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The ties to bind

Techno-science, ethics and democracy

Abstract The paper seeks to address the lag between, on the one hand, existing ethical and socio-political frameworks and, on the other hand, developments in the realm of techno-science. I argue that the growing power of science and technology has been fed by, and has itself fed, the confrontation of instrumentalism and autonomy defining the modern condition. Conversely, the project of self-management of techno-science by citizens needs to proceed by binding ethical and democratic dimensions of the problem, as well as the public and subjective elements of autonomous existence. Techno-science can only be 'ethicalized' if it is enframed in vibrant public spaces, at the same time as its democratization depends upon subjects' sense of conscience and social responsibility.

Key words autonomy · democracy · ethics · public sphere · techno-science

From dreams of god-like knowledge you will wake
To fear, in which your very soul shall quake.

(Goethe, *Faust*, Part I)

This paper aims to address what is simultaneously one of the greatest challenges and dangers confronting western societies at the dawn of the 21st century: the sorrowful lag between, on the one hand, existing ethical and socio-political frameworks and, on the other hand, developments in the realm of techno-science.[1] Today, the latter is among the principal sources of market profitability, state power and administrative control. Moreover, major scientific discoveries and technological inventions regularly thrust onto the social field possibilities and issues that may revolutionize the organization of society, yet are unknown elsewhere and in previous ages.[2] We are on the verge of realizing what has

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been contemplated with dread or glee throughout human history: not only complete human mastery over nature, but the creation and manipulation of life itself at will. And yet the rapid advent of our newly found powers has left us largely unprepared to respond to their massive implications, creating what Jonas termed an 'ethical vacuum'.[3] Simultaneously, the growing integration of techno-scientific activities within the instrumentalized domains of the state and the market has produced a democratic lapse, since social autonomy has been endangered by the lack of practices and institutions directed toward the self-management of techno-science by citizens. Techno-scientific approaches have themselves contributed to the problem, since they tend to frame existing social phenomena and processes according to their own formal logic; meta-societal considerations that cannot be operationalized or translated into expert knowledges are thereby excluded. Under the combined pressures of bureaucratization and commodification, nothing less than a new nexus of production, control and use of techno-science is coming into being – a nexus from which both the ethical lifeworld and the public sphere are more or less excluded. Three pivots of modern autonomy are undermined: public access to and control over techno-science; the techno-scientific actor's reliance on his or her conscience; and his or her sense of social responsibility in relation to the public good.

This erosion of ethics and publicness creates a disturbing situation, according to which the sources of socio-political power and normativity increasingly stem from scientific and technological forces by default. The ethical vacuum and democratic lapse leave the social field open to being dominated by a sole instrumental imperative: what science and technology can do is what society ought to and will do. Reversing the situation common in other societies and in previous epochs, the good is progressively being determined by what is technically or scientifically possible. Hence, neither science nor technology inherently provides us with the means to deal with emerging issues and possibilities in a democratic, ethical fashion; to believe otherwise is to be technocratically naïve at best or, at worst, socially irresponsible. If left uncontested, the instrumental imperative will confirm the dystopias of scientific and technological determinism, of which Ellul's 'technological society' and Postman's 'technopoly' are the most widely recognized examples.[4] To be sure, history teaches us that, if not for vigorous normative and democratic safeguards, little prevents the manipulation, control and mastery of nature from being extended to humankind as a whole, or to targeted (and subordinate or vulnerable) social groups. Techno-science may well bring about revolutions in our ways of living and thinking, but the crucial questions remain: in what direction, for what purposes, and according to what and whose values?

Over the past few decades, at least three areas of investigation have offered promising responses. Major contributions by philosophers and sociologists have placed moral and ethical concerns at the core of social research, returning to the matter of the good.[5] Others have, in a more specific manner, endeavoured to reformulate the relationship between science, ethics and society,[6] to say nothing of the massive expansion of the important domain of bioethics. In addition, partly inspired by pioneering writings in the philosophy of science,[7] the field of science and technology studies has produced a number of works undermining the traditional separation between the natural and social sciences; in particular, thick ethnographies and socio-cultural histories of specific scientific discoveries or technological processes have appeared.[8]

Although they have evoked many of the concerns raised here, these three domains of knowledge have generally not pondered how techno-science has influenced the tension between autonomy and rational mastery that is constitutive of modernity. Further, they have not explicitly connected the advent of the ethical vacuum and democratic lapse to one another. Calls for a return to ethics have tended to neglect the broader socio-political environment that provides both the ground for normativity and the context within which it can be exercised. At the same time, demands for greater public discussion of scientific and technological affairs have predominantly focused on formal rather than substantive aspects. Procedures, mechanisms and institutions have been highlighted, at the expense of consideration of the moral grammars and imaginaries nourishing public deliberation about techno-science. Finally, the existing literature is inclined to concentrate either on the societal or individual facets of ethical autonomy, failing to show the links between a vibrant public sphere and a subject's practice of normative judgement. Thus, this paper strives to address each of these limitations in turn. The first section will analyze the ways in which the growing power of science and technology has been fed by, and has itself fed, the confrontation of instrumentalism and autonomy defining the modern experience. More specifically, we will examine how 'de-ethicalizing' and privatizing tendencies have produced three problematic transformations of contemporary normativity: its displacement onto institutions, experts or private life; its neutralization by the joint dynamics of bureaucratization and commodification; and its colonization by purposive-instrumental rationality. In the second part of the paper, I will claim that the project of self-management of techno-science by citizens needs to proceed by binding ethical and democratic dimensions of the problem, as well as the public and subjective elements of autonomous existence. Techno-science can only be 'ethicalized' if it is enframed in vibrant public spaces where the themes of accessibility, deliberation and social responsibility are ever-present. Conversely, its democratization depends upon the existence of

public arenas nourished by an actor's sense of conscience and social responsibility.

