

## § 1. Conspicuous abstention: Why is there no psychology of technology?

Technology has become a ubiquitous feature of everyday life, in the twenty-first century “global village”. It seems reasonable to expect a corresponding sub-field concerned with the psychological aspects of technology. What is technology’s impact affectively and relationally? What are its effects cognitively, or on the imagination? How does it qualitatively transform experience and perspective? The set of studies undertaking these inquiries would compose at worst a focus, at best a subdiscipline, called “the psychology of technology”. However, even a cursory review of the literature shows there is no such focus, let alone a subdiscipline. This is surprising, not least because there are two significant precedents from which psychology could draw. One is the *ersatz* tradition of “the philosophy of technology”, i.e., a continuity of questioning within philosophy, instigated by the ground-breaking work of figures like Heidegger and Ellul, focused on the phenomenon of technology. The second is the emergence of an interdisciplinary field of “technology studies”, primarily as a development within and differentiation of the older and more broadly-defined field of “science studies”. This emergence, which can be dated to the 1980s, has been significant enough to warrant the increasingly-accepted nomenclature of “science and technology studies” (STS). In both cases however psychology is conspicuous by its absence.

The obvious strategy to rectify this conspicuous absence of psychology would be to exhaustively review the literature composing these two venerable precedents and extract from that corpus the texts with psychological import. However, this strategy turns out to be not as straightforward as it first appears. There are two significant obstacles, which

upon closer examination show themselves to be related. The first obstacle is the troubled relationship between the philosophy of technology and STS, and the obscuring of the substantive issues on which they (dis)agree due to the resulting polemics. This obstacle has everything to do with their attempt at legitimating themselves as newly emerging fields that have a common subject matter but which derive from very different intellectual traditions. Technology as a phenomenon, then, upon becoming the subject matter of different traditions of enquiry, incites issues of “boundary maintenance” (Stam, 2003) that raise the question of the legitimacy of those traditions. This paper argues the differences and polemic between the philosophy of technology and STS prove to be more than mere practical problems to be clarified for a potential psychology of technology; they pose a substantial challenge to psychology.

The second obstacle is psychology’s disciplinary self-understanding, rooted in an empiricist epistemology as elaborated by a philosophy of science tradition. A key feature of this self-understanding is that it overlooks and takes for granted the role of technology in the constitution of its subject matter and formulation of its theorizing. Both the philosophy of technology and STS, despite significant differences and disagreements, are in critical agreement insofar as both reject empiricism and the “Received View” as articulated by traditional philosophy of science. For psychology to engage either the philosophy of technology or STS in productive ways, the discipline needs to overcome its reliance on those traditional views of science. But in so doing, the otherwise hidden political advantages and consequences that accrue from an unexamined use of technology

are exposed which deal a significant blow to claims for psychological expertise and knowledge.

The two obstacles to developing a psychology of technology, then, prove related in that each are symptomatic of *disciplinarity*, by which latter term of art I mean *a* particular, which is *the* peculiarly modern, way of mobilizing respective intellectual traditions for developing inquiry. The polemic, debate, and cross-talk between the philosophy of technology and STS obscures substantive issues about technology itself as a phenomenon due to their deriving from different traditions while dealing with a common subject matter in a process of inquiring that is also serving the purpose of self-legitimation. Whereas psychology legitimates itself through an inquiry derived from a tradition in which technology, as a so-called neutral tool that enables the control necessary to attain objectivity, retains its privilege to the same extent that it remains unexamined. Both obstacles stem from the disciplinary self-interest of each mode of inquiry that mobilizes its respective tradition to legitimate the community's investigative practices in the present. Seeing these two obstacles working together in combination, psychology would seem to not merely be conspicuously absent from the study of technology but, in effect, the discipline is deliberately abstaining from such inquiry. In this respect, technology is analogous to phenomena like human agency, or power, or religion: in transcending extant disciplinary boundaries the phenomenon is either ignored because the researcher cannot see how to address it according to accepted disciplinary conventions of inquiry, or it is reductively distorted into a caricature of itself amenable to study. To reflect on technology and psychology's conspicuous abstention from its study, then, is an exercise

in diagnosis of that institutionalized dis-ease of intellectual life, co-extensive with modernity, called disciplinarity.

