase in reflexivity. And the bad, again following Deleuze-Spinoza, is whatever it is that a body does that decreases its reflexive capacity. All of this has to do with the field of bodily movement or motion — hence ethology.

3.4 Although things may well change in the future, perhaps in the very near future, it has to be said that while all cyber-beings (animal organisms, human organisms and some machines) are uniquely reflexive in their operations, only human cyber-beings are accountably reflexive — so here we come, finally, to the question of accounts and accounting. As a human reflexive organism, I display, in and as my own motion, how it is that that very motion is to be taken by others. This is how the "social order" so crucial to human self-organisation is possible. Or rather, this is what social order, fundamentally, is.

3.4.1 A good instance of accountable reflexivity as social order is mentioned by Wes Sharrock: "Social order is easy to find because it's put there to be

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19. Gilles Deleuze, Spinoza: Practical Philosophy, trans. R. Hurley, San Francisco, City Lights Books, 1988, pp27 & 125.

found. When you go about your actions [...] you do them so that (or in ways that) other people can see what you're doing. You do your actions to have them recognized as the actions that they are. When you stand at the bus stop, you stand in such a way that you can be seen to be waiting for a bus. People across the street can see what you're doing, according to where and how you're standing.... [Y]ou're standing at a bus stop and somebody comes and stands next to you and they stand in such a way that eventually you can see that these people are standing in a line and that one person's the first and another is the second, and some person's at the end. People stand around at bus stops in ways they can be seen to be waiting for a bus".[20]

3.4.2 Human social order is self-organising; it is cybernetic through-and-through; but it is not just cybernetic. It is also, and utterly, in the business of displaying its cyberneticity, its self-organisation. That is, it is accountable. The way I stand by a particular pole, perhaps under a particular shelter, so that what I'm doing is visible to everyone as "waiting for a bus" (rather than, say, loitering) is an instance of accountability. With or without words, I am, in the very doing of waiting for a bus, accounting for what I'm doing as waiting for a bus (as opposed to, for example, using the bus shelter to keep out of the rain for a while).

3.4.2.1 Note that the verbal form of this accounting is only one such kind of accountability. Though it is, by and large, how we do it, accounting does not have to be limited to verbal language.

3.4.3 Sharrock's point (§3.4.1) cannot be over-emphasised: it is not as if there is the movement, motion or action and then the feedback-like

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20. Wes Sharrock, "Ethnographic Work", The Discourse Analysis Research Group Newsletter, 11, 1, 1995, pp3-8. This quotation, p4.

accounting (organised, for example, intentionally). Rather the two, as the specific properties of human self-organising organisms — and such that that self-organisation is called, in general, "society" — are indistinguishable. This is what is particular to us, to our ethos. It is unique to our ethical positioning that we are accountable in this sense.

3.4.3.1 To Heidegger's idea of beings' accounting for Being as their ground, we should now have to ask: what form of being other than man can provide such an account? Perhaps, after all, we shall have to agree with Stambaugh's insertion of man into the equation (§1.1.1).

3.4.4 Still, as a matter of sheer principle, there is no reason why cybernetic machines should not have — though they presently do not have, as a matter of historical fact — exactly this ethics. Animals and other non-human organisms, I fear, are stuck without it forever. (Though I'm not entirely sure about dolphins. They seem to need a closer look.)

3.4.4.1 The question would be: when will a non-human cybernetic device put itself in motion in such a way that anyone (including any other cybernetic machine) will be able recognise what it is doing because it has designed its motion to be (not only self-governing but also) accountably that (self-governed) action? A cybernetic machine can build, say, a car. When will it do so accountably — such that what it is doing is indeed building a car but, above all, such that it is doing so in such a way that it displays its motions as designed to be specifically that action for anyone to see?

3.5 It will be at that point that a sheer coincidence of self-organising cybernetic properties — held in common by some machines and all organisms (including human organisms) — will have become an ethical

identity between cybernetic machines and ourselves. That, if ever, is how the Turing test will be passed.