Before proceeding any further, the intent of the analysis offered below should be made explicit. This intervention is cast less in the mode of expert legislation than critical interpretation.[9] As such, my purpose is not to prescribe a new set of regulations or procedures to be followed by individuals in society, nor to produce yet another moralizing discourse; as Rabinow cuttingly remarks, 'Whatever America lacks, it is not therapists and managers of the soul.'[10] Instead, this paper is intended to support the project of autonomy by encouraging citizens to create for themselves individually and collectively novel strategies aimed at the 'ethicalization' and democratization of the techno-scientific realm. To contribute to the institution of autonomy, the critical interpreter can follow at least three routes: call into question the existing social order by explaining how it has been historically constituted as well as by pinpointing its pathological consequences; excavate other sets of practices and perspectives that have been either forgotten, neglected, or discarded in the making of the present; and help to support the exploration of different ways of being and thinking by identifying basic conditions and emerging possibilities on the socio-historical terrain. It is hoped that the pages below explore, if only very imperfectly, all three of these paths.

Modernity's ethical vacuum and democratic lapse

I would like to argue, following Castoriadis and Arnason, that modernity can most convincingly be interpreted as a field of tensions structured by the perpetual dialectic between the poles of autonomy and rational mastery.[11] Although taking on widely varying configurations in different settings, the existence of this dual institution informs what we understand the modern experience to be. On the one hand, as is by now familiar, modernity's positing of the ideals of liberty, equality and solidarity crystallized the human struggle for autonomous forms of existence. In addition, the anthropocentric championing of human reason gradually challenged – and eventually displaced – the centrality of religious, traditional and natural sources of moral and intellectual authority. Whether in its rationalist (Enlightenment) or expressivist (Romantic) variants, this situation has typically been portrayed through narratives of a modern self giving free rein to her or his logic or inner voice. At the collective level, autonomy has signified the potential self-instituting of society, namely the radically democratic drive toward society's self-positing of its normative foundations without depending upon extra-social forces (god, nature, etc.).

On the other hand, modernity has also been shaped by the striving

toward rational mastery, which has unleashed a purposive-instrumental type of rationality (Weber's *Zweckrationalität*) embodied in bureaucracy and capitalism. To achieve a semblance of control, the means–end logic of quantification been extended into multiple domains of social life, a process akin to Habermas's well-known theory of colonization of the lifeworld by economic and administrative subsystems (via the media of money and power, respectively) and Arendt's decrying of the *homo faber*'s 'instrumentalization of the whole world and the earth, this limitless devaluation of everything given, this process of growing meaninglessness where every end is transformed into a means and which can be stopped only by making man himself the lord and master of all things'.[12]

As Weber's diagnosis of the modern condition reveals, the demagification (or disenchantment, *Entzauberung*) of the world has pluralized and fragmented spheres of value and meaning.[13] For my purposes, the Weberian scenario enables the drawing out of two relevant implications. In the first instance, since normative and interpretive perspectives are locked in permanent conflict to the point of potential irreconcilability, the notions of beauty, truth and morality are no longer interdependent; the harmony between the beautiful, the true and the good is shattered.[14] Commenting upon the significance of the rise to prominence of the Cartesian *cogito*, Foucault remarks: 'Thus, I [the post-Cartesian subject] can be immoral and know the truth. I believe that this is an idea which, more or less explicitly, was rejected by all previous culture. Before Descartes, one could not be impure, immoral, and know the truth. With Descartes, direct evidence is enough.'[15] Knowledge can be pursued for its own sake, thereby emancipating itself from its necessary validation by virtue or beauty.

Secondly, modernity has fostered a differentiation of domains of social life, their growing separation and independence from one another. At its most extreme, this trend has resulted in the creation of discrete spheres of social action which are unhinged from any general mechanism of integration or coordination (Polanyi's 'great transformation', or Habermas's 'uncoupling of system and lifeworld').[16] Thus, these spheres have increasingly become simultaneously self-enclosed and self-expanding, generating their own *modus operandi* as well as criteria of validity and growth; Luhmann's theory of autopoietic systems represents another way of expressing this phenomenon.[17] Rationalized fields of social action, disembedded from normative frameworks, have striven to generalize their distinctive logics to society as a whole; the phenomena of commodification and bureaucratization of social relations have exemplified such a danger.

Over the centuries, modernity's vibrancy and complexity have been given life by the field of tensions formed by the dual institution of

autonomy and rational mastery. Today, our moral predicament is distinguished by the ascendancy of rationalization over social self-institution. This threat to the project of autonomy has spawned two notable developments: an ethical vacuum (to borrow Jonas's expression) and a democratic lapse.[18] In other words, the current period is marked by simultaneous processes of 'de-ethicalization' and privatization. Not only is the tendency to turn to ideas of conscience and social responsibility as primary sources of ethical judgement compromised, but the capacity of citizens to deliberate collectively and determine the normative principles under which they live is significantly challenged. All too frequently, when faced with thorny normative questions, we are turning to social institutions moved by instrumental-cum-formal logics for answers (e.g. the state and the market). Ethics becomes over-infused with commodifying and administrative dynamics.[19] Pushed to their furthest extent, the ethical vacuum and democratic lapse produce Macpherson's dire scenario whereby '[d]emocracy is simply a market mechanism: the voters are the consumers; the politicians are the entrepreneurs'.[20]