## **§ 2. The philosophy of technology and STS: A study in contrasts**

The title STS, which can be dated to the 1980s, designates a coalescence of the broadly defined and very young interdisciplinary field, at that point called “science studies”, into a more clearly discernable shape. In 1987, Trevor Pinch and Wiebe Bijker reissued their 1984 article “The social construction of facts and artifacts: Or how the sociology of science and the sociology of technology might benefit each other”. Pinch and Bijker’s (1987) concern, to outline an “integrated social constructivist approach to the empirical study of science and technology” (p. 46), clearly touched a chord that resonated throughout science studies, as its seminal importance in any review of citations in STS will attest. On the one hand Pinch & Bijker articulated technology as a research object that gave it prominence and respectability, and worthy of investigation in its own right. On the other hand, in so doing they established, not so much through demonstration as by fiat, a coherence of methodology, and therefore an identifiable research programme, to the motley assortment of studies of science being undertaken. The research programme had its object (science and technology) and an accepted methodology (social constructivist). The seminal importance of their article was not due to Pinch & Bijker breaking new ground or making some discovery, but that much of the groundwork already undertaken and in process, as well as many other potential and promising lines of inquiry still ‘up in the air’, congealed into a definitive pattern implicitly at work in, and thus broadly accepted by, the science studies community, through Pinch & Bijker’s manner of articulating the situation. The proposal for research into technology, a

phenomenon which in itself amounts to a field of its own, as an extension and indispensable part of the study of science, was a key self-defining moment that intertwined numerous strands of inquiry, from feminist epistemologies to sociology of knowledge to rhetorical analyses to historical studies, into a common thread.

In accomplishing this kind of influential articulation, Pinch & Bijker were in effect repeating, and consequentially elaborating, what Thomas Kuhn's *The structure of scientific revolutions* achieved in the 1960s context of the widespread rejection of traditional philosophy of science. Kuhn's articulation of paradigms, normal science, revolutions, etc., gave influential voice to a broadly held 'dissensus', and it was in the wake of the demise of positivist and empirist conceptions of science that sociological and historical formulations gained their appeal. In the late 1960s, theories such as Foucault's work on the human sciences and their historical emergence, Bachelard's reconceiving of science in terms of instrumentally-constituted problematics, Habermas' argument for knowledge as constituted through particular interests, or Berger & Luckmann's elaboration of the sociology of knowledge through the notion of social construction, become central rather than peripheral to our understanding of science. In a dramatic reversal from a philosophy of science that argued the essence of science inhered in the rational work of justifying theories whereas the context of discovery was of merely incidental interest, the sociological and historical particulars of scientific activity become the focus. Formerly marginalized approaches or minorly influential movements like the sociology of knowledge, the Frankfurt school and neo-Marxist theorists, the Parisian historians of science, feminist reconceptualizations of epistemology, and so on, rush into

the breach. Earlier forms of sociology of science, like Robert Merton's, become criticized for their timidity by way of contrast to the Edinburgh "strong programme"; early sociological histories of science such as Joseph Ben-David's become exemplary of old assumptions to be superseded by more thoroughly socialized and politically aware histories like Shapin and Schaeffer's account of the Boyle-Hobbes controversy (cf. Shapin, 1982); and earlier histories of science, including ironically Kuhn's own versions, condemned for their Whiggish celebratory attitudes in favour of more radical and more critical historicist accounts, like Latour & Callon's "actor-network" approach. Feminist analyses of male gender bias evident in scientific discourse, historical representation, and epistemological assumptions become another form of ammunition in the assault. That is, all of those strands that compose the multiplicity of studies summarized under the umbrella term "science studies", but which had not yet coalesced into a distinctive shape, come into their own.

At this point I want to draw attention to the distorting privilege of hindsight in order to stress the significance of the theme of technology in transforming the cacophony of "science studies" into a now-established, a now-presumably-coherent, and an unquestionably productive, orientation of inquiry and field called STS. A problem in doing any history is that the counterfactual thought experiment of "would science studies have coalesced into its current shape without technology as a theme?" cannot be invoked as in any sense a proof. Rather we have to work with the historical record as a given, neither in the reified sense of predestined or ineluctable, nor as altogether arbitrary chance. Events – and note, the ascription of 'eventhood' is already loaded with the

reifications of hindsight! – are, contra arbitrariness, certainly significant, but, contra reification, significant in an open-ended manner soliciting contestation, and with an unfixed, unfinished quality to them that demands interpretive engagement not so much for the sake of the truth of the past event, but more to improvise the shape and therefore the orientation to the future of the present. I read the seminal place of technology as the key theme in determining the emergent shape of science studies, when put into the broader historical context of the dismantling of the modern epistemological picture of science, progress, neutrality, and objectivity, to be above all because technology is the crucible wherein the all-too-human activity of social constructing science's object gets transformed into its opposite, the God's eye view from nowhere, that has defined objectivity. For the traditional scientist, technology as the materialization of theory, discourse, and history, for the purpose of maximizing consensus prior to the pursuit of certain questions aimed at an equally maximal stabilizing of reality into facts conceived as "natural", is precisely the last thing to be reflected upon. Whereas for science studies, it is precisely the manner in which all of those sociological and historical factors come to be invested into and hidden within the technology that is of central interest, while nature talk is put entirely out of play – or, as with Latour, nature talk is put out of play in the sense that it and the social are collapsed together. It is not irrelevant that shortly after the increased focus on technology within STS the science wars of the 1990s erupt, and the increasingly strident rhetoric and alarmism about the relativist implications of social constructivism breaks out. To focus on technology is to focus on something essential for and constitutive of science; and insofar as to avoid reflection on technology and to keep hidden its alchemical transmutation of social-historical human stuff into universally

objective truth is necessary support for a certain ideology of science, to reflect on it and expose its mysteries is to threaten that ideology.

At least, that is how I want to frame the contestation, and how I want to influence the shape and orientation to the future of the present. But it is not clear that this is how STS has understood its own history. On the one hand, they are playing to their strengths, and a key part to their productivity and success at establishing themselves is their eschewing any 'big picture' pronouncements. In terms of disciplinarity this is immediately understandable: the success and significance of STS is rooted not in substantive implications of their research, but in having defined themselves through a distinctive inquiry and methodology and defined a field in a proprietary manner. Thus they form an autonomous community with an empirical programme that generates results, is productive in an institutionally recognized sense, and the community can teach its methods and extend the reach of the field through the next research generation. But through this success STS also becomes part of an institutional infrastructure that in administering research also enforces, according to bureaucratic rationalizations of efficiency and necessity, the compartmentalization of disciplines into noncommunicating solitudes. In large part this negates cross-disciplinary dialogue and understanding, and neutralizes political implications and conflicts between disciplines. Through this process, it must be asked how well STS can retain a critical edge or transformative potential vis-à-vis scientific practice in its becoming well-established.

The philosophy of technology has followed a very different trajectory. Unlike STS, the philosophy of technology has not been able to capitalize upon disciplinarity. In this respect the difference between the philosophy of technology and analytic philosophy is stark, as in many ways the latter, following the logical positivist lead, is the expected form philosophy should take if it capitulates to disciplinarity. Instead, a scattering of individuals with impressive philosophical forefathers – Albert Borgmann develops Heidegger; Langdon Winner refines Jacques Ellul; Don Ihde applies Husserl; Andrew Feenberg elaborates Marcuse – articulate highly individualized positions that in each case demonstrate considerable erudition and insight. Of course, this pattern is not pervasive, but to generalize there is a discernable pattern: a scaling back of focus and corresponding modesty of claim from the grand pronouncements of the forefathers in an attempt to apply more particulate analysis to more specific effects of technology. At the same time, they have tried to retain some of the aspiration to generality traditionally associated with philosophy: unlike STS, for which the case-study analyses of locally bounded phenomena they conduct *are* in a sense the implications, the philosophy of technology argues for broader consequences to their analyses. Some have published work of considerable acclaim; Borgmann's articulation of the device paradigm is well-known, while Winner's work is highly respected and in some cases (e.g. Do artefacts have politics?) of broad influence. However, understood as a whole, the philosophy of technology does not come together as a conversation, but a disparate collection of monologues; not a movement, but a discord; not defining a field, but a set of disagreements about what to disagree on. In this failure to come together, the philosophy of technology could be seen as a casualty of disciplinarity (which from some viewpoints might be interpreted to commend it, but that