How have 'de-ethicalizing' and privatizing forces affected contemporary conceptions of ethics? While many commentators have offered diagnoses of our moral malaise, I would contend that three processes need to be distinguished: displacement; adiaphorization; and colonization. First, rather than pervading the social fabric and being considered the grounding of all social relations, ethical questions are displaced in different ways. At one level, they are left to be answered by bureaucratic or commercial institutions. Instead of engaging in the difficult yet vital labour of self-examination or public discussion, we are content to resolve matters either by following existing rules, depending on the state to create new legislation, or letting market forces make choices for us by playing themselves out: 'When people consider their debts and legacies to past and future generations, when they want to acknowledge their ties to others around them, when they try to develop rules for sharing the things they have in common, they tend to reach, almost automatically, for laws and bureaucratic regulations.'[21] At another level, the normative dimensions of existence are pondered only temporarily – thus reconciling an individual's acting immorally in some instances and morally in others – or exclusively by 'ethical specialists' (religious leaders, bioethicists, philosophers, etc.). With the fragmentation and pluralization of worldviews previously noted, categorical imperatives are diluted, becoming conditional in application or limited in scope. Further, given that it is widely considered to represent a personal matter made by atomized individuals (or between themselves and their god), ethics has withdrawn to the private sphere. 'When science seemed to have dominated the explanatory schemes of the external world, morality and religion took refuge in human subjectivity, in feeling and sentiment.'[22]

Second, the pervasiveness of rationalizing forces has immunized whole areas of social life from ethical scrutiny. To refer to this phenomenon, Bauman has coined the term 'adiaphorization': 'making certain actions, or certain objects of action, morally neutral or irrelevant – exempt from the category of phenomena suitable for moral evaluation'.[23] Amorality, rather than immorality, becomes the label affixed to a host of practices and outlooks shielded from normative evaluation. The deactivation of the critical faculty of ethical judgement eases blind obedience to existing rules and orders (e.g. the letter of the law, the laws of the market, the will of a superior), which are protected from interrogation. Furthermore, adiaphorization promotes what can be termed social 'deresponsabilization', the neutralization of or flight from feeling responsible for the consequences of one's actions in relation to the public good. When not required to put into play one's ethical sense, one is not compelled to assume or confront social responsibility.[24]

Finally, as the rationalizing institutions of state and market have progressively colonized the lifeworld of modern society, ethical modes of thinking and acting have been redefined in instrumental terms.[25] Bureaucratization has elevated rational mastery to the status of a cultural ethos detached from any greater end, while commodification has equated the good with the saleable and the profitable. In several cases, the traditional disjuncture between morality and instrumentalism has been swept away; purposive-instrumental rationality has become ethical in and of itself. Put differently, the modern subject's duty increasingly consists of being able to efficiently calculate and predict outcomes, to obey orders from above,[26] or to convert objects and activities – and increasingly, ideas, feelings and values – into marketable commodities.[27]

The dangers introduced by the ethical vacuum and the democratic lapse are nowhere more visible than in the realms of science and technology, which have both acted as catalysts and receptacles of these phenomena. It is undeniable that techno-scientific modes of activity have invaluably contributed to the progress of humankind by pushing ever further the bounds of our knowledge, increasing our power over nature and discovering a series of devices and techniques that have dramatically improved our lives. Nevertheless, techno-science has arguably become rational mastery's most powerful vehicle, for it is deeply enmeshed in the processes of 'de-ethicalization' and privatization of modern society. This is not to claim that techno-science has single-handedly led to the prevalence of processes of rationalization, but rather that the two have developed bonds of complementarity and mutual reinforcement which help explain the current ethical vacuum and democratic lapse. From one side of this interaction, an administered and rationalized social world represents fertile ground for the disarticulation of techno-science from morality or publicness.[28]

Referring back to the elements sketched out in the previous section, we can grasp how this divide has come into being. Due to the displacement, adiaphorization and colonization of ethics, the scientific quest for truth and knowledge can become an end that neither requires nor inevitably concerns itself with the good or the beautiful. Under such conditions, it is entirely feasible that scientific discoveries can simultaneously advance human knowledge and be the well-spring of evil. The tragedy of modern techno-science stems from the fact that the truths it brings us can be immorality's bedfellow – in the same way that, in the aesthetic realm, beauty and evil can feed off each other. Furthermore, the fragmentation and differentiation of social spheres characterizing modernity clear the way for techno-science to be disembedded from the rest of society. Once a more holistic or integrative view of the social gives way to one composed of relatively discrete and specialized domains, and once many of these domains are considered amoral and independent, science and technology (like art, politics, the economy) can emerge as a seemingly self-enclosed system impervious to broader steering mechanisms. 'The sole totality technology systematically constructs, reproduces and renders invulnerable is the totality of technology itself – technology as a *closed system*, which tolerates no alien bodies inside and zealously devours and assimilates everything that comes within its grazing ground.'[29] Or yet again, techno-science becomes a domain positing its own ends and ruled by experts, the *Fachmensch* who take over from the *Kulturmensch* of old as Renaissance and Enlightenment ideals are replaced by the more prosaic realities of utilitarianism and specialization.

Hence, techno-science today is reified, and thus simultaneously adiaphorized and privatized. Because believed to be a self-sustaining and self-referential juggernaut moved by an implacable developmental logic of its own volition, it is allowed to function outside or beyond frameworks of normative evaluation and public involvement. Scientific and technological activities become immunized from matters of ethics and democratic participation, which tend to be deemed either impertinent or obstructive to the efficient performance of the immediate task at hand. The techno-scientific actor can thus adopt a bureaucratic ethos characterized by moral and democratic blindness, whereby she only concerns herself with realizing an instrumentally defined outcome. The question of social responsibility *vis-à-vis* the uses of her research, and that of the decision-making process determining such uses, lie outside of her purview and need not preoccupy her. Of course, this belief in amorality and this lack of concern for publicness leave techno-science completely exposed to the risk of appropriation for unintended or immoral purposes.