is a discussion for a different paper); in the persistent failure to come together around a methodology, or perhaps more appropriately for philosophy, a consensus on crucially defining issues about which to argue, and thus define a field and themselves as an autonomous community, each thinker is thrown back upon themselves to carve an individual career.

Clearly, the history of the philosophy of technology and STS are remarkably distinct, and in some respects, their respective trajectories are starkly opposed. This has everything to do with their different intellectual traditions, and the manner in which mobilizing them converges (as with STS) or doesn't (as with the philosophy of technology) with the possibilities and constraints of disciplinarity. A key difference between them is the manner in which the philosophy of technology aspires to a relevance through breadth (if not universality), not only in terms of how it tries to draw implications from its studies, but more basically also in the cultural and historical terms of how it conceives technology. That, as claimed above, the case-studies STS conducts *are* in a sense the implications, is due to the restriction of technology studies in advance within the context of science studies, and the key role of technology within science, against the backdrop of the long-term dismantling of an entrenched, dominant ideology. This dismantling is by no means guaranteed or complete, and every STS case-study that demonstrates the sociohistorical constructedness of technological usage or scientific knowledge is another small victory against the enemy, additional data confirming the social constructivist hypothesis. Would analyses of technology, if taken out of that context and background, necessarily prove so compelling that a subdiscipline would emerge and gain

self-legitimacy in a matter of decades? No; and the difficulties of the philosophy of technology seem to make the point. Thus, while the philosophy of technology is in critical agreement with STS regarding the rejection of traditional philosophy of science and its accompanying epistemological conception of things, it has not developed this rejection as the premise and *raison d'être* for its own research as STS has – and while perhaps technology is the key that turns the lock to understanding contemporary civilization, as the technological determinism thesis of the founding fathers of the philosophy of technology would have it, we would seem to be much further from achieving that goal than we are to the more modest, although to be sure still ambitious, notion of technology as the key to understanding science.

### **§ 3. Failure to engage: A dialogue of the deaf?**

The consequence of these marked differences of history and orientation, and occasional stark oppositions in practice, is, in those few instances where there is any dialogue across the two fields, an unfruitful debate. For the most part, STS ignores the philosophy of technology. In cases where they do attend to the philosophy of technology, it is to make explicit the rationale that explains why STS usually ignores the philosophy: rather than investigate the empirical particulars in detail which make up the technological implementation in question, the philosophers invariably lapse into abstract, essentialized description, which because they aim to forward some moral, social, ethical, or political ideological agenda, is in reality prescription. The philosophy of technology is perceived as guilty of the problems characteristic of traditional philosophy generally (abstraction, essentialism, insufficient attention to empirical detail), and traditional philosophy of science specifically (all of the above, tied to a particular ideology). They do not keep

separate their ideological orientation through adherence to the appropriate methodology, and worst of all, their lack of appropriate (i.e., social constructivist) methodology means their accounts are ultimately not grounded in the empirical case. As such, the philosophy of technology is not *useful* to STS. And since, as noted above, the philosophy of technology is unable to get its act together, this inability itself is proof of that conclusion. For its part, the philosophy of technology perceives STS as far too invested in methodological navel-gazing at the expense of the kind of ideological engagement unavoidable when dealing with the non-neutral phenomenon of technology, thus amounting to a widely-shared relativism which shirks appropriately-transformative outcomes to its analyses. At best, this is because STS is insufficiently reflexive and naïve, at worst, because its practitioners are conceited careerists. The philosophy of technology sees the restriction of STS to seemingly unending case-studies in exorbitant social-historical detail, the constant appeal to reflexivity within STS in order to finesse its methodology, and its shirking of overt stance-taking on the broader implications of its analyses, as too servile to the extant technological order of things, and in effect because of its hiding behind a neutral methodology, a late 20<sup>th</sup> century version of, of all things, positivism. Winner (1993), for example, claims that the central methodological postulate of “interpretive flexibility” characteristic of STS’ social constructivist view “resurrects” “what positivists use to call value neutrality” (p. 374). (It is of some interest that each side of the debate are attributing to the other a return of the repressed evils of traditional philosophy of science and of modernist epistemology.)

The attribution of positivism to STS is as surprising as it is interesting, not least because positivism is one of the crucial aspects for the traditional philosophy of science to which STS is so opposed. Further, internal criticism of STS by its own proponents has also made the same claim, most notably by Steve Fuller (2006) who describes STS as “postmodern positivism” for numerous reasons, including social-historical ones:

STS’s historical opposition to philosophy is undoubtedly related to the high proportion of the field’s founders who were trained in—and subsequently disillusioned by—the natural sciences, yet without ever quite having been converted to the humanities. (p. 8)

Fuller cites additional analogies and reasons, in the context of advancing the argument that STS needs a philosophical articulation to accompany its empirical studies if it is to avoid painting itself into a corner. It should be noted in this context that Fuller is also distinguishing himself as more and more of a ‘fringe’ member of the STS community! Most proponents of STS are nonplussed about such accusations, and typically turn the criticisms into rhetorical ammunition for developing their methodological self-consciousness: in contrast to the philosophy of technology, STS clearly realizes that reflexivity which elaborates methodology serves to establish its research community well insofar as methodological elaboration is part and parcel, in the context of disciplinarity, of institutional self-legitimation. The best expression of such criticism is Woolgar’s (1991) critical evaluation of the science studies’ “turn to technology”, wherein he argues that the uncritical extension to technology as a new empirical object of research of the social constructivist methodology successfully developed in the sociology of scientific knowledge – i.e., the seminal Pinch & Bijker article – will backfire because it signals that the science studies movement is resting on its laurels and beginning instead to extend STS’ now-imperial reach. Woolgar (1991) argues that the “ultimate significance” of STS

is neither in its method nor in its insights into its objects of study (science, technology), but in a momentum gained through coupling self-reflexivity with ongoing empirical analysis as a “potential for reevaluating fundamental assumptions of modern thought” (p. 25) in constituting a “dynamic basis for the iterative reconceptualization of epistemic matters” (p. 28). To settle on a formula for empirical analysis will detract from the capacities for self-reflexivity, and in uncoupling these two STS will lose its dynamically progressive momentum. Woolgar describes the process of “iterative reconceptualization” as nearing the elusive goal of insight into the “Self that sustains representational practice” (p. 28), a Self that Woolgar distinguishes from “*current* sociological or psychological approaches” (my emphasis). The turn to technology could potentially contribute to the dynamic process that approaches this elusive Self, but instead the “sideways” manner of this turning raises the distinct “danger” of the STS’s dynamic potential “being brought to a halt” (p. 29). Woolgar explains the danger is evident in an incomplete pursuit of reflexivity. Key to pursuing reflexivity more radically and provocatively would mean, first, realizing the relativism assumed by the social constructivist tenets of much of STS proves to be parasitic on the realist epistemology and discourse of the traditional philosophy of science STS is deconstructing. Second, this realization would then dissolve the potency of this manner of representation and expose the reification of certain categories, like technology, into objective and transcendently existing reality (p. 41). Third, this dissolution would then undercut the subject-object, self-other, constituting representer vs. constituted represented, distinctions, so as to view technology itself as text that the user-writer employs that has the effect, among others, of establishing such distinctions.