If techno-science has become decoupled from morality and the

public sphere, it has also been increasingly penetrated by the state and the market since the Second World War (a process designated by the phrase 'big science'). The bureaucratization and commodification of science and technology have reshaped them according to military or commercial imperatives. As the scientific community's organizational integration, the locus of its allegiance may lie less with humankind or the public than with the state or the corporation. Whether for reasons of 'national security', 'commercial privilege' (namely, market advantage and profitability), or 'intellectual property', the duties of the techno-scientific actor are frequently redefined in terms of secrecy and confidentiality. In recent decades, the principles of public access and scrutiny of science and technology have been considerably eroded. Knowledge has all too often been reduced to the status of a commodity to be sold and purchased by corporate customers, or a potential weapon in intra-state rivalry. Scientific research may initially be pursued for its own sake, yet its integration within administrative and marketized circuits tends eventually to transform it into an instrument serving other ends. It is thus possible to speak of the 'technologization' of science, the emphasis on rapidly converting (or 'operationalizing') discoveries into technological applications that are exploitable for military or commercial objectives.

Having examined the moulding of techno-science by rationalizing tendencies, we must now consider how it has itself acted as a force of 'de-ethicalization' and privatization of contemporary society. To the same extent that they do not represent fully independent institutions, science and technology should not be perceived as empty vessels passively incorporating administrative or commercial dynamics. Rather, scientific and technological practices directly inform contemporary social life. In effect, by diffusing a specific worldview and mode of conduct, as well as by serving as a model for the management of society, techno-science constitutes the highest incarnation and vehicle of purposive-instrumental rationality. The impact of techno-scientific instrumentalism upon all fields of inquiry is striking. We need only remind ourselves of the extent to which, in terms both of epistemology and outcomes, the natural sciences have served as model for the transformation of humanistic knowledges into social *sciences* since the 19th century. The promise of gaining increased control over domestic and foreign populations (or particular segments thereof), as well as of permanently curing the perceived pathologies ailing the body social, are closely derived from the claims and results achieved by the natural and biomedical sciences.

Most strikingly, science entrenches the principle of objectivity at the heart of modern society. Aside from the epistemological separation of subject and object, the severance of value from fact (the ideal of value-freedom) warrants our attention. Though dramatically challenged in

recent years, scientific orthodoxy still aims to remove or neutralize normative concerns from research; subjective elements are best checked at the laboratory's door, lest they 'taint' the supposedly disinterested search for knowledge.[30] According to positivist perspectives, understanding is never to be confounded with evaluation, nor truth with judgement. Another questionable aspect of techno-science is its problem-solving bias, its predisposition to translate social, cultural, economic and political issues into a narrow set of technically calculable and administratively resolvable problems. Normative debates and questions of power are dismissed in favour of finding the most efficient and certain means to achieve a predetermined objective; the ubiquity of cost-benefit analysis and rational choice theory are cases in point. Coupled with bureaucratization and commodification, this problem-solving character nurtures a technocratic social environment: more and more, we are ruled through techno-scientific expertise, for crucial decisions are either left directly to a restricted group of specialists (assumed to possess appropriate knowledges) or strongly influenced by them.[31] Because it is kept undisclosed, restricted, or highly esoteric, scientific and technological knowledge commonly escapes from public examination and deliberation.[32] Techno-science has become a vital source of economic and political power, for it holds one of the indisputable keys to profit-making and administrative control.

Overall, then, techno-science has participated in the three modern processes of transformation of ethics noted in the previous section – namely displacement, adiaphorization and colonization. Scientific and technological practices have not only displaced ethics from their own fields of activity, but also contributed to its retreat from social life more generally. Being incompatible with the requirements of instrumentalism and thus inherently resisting operationalization into technically exploitable and objective knowledge, normative rationality is circumscribed to the private sphere. Techno-science propels amorality into a new societal tenet, one that utterly restricts our understanding of the role of social institutions. The state and the market themselves become strictly problem-solving organizations structured by the demands of control, efficiency and utility. They are considered as no more than neutral arbiters of divergent interests, designed to manage the reproduction of the existing social order by allocating resources and generating technocratic solutions to occasional crises.

Rekindling autonomy

The preceding queries engender a host of other issues which, for our purposes, can be summed up as follows. Given that, as I have contended

above, the intersection of rational mastery with techno-science has endangered the project of autonomy, how can this project of social self-institution and normative self-determination by citizens themselves be rekindled? Even to arrive at a provisional answer requires that we confront two additional questions. How can the ethical vacuum created by techno-science, both within its own sphere of operation and in society more broadly, be filled? And how can the related democratic lapse, resulting from the seeming autopoiesis of science and technology, be overcome? What should be clear from our previous discussion is that these matters, namely the 'ethicalization' and democratization of techno-science to foster autonomy, should not be pondered separately. Techno-science can only be ethicalized if it is enframed in a vibrant public space where the themes of accessibility, accountability and responsibility are debated. Conversely, its democratization depends upon the existence of a public space nourished by substantive deliberation about the great social and ethical subjects of the age.

Considering the interdependence of techno-science's democratization and ethicalization, I would contend that any proposal to address our current predicament should be conceived in the form of a double movement: the reinsertion of science and technology within the public realm must be matched by a parallel process of reverse colonization of the techno-scientific field by normative lifeworlds; bureaucratization and commodification must be countered by substantive, value-driven and publicly minded forms of acting and thinking. Only then can we begin to address the troubling displacement, adiaphorization and colonization of ethics observed earlier in this paper, and thus transform techno-science into an 'ethicalized' and democratized socio-cultural institution – that is, an institution permeated by ethical concerns, serving the public good while being controlled by the citizenry. For heuristic purposes, the collective and individual components of this double movement can be distinguished. Science and technology must, first of all, be immersed in the public sphere, a participatory arena of discussion, debate and deliberation about the general direction of scientific research, the effects of specific technological developments, and the ethical stakes of both. Thus, publicness requires that techno-science be fully accessible to, scrutinized by and ultimately accountable to citizens themselves.