In particular, by attempting to explain technology, we are in danger of explaining it away, precisely in the sense that the technology becomes an object disengaged from the author and subject only to “social forces” apparently removed from the world of the analyst. (p. 43)

Curiously, or ironically, or possibly predictably, a philosopher of technology like Winner seems to miss the nuance and implications and radical self-criticism of the STS community that Woolgar offers (cf. Hernstein-Smith’s analysis of debate for insight here). Winner, with a politically-sharpened needle, like Carl Mitcham with his ethical one or Borgmann’s moral, social theoretical point, become intent on popping STS’s positivist balloon because it is looming too large. The intent is strongly motivated by frustration and consternation. Woolgar, on the other hand, also seems to want to blow up the STS positivist balloon, not from the outside in order to dissipate it, but from the inside with a different, better balloon hidden within as an unrealized potential. Key to their differences are their starting points and defining backgrounds, in that someone like Winner is interested in a critical transformation of technological practice away from its current corporate, technocratic elitist form, towards a more participatory inclusive democratic one. Science is not even on the radar. Woolgar, on the other hand, and the STS community with him, are intent on driving the social constructivist stake deeper and more decisively through the heart of modern science and its objectivism in anticipation of new possibilities that will emerge once it is well and truly dead.

There is much more worthy of exploration here but they are outside the present paper’s focus. The point to be taken is that the differences between the philosophy of technology and STS, whether perceived from their differing responses to disciplinarity, different intellectual traditions, differing foci and self-legitimation strategies, and so on, are

inseparable from how they conceive technology as a substantial object of inquiry, and thus they present not immediately significant content for how a potential psychology of technology might proceed, but rather an apparent deadlock of incompatible approaches and a resultant unfruitful debate around technology. I return to this issue below, after a brief discussion of the second major obstacle to psychology's developing an approach to technology.

#### **§ 4. Psychology's reliance on technology and the traditional philosophy of science**

Psychology throughout its checkered history of attempting to self-legitimize itself as a viable discipline has relied extensively on an empiricist epistemology and a traditional philosophy of science primarily defined by positivism. While this has never been uncontroversial and continues to the present day to be contested, the numerous components that make up the mainstream of psychology as a community of investigative practice, and in particular as represented to its initiates through textbooks have endorsed the ideological view of an objectivist science. Neither the philosophy of technology with its roots in Continental philosophy, pragmatism, moral philosophy, social theory, and so on, nor STS as premised on the critical dismantling of the Received View, share this orientation. As this history and understanding of psychology is I assume common knowledge among the audience, I will present this very briefly in terms of key points of relevance.

Endorsing the Received View meant enshrining an idealized ahistorical conception of the natural sciences as the model for psychological enquiry. While this devolved on experimentation and statistical approaches according to standards of reliability of

observation, etc., this manner of construing objectivity meant constructing the subject as a dehistoricized, decontextualized natural object. As Markus' (1987) hermeneutic analysis of the natural science research report makes clear, key to achieving this version of practical-technical inquiry is a necessarily shallow history emphasizing the past in terms of the recency and relevance of the literature, with the ultimate aim being to maximize a consensus around what is known and what is unknown. Danziger (1994) traces some of the implications of this for historiography, where the celebratory Whig history that is subsequently written in the natural sciences stands in sharp contrast to critical histories relevant to the human sciences that emphasize the agonistic structure of their fields with emphasis on past possibilities and alternative perspectives latent within the history, such that current research assumptions can be laid bare, questioned, or possibly even abandoned in favour of more promising, or strategically apposite, avenues of inquiry. While these points are obviously significant for the methodological self-understanding of the psychological community as 'natural scientists', they are also crucial for constituting the subject matter in terms of a universally occurring natural object, as for example the categories in which the subject are described are not examined for their historically-relative, and historically changing, meaning. Further, the ascription of universality has similar implications for de-emphasizing to the point of ignoring the social, and political, context of their objects. In other words, by comparison for example to STS, the historiographic sensibility and sociological methodology of psychological investigation will lack sophistication. In addition, the political complexities and their implications which are always part of the texture of any historiographic or sociological analysis, will be mostly absent. It is no accident that when Latour & Woolgar (1979) in

their now-famous study decided to extend science studies by studying actual scientific work in the laboratory – i.e. the method of “following scientists around” (Shapin, 1989) – they chose the participant observation method characteristic of ethnography and adopted anthropological terminology to describe the dynamics of lab research. The anthropological trope of culture, rather than cognition or behaviour or individual variables, was a logical fit for the aims of conveying the social, historical, and political picture of science, in a way that established psychology’s tropes were not.

The paradigm of natural science for psychology was meant to secure not only the epistemological goal of objectivity, but also the legitimation of expertise over against common sense. Thus alongside the decontextualizing of the subject so as to obtain universal, objective knowledge, occurs a reliance on technical procedures, experimental apparatus, quantification techniques, and so on, to transform the subject into rigorous data requiring professional expertise to interpret it. The decontextualized subject is conceived in terms largely dictated by the techniques, i.e. mechanized parts described as variables within an ostensibly psychological mechanism that makes up the decontextualized individual.

While there are numerous factors that go into making psychology into this particular type of enterprise, what is striking as a theme that runs through every aspect – the emulation of an idealized natural science approach, the maximization of consensus around a shallow history so as to construct a natural object requiring decontextualized (depoliticized, dehistoricized, asocial) individual subjects, conceived as a mechanistic system knowable

through technical expertise – is that technology proves essential for the realization of each. Taking this point and inserting it into the midst of the issues of the troubled relations and unfruitful dialogue between the philosophy of technology and STS, it becomes clear how a potential psychology of technology poses in fact a deep challenge to the very discipline of psychology itself, and sheds some light on psychology's conspicuous abstention.

### **§ 5. Implementing a psychology of technology: Insoluble problem?**

It could be argued there is no such problem: that, accepting that psychology lacks the sociological and historiographical sophistication of STS, but has developed its own sophisticated, psychologically-specific methodology, then it can contribute in a complementary manner by applying its methods to the effects of technology at an individual level. In this case there is a complementarity of disciplinary specializations: psychology describes the micro-mechanisms within the individual that at the sociohistorical level manifest as cultural patterns. Psychology will provide the cognitive and neurological correlates to STS case studies of technology as a sociological structure. Although this seems straightforward, and such approaches might well be already underway, this approach presents problems. First, that the perennial reductive problem of human experience is simply ignored or bypassed in moving from the level of social structure to that of mechanistic subsystems, whether cognitive or neurological. Unless one wishes to identify psychology as nothing other than cognitive neuroscience, there is an issue here of losing the level of description arguably definitive of and for psychology. Second, that the cognitive neuroscientific description is ultimately individualistic, and as such the 'individual' will be an unexamined midpoint between the biological and the

sociological – arguably such midpoint being precisely what it is the role of psychology to articulate. Third, that the authority for the meaning of technology as a phenomenon, in its particular content as given by its role and use in a particular context, will ultimately reside with sociology and history, and cognitive-neuroscientific psychology will compose at best an auxiliary interest in explaining particular correlations in terms of cognitive or neurological subsystems. Fourth, the complementarity proposal assumes without reason that the practitioners of STS would simply welcome the cognitive, neuroscientific account as an equal but different articulation. This misunderstands STS in two ways. The first is that one of the strengths adduced by its practitioners in their development of sociological sophistication can be summarized as “cognition conceived as action rather than as expression of mental substance” (Christie, 1993). A cognitive account would be greeted hostilely as competition or as mistaken. The second misunderstanding is that the very reflexivity which is so much a trademark of STS would be applied to psychology and to the importance of technology’s remaining unexamined for psychology’s own claim to power and expertise. That is, STS among other things is an ongoing form of ideology critique – an ideology in which established psychology is far too strongly invested. There is no reason to assume that the technology employed by psychological investigators to conduct their cognitive or neuroscientific research will *not* itself eventually be shown as a social and historical product, in which case the very self-understanding of objectivity and universality that motivates the style of study and the reliance on technology in the first place, will be undercut such that the apparent complementarity of accounts vanishes, and the cognitive neuroscience account subsumed within the sociohistorical.