Yet if limited to the public domain, the ethicalization and democratization of techno-science are incomplete. Referring back to our earlier discussion, three possible risks would remain unaddressed at the level of the subject. The techno-scientific actor could, first of all, still displace ethical matters onto other instrumentalized institutions (the state, the market, etc.) and individuals (e.g. politicians, judges, philosophers). Or she could remain morally blind by claiming that her field

of operation is amoral, as well as by strictly separating her role as techno-scientific actor from that as an ethical and publicly minded subject. Finally, she could believe that her primary duty is allegiance to the organization (which would impose secrecy as the first rule of order for administrative or commercial reasons), or to the advancement of knowledge through the efficient performance of whatever immediate task. This is why the double movement must also conceive of the self as a locus of morality and publicness; the techno-scientist must be perceived – and perceive herself – as an ethical and public actor. Two particular dimensions of such a scientific role are of interest here: the possibility of cultivating one's conscience as the ultimate source of the exercise of ethical judgement; and the possibility of considering social responsibility as constitutive (rather than adjunct) elements of scientific and technological practice.

Going public

Let us begin by turning to the notion of the public sphere, which Taylor helpfully defines as 'a common space in which the members of society meet, through a variety of media (print, electronic) and also in face-to-face encounters, to discuss matters of common interest'.[33] Since the belated translation of Habermas's *Structural Transformation of the Public Sphere,* the idea has proved attractive to many thinkers in the English-speaking world as an object of reflection and socio-historical analysis.[34] Nonetheless, the conception of the public sphere employed here differs from the Habermasian version in two important respects. First, it is difficult to accept Habermas's early narrative of the unidirectional decline of the public sphere since the mid-19th century, a narrative premised upon both a unitary and an overly institutionalized view of publicness. Albeit a singular bourgeois public sphere and, consequently, bourgeois notions of public life have been eroded by bureaucratization, commodification and industrialization, other sites and modes of publicness have come into existence.[35] In recent decades, a variety of social movements (feminist, labour, anti-racist, environmental) have challenged both state and corporate actors within the realm of civil society, thereby enriching the public space as well as expanding our understanding of public life itself. For instance, relating directly to the focus of this paper, the postwar scientists' movement around atomic energy as well as the current activism around biotechnology and genetic engineering have sought to educate and involve citizens in debates about techno-science.

Second, when coupled with his notion of the ideal speech situation, Habermas's conception of the public sphere focuses excessively on the formal achievement of consensus as the ultimate outcome of communicative action. The danger with such a position is that it instrumentalizes

and proceduralizes public deliberation, which becomes merely a means of institutionalizing rational agreement over socio-political norms. Moreover, it tends to view debate and contestation, however fundamental, as temporary stages to be overcome or left behind through consensus-building. While not denying that the setting of common normative and socio-political guidelines is desirable, it is necessary to supplement Habermas's writings by those of Arendt and Castoriadis in order to conceive of the productively agonistic and pluralistic character of public spaces.[36] The latter can thereby be understood as participatory theatres of sociability, dense webs of social interactions through which citizens formulate, contest and debate different positions in order to contribute to the self-instituting of society. Therefore, it is less the formal procedures and end-result of discourse ethics than the conditions and exercise (or performativity) of public deliberation that is of interest for our purposes.[37]

Having made these qualifications, we can now examine why the concept of the public sphere illuminates our topic. First and foremost, it represents an ensemble of dialogical sites that cannot be subsumed under the logic of commodification or bureaucratization; although interacting with these processes, the public sphere is ruled neither by the market nor the state.[38] Instead, it is animated by substantive (or normative) rationality as well as by publicness: the principles of visibility, free and equal access, dialogue and participation by all citizens. 'The only remedies against the misuse of public power by private individuals lie in the public realm itself, in the light which exhibits each deed enacted within its boundaries, in the very visibility to which it exposes all those who enter it.'[39] This openness points to the fact that the public sphere's promise of inclusiveness is significant, for it creates a domain enriched by the encounter between diverse (and often divergent) opinions, values and interests.[40] Contestation of dominant discourses can come forth, while the constitution of a naturalized social order can begin to be put into question through public dialogue.

Thus, by underlining the process of popular scrutiny of and sovereignty over techno-science, the notion of the public sphere enables us to address the democratic lapse identified in the previous section. The re-embedding of science and technology in public spaces would represent an important step toward democratization, for it would counter the erosion of publicness previously noted: the privatization and concentration of techno-scientific knowledge in the hands of state or corporate actors, as well as the concomitant movement toward technocratic rule.[41] Under no circumstance should this proposal for democratization be conflated with demands for facile populism, micro-management of research, or totalizing integration of differentiated social fields under a unitary logic. Though valuable in principle, governmental or

corporate-sponsored public education campaigns have repeatedly taken the form of one-way vertical transfers of information through which the most recent scientific and technological developments are 'passed down' from experts to laypersons. Almost always, such developments are presented as positive *faits accomplis* over which citizens have virtually no say. Further, campaigns of this sort – such as those currently mounted by multinational corporations regarding genetically engineered foodstuffs – can degenerate into little more than public relations exercises to allay consumers' apprehensions. Nor would it be desirable to reverse the social division of labour by making every individual into a quasi-scientist, or by encouraging constant lay intervention into all aspects of the techno-scientific process. Evidently, specialized roles and expert knowledges are necessary for the continued advancement of science and technology. However, broad decisions about the directions, implications and applications of discoveries cannot be left solely in experts' hands, whether politicians, military leaders, corporate officers or scientists.