Moving away from any potential alliance with STS, psychology finds itself in very different difficulties with the philosophy of technology. The traditional philosophical style assumed in avoiding the specialized empirical test situation has been in many respects ‘the enemy’ for a respectable scientific psychology. The philosophy of technology’s difficulties with disciplinarity, and thus its resulting incoherence as a movement, do not further recommend it to psychology. In this respect history seems to be repeating itself: philosophy, as characterized by big picture generalizations developed by a reasoning through a particular tradition of thought, does not present itself as a practicable or productive mode of inquiry compared to the collaborative empiricism of a methodologically-defined community engaged in data collection and hypothesis testing, ideally through experimentation.

To put the point bluntly, psychology does not possess within its own resources, nor can it derive from the philosophy of technology or from STS, a potentially significant or relevant position on technology *given an uncritical capitulation to the context of disciplinarity*. Analogously, I have described the philosophy of technology’s incoherence and failing to come together as a casualty of disciplinarity. While for STS, its very success has led it to be accused of being a postmodern positivism; for philosophers of technology from the outside, it has “retreated into a blasé, depoliticized scholasticism” (Winner, 1993, p. 376), while from the inside, STS is “in danger of being brought to a halt” (Woolgar, 1991, p. 29). The strategy as I see it is not to try to harmonize, or find some productive point of agreement in the midst of, these different orientations, but to aim for an as yet unrealized point of focus that supersedes these differences and exposes

in a critical fashion the limitations of disciplinarity as an institutionalized research system vis-à-vis technology as a phenomenon. Given this strategy, the difficulties particular to each of the three orientations can be interpreted positively as a kind of triangulation in terms of revealing pressure points in disciplinarity and uncovering limits to the current system. I will conclude this paper by pursuing one such avenue, focused on the costly success for STS in establishing itself.

Christie (1993), in reflecting on the question of whether any “big picture” of science is possible given the proliferation, specialization, and diversity evident in histories and sociologies of science, offers an insightful before & after picture in the historiography of science. Since the 1960s – perhaps due to the significant effect of Kuhn’s articulation, as discussed above – it has proven apparently impossible, and often undesirable, to draw any sort of “big picture” of science, as had been the widespread norm typically associated with traditional philosophy of science. In that tradition, key elements were the “selection and account of events so as to constitute a unity of action” (p. 397), methodological moves that relied upon an abstraction of a homogenized essence understood to hold itself self-same across the heterogeneity of events and processes. These moves are key to the formation of “big pictures”, which

narrate unified and ultimate epochal space-time significances, by means of a philosophical emplotment of one highly particularized class of homogeneous mental or material process. (p. 398)

This philosophical ‘methodo-logic’ view of science has steadily been displaced, and increasingly replaced, by a new ‘socio-logic’ emphasizing heterogeneity, locality, and particularity, emphases that only yield themselves up to specific case-studies, themselves

incapable of a grand synthesis. In trying to suggest a theme around which to posit a potential synthesis, one that would not homogenize but, following Ricoeur's notion of narrative historiography, "configure" in the sense of grasping heterogeneous elements together, Christie tentatively and self-consciously proffers power. Without endorsing the desirability of such an attempt to provide a "big picture" in contemporary historiography of science, Christie suggests that such a big picture would consist in "a narrative whose specific temporality is the time of science's worldly power." (p. 405)

Reading between the lines of Christie's article, it is clear that he misses the crucial significance of technology as the constitutive center of "science's worldly power", in that he does not differentiate technology from science. If we do so, there immediately emerges a clear distinction within "the time of science's worldly power", between those whose work depends in a positive or productive way upon that power (i.e., natural science, its applications, and its imitators, whose combined work is about constructing Nature), and those whose work depends in a critical or parasitic way upon that power (i.e., the critics of natural science, whose combined work is about deconstructing Science). The former rely unreflectively upon technology; the latter reflect upon technology and upon unreflective reliance on technology. These opposed poles are like the thesis and antithesis of modern disciplinarity, with the rest of the humanities and arts bulking out the 'excluded middle' ground. Historically, the "specific temporality of the time of science's worldly power" is co-extensive with the rise and consolidation of disciplinarity; i.e. disciplinarity is, not the narration, but the institutionalized practice indispensable in disseminating and supporting "science's worldly power".



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