> The vogue of modern policy analysis, which in many instances has taken the place of the reflection of our public philosophers, does not substitute for genuine democratic conversation, for it remains within the esoteric domain of experts, experts who, under the façade of democratic rituals, want to make the real decisions for us. To allow policy analysis to supplant public discussion is, in effect, to abandon the democratic undertaking altogether, and to admit that we have become the administered society our prophets have long feared we might become.[42]

Ultimate sovereignty over science and technology must be located in the public sphere. This entails not only that citizens be consulted at the stage of implementation, but also that they participate in shaping and determining the direction of research before it has taken place. Only then will it be possible to contemplate a truly democratic techno-science.

In addition to acting as the milieu for science and technology's democratization, the public sphere constitutes a key site from which to redress contemporary society's de-ethicalization with regards to techno-science. Inspired by the Athenian *polis*, both Arendt and Castoriadis have convincingly demonstrated the intrinsically public character of ethics; virtuous conduct is acquired and practised in and through public life, while the normative underpinnings of all societies should be forged through open dialogue between citizens. '[T]he actual content of freedom . . . is participation in public affairs, or admission to the public realm.'[43] Hence, the public sphere is the domain through which social autonomy can be achieved, given that the process of participatory deliberation over collective norms and values offers a powerful alternative to the displacement, adiaphorization and colonization of ethics. By enframing techno-science as well as other instrumentalized areas of

social life, the project of a public ethics initiates a process of reverse colonization of the system by the lifeworld. It recentres the hearth of morality from the state, the market, or techno-science itself, to civil society – the locus *par excellence* of socio-political self-institution. As a consequence, authority and responsibility for the creation of normative frameworks to oversee scientific and technological activities are placed in the hands of the citizens. The notion of the public sphere also combats the expulsion or neutralization of ethics from the realm of techno-science by re-ethicalizing the latter, that is, by arguing for the latter's intrinsically normative disposition as well as by confronting it with the moral questions it engenders. Finally, the redefinition of ethics by rationalizing forces is reversed by a strong conception of the public good, a conception that is irreducible to instrumental ends.

If the democratization and ethicalization of techno-science take place in the public sphere, these processes must be grounded in an affirmative conception of the public good that goes beyond the minimization of suffering of others or domination over them. Hence, although it includes this negative injunction, the public good can also be understood as the maximization of individual and social autonomy, aimed at the critical self-instituting of society and the development of citizens' capacities as members of such a society. When taking techno-science into account, this more affirmative vision of human well-being must be realized through two specific corollaries that follow from our discussion above.[44] First, the public good can be achieved through democratization: citizens' free and equal access to scientific findings and technical information, as well as full participation in decisions both about general orientations and applications of techno-scientific activities. Second, a public ethics can be articulated around what Jonas has termed 'the imperative of responsibility',[45] a collective duty of prevention to ensure the survival of humankind and the natural world which surrounds it. Our thicker notion of the public good allows us to place, at the very centre of socio-political deliberation, fundamental questions about science and technology. Should we embark upon a specific course of research and development? What are the effects of a particular discovery on existing sources of social domination and liberation? What risks does it pose to human dignity and understanding, or to human life itself? Given their magnitude, queries such as these can solely be engaged with through discussion and debate in public spaces.

Before turning to the subjective dimension of the double movement, I should underline the fact that advocating a public ethics should not be equated with a Durkheimian form of moral sociocentrism. Bauman has convincingly demonstrated the latter's flawed, or even dangerous, effects, for its over-socialized understanding of the good holds that ethics is entirely derived from or determined by societal institutions; as

he memorably phrases it, modern society becomes 'a factory of morality'.[46] The argument advanced here is rather that the public sphere provides, to borrow Bellah *et al.*'s suggestive expression, a 'moral ecology' to nourish ethical conduct.[47] The existence of a vibrant public ethics relieves the self neither of social responsibility nor of normative judgement, but it does provide a deliberative and intersubjective arena within which both responsibility and judgement can be exercised.

The inescapable call: conscience and social responsibility

As much as a public ethics is essential to the ethicalization and democratization of techno-science, the personal aspects of autonomy are equally significant. The normative and democratic practice of science and technology depends upon both a vigorous public sphere and reflexive subjects. Ethical conduct is created and performed dialogically, through communicative action and social interactions between individuals themselves, as well as between individuals and a normatively infused social environment cultivating their conscience and sense of social responsibility. What must be foregrounded are the irreducibly subjective dimensions of ethical, publicly minded conduct, which cannot be merely derived from or reduced to societal considerations. The pluralization and fragmentation of spheres of value and meaning cannot be heteronomously 'resolved' by the individual, who has tended to effortlessly rely upon, follow, or even willingly obey institutional producers and guardians of morality. While nourished by a public ethics and a democratic politics of techno-science, the modern subject must nevertheless confront her or his solitary obligation: to perpetually and critically interrogate oneself by exercising one's conscience in order to make moral judgements, as well as by assuming social responsibility.

> We will always still have to make our lives under the tragic conditions that characterize those lives, for we do not always know where good and evil lie, either on the individual level or on the collective level. And yet, neither are we condemned to evil, any more than we are to good, for we can, most of the time, turn back upon ourselves, both individually and collectively, reflect upon our acts, reexamine them, correct them, repair them.[48]

The appeal of conscience and the weight of social responsibility are inescapable; they can be neither displaced nor side-stepped, neither silenced nor instrumentalized.[49] Instead, the self's capacity for critical reflexivity and care for the public good must, in the last instance, guide him or her through the difficult labour of reflecting upon and determining complex normative matters.

How, then, can we cultivate an autonomous ethos according to which the individual acts as a responsible citizen and an ethical subject,

oriented to the public good and the call of her or his conscience? To begin, a course must be steered between under-socialized and over-socialized conceptions of conscience. Particularly prevalent in philosophy's expressivist tradition since Rousseau,[50] the former tendency depends upon the belief in a benevolent pre-societal human nature. Whether this moral ontology reveals a physical or an emotional essence, the self is imagined to possess an inherent sense of the good. An intrasubjective or monological understanding of conscience is thereby advanced, for the latter is conceived as an authentic inner core to which the outer self must correspond in order to escape or be protected from forces of socialization. The intrasubjective interpretation of conscience generally regards modern society with intense suspicion, since socializing processes are believed to distort, corrupt, or extinguish a person's true feelings and drives. Accordingly, expressivism views authenticity as the modern subject's principal ethical ideal; one must be true to oneself by being utterly transparent, that is, by ensuring that one's inner voice is heard and listened to at all times.[51]

On the other hand, the human sciences are rife with over-socialized theories of ethics. From Montesquieu onwards, though most insistently in Durkheim's work, much has been written about the proper macro-societal arrangements and procedures to generate a secular sense of the good.[52] Morality is correspondingly perceived as an outcome of a society's institutional configuration, which simultaneously posits ideals and enforces rules of conduct. Normative life is believed to be exclusively created and sustained by institutions located in the state or civil society (such as the market, the division of labour, the law, the family, and education). Conscience is left unexamined because assumed to be a by-product of socialization. Revisiting the tripartite taxonomy proposed at the beginning of this paper, it becomes clear that over-socialized perspectives marginalize ethics in three ways. First, because the state, the market or 'ethical specialists' are entrusted with morality, individuals need not consult their conscience; the faculty of normative judgement and decision-making can be delegated to others. Second, over-socialized frameworks fail to perceive or acknowledge the fact that social institutions themselves may deactivate or suppress conscience. Since they remove whole areas of social life from ethical scrutiny, institutional forces can, in many instances, act as sources of adiaphorization. Third, certain modes of socialization can pervert or channel conscience toward instrumental objectives. For instance, individuals may completely identify their duty with what is deemed organizationally efficient or profitable. Over-socialized approaches risk harbouring conformity to the existing social order; either unquestioned obedience or indirect 'deresponsibilization' – or yet again, obedience through 'deresponsibilization', and vice versa – become possible, even desirable, when ethical

agency is denied. Hence, an over-socialized notion of ethics is just as inadequate as its under-socialized counterpart, since neither society nor the subject enjoys a normative monopoly.

Drawing upon an undercurrent of western thought envisaging ethics as a form of *Lebensführung* (conduct of life) through which subjects constitute themselves, I would like to propose a performative understanding of the ethical self. This undercurrent finds its roots in Weber's comparative studies of world religions, which examine the self-formation of a subject's ethos of daily existence through rituals and beliefs.[53] More recently, it has been present in Hadot's work on ancient Graeco-Roman 'spiritual exercises', which in turn inspired Foucault's late writings on subjectivation where ethics is theorized as a set of practices of the self.[54] Applied to our concerns, a performative viewpoint allows us to analyse how actors involved in the techno-scientific field can form themselves as ethical and publicly minded subjects. The self cultivates his or her capacity for moral judgement and social responsibility through a series of dialogical encounters between conscience and the public good, which are themselves partly constructed by way of struggle and debate between citizens.

> When we abandon the notion that identity is formed once and for all in advance of participation in the public sphere, however, we can recognize that in varying degrees all public discourses are occasions for identity formation and disclosure. . . . Experience is not something exclusively prior to and addressed only by the rational-critical discourse of the public sphere; it is constituted in part through public discourse and at the same time continually orients people differently in public life.[55]

Conscience is thus neither entirely an ontological category nor a societal offshoot, but an intersubjective and self-reflexive faculty of ethical evaluation shaped by the junctions of processes of introspection, socialization, and communicative action. From the opposite end of the scale, a performative model encourages us to study how conscience often acts as the driving force behind individual or collective interventions contributing to social autonomy. For instance, personal feelings of disquiet, responsibility and remorse – as well as a profound sense of the public good – experienced by many Manhattan Project participants spurred the postwar scientists' movement, which aimed to ethicalize and democratize the institutions of science and technology.

The contention that ethics can productively be viewed as a mode of self-formation of the subject allows us to move away from three limitations of a prevailing, Kantian view of morality, and thus to sketch an alternative better suited to our objectives. First, rather than being formalistically considered as an ensemble of abstract and universal regulations, the idea of the good (whether personal or public) can be

envisaged as a practice woven through the texture of everyday social interactions.[56] Ethics is thus not extraneous to subjects, but incorporated into their daily activities and, to go further, at the very core of their identities as citizens and social actors (scientists, engineers, politicians, etc.). By extension, rather than being a supplementary or residual dimension of science and technology, normative considerations permeate and shape them; in fact, they are foundational in relation to other spheres of social life, and must therefore take primacy over competing societal logics. Third, instead of solely being viewed as a series of 'negative' prohibitions (what is not allowed or what is banned), scientific and technological ethics can more constructively come to signify an affirmative exercise of social responsibility and expression of conscience.

A notion of self-cultivation of the ethical and socially responsible subject underscores the indispensable presence of what Taylor calls 'strong evaluation' at every turn in the techno-scientific process.[57] The Cartesian severance of the connection between truth and virtue needs to be reversed, for the pursuit of knowledge is intimately linked to the care for and practice of the good; normative rationality must take precedence over its purposive-instrumental counterpart. Actors involved in the process at all stages – whether those of conceptualization and priority determination, funding, research, implementation, regulation, or even sale and marketing – can thus foreground their capacity for moral judgement and visions of the public good in order to face troubling yet essential questions. What are the social, cultural, political and economic interests involved in a specific scientific or technological project? For what immediate and foreseeable purposes is it being pursued? Stated differently, what social groups benefit from or suffer because of it, and what are its effects on existing relations of domination and inequality? Who determines the uses to which a given discovery is put, what is the decision-making process and under what circumstances does it take place? Necessarily, critical self-interrogation along these lines activates the possibility of dissent *vis-à-vis* institutional logic and organizational regulations. The issue is particularly pressing for two groups of actors, namely scientists and engineers directly involved in the techno-scientific process, as well as politicians, civil servants and corporate executives regulating research and implementing its findings. Bureaucratic and market imperatives (such as secrecy, obedience, or profit maximization) must be carefully scrutinized, and ultimately subordinated to the public good. When the opposite is the case – or in extreme cases, when evil is perpetuated – contestation, subversion and violation of specific rules and orders becomes necessary. Today, whistleblowing stands as the most compelling exercise of dissenting ethical judgement within social, political and economic institutions.

In addition to reflexivity, a performative view of ethical subjectivity

should incorporate a notion of social responsibility to transform the way techno-science is pursued. Above all, what must be countered is the scientific or technological player's rampant 'deresponsibilization', the displacement, neutralization or redefinition of ethics resulting in what Arendt calls the administrative 'rule of nobody'.[58] Thus, the cultivation of a sense of social responsibility is vital to the subject's normative self-formation. It is altogether different from two versions of responsibility that have come to prevail in the modern era: the legalistic idea of liability; and the moralizing concept of blame. An alternative conception of social responsibility has the additional merit of moving us away from merely a common, passive idea of the principle, toward a thicker and more active understanding of it.[59] Whereas the former is legalistic, often interpreted as imposing responsibility on the techno-scientific actor and holding him or her accountable for the consequences of research or decisions, the latter focuses on fostering the conditions under which this same actor can, as a citizen and moral subject, feel a sense of social responsibility and contribute to public debates about the ethical aspects of his or her pursuit. This thick, affirmative sense of responsibility addresses, in a more persuasive manner than its formal counterpart, the problematic fate of morality in the techno-scientific sphere today. For our purposes, then, being responsible signifies assuming a duty of care for the public good in the performance of scientific and technological activities.

The sense of social responsibility appropriate to the techno-scientific realm interweaves *khronos* and ethos, for it takes shape at the crossroads of remembrance and foresight. On the one hand, it is fed by an obligation to acknowledge and remember past evils, to bear witness to human suffering caused by the instrumentalization of science and technology in the 20th century. Ethical remembrance nurtures a duty of care for the public good which cannot be addressed by a logic of redress (how could the victims and survivors of Hiroshima and Chernobyl ever be compensated?). Instead, such a duty calls for techno-scientific actors to perceive themselves as ethical citizens, witnesses of history who extract lessons from the errors of the past in order to struggle against the privatization and de-ethicalization of their fields of activity. On the other hand, in the footsteps of Weber and Jonas, social responsibility envisages a future that always carries the seeds of tragedy in its bosom.[60] Foresight toward unintended consequences, toward the possible perversion of even the noblest of ends, requires incessant vigilance and anticipation. Consideration of the potential dangers unleashed by scientific discoveries and their technological applications, as well as the risks of violence, suffering and domination carried by them, must squarely be confronted. Therefore, a sense of social responsibility is fundamentally preventative, urging caution and humility in the face of humankind's newly discovered capacities of self-destruction.

> If the new nature of our acting then calls for a new ethics of long-range responsibility, coextensive with the range of our power, it calls in the name of that very responsibility also for a new kind of humility – a humility owed, not like former humility to the smallness of our power, but to the excessive magnitude of it, which is the excess of our power to act over our power to foresee and our power to evaluate and to judge.[61]

Jonas's intensely compelling and difficult 'imperative of responsibility' asks that we support a burden of prevention and foresight that is anathema to the lightness of techno-scientific hubris. For some actors involved in the circuits of techno-science, insatiable curiosity, the intoxication of greater knowledge and increased control over nature take precedence over all else. Recent controversies over human cloning illustrate that the temptation to play god – nay, the delusion of being god (if only momentarily) – is very much alive today. And yet the ethos of social responsibility highlights the fact that the actual pursuit and reach of an objective cannot unproblematically follow from our capacity to attain it. In reality, the very opposite is true: until an ethical and publicly minded practice of techno-science is achieved, we are bound to ensure that what we ought to do is not confused or simplistically equated with what we can do. For the self, the exercise of ethical judgement can only stem from the encounter of conscience and social responsibility.

Conclusion

This paper began by contending that the rise to prominence of science and technology in the current era has reshaped and, in turn, been reshaped by the skewing of the modern field of tensions toward rational mastery. In addition to eroding the democratic potential embedded in the project of autonomy, this skewing has displaced ethics away from public arenas, immunized entire domains of social life from normative considerations, or colonized the ethical by way of bureaucratization and commodification. Thus, it has been noted that twin processes of 'de-ethicalization' and privatization of techno-science have taken place, giving birth to an ethical vacuum and a democratic lapse. The paper went on to suggest that ways to overcome this predicament can be viewed in the form of a double movement toward the democratization and ethicalization of techno-science. I argued that the latter must be inserted into and enframed by the public sphere, a dialogical theatre of social interaction oriented toward universal access and pluralist deliberation, as well as the creation of a public ethics and an affirmative notion of the public good, with regard to scientific and technological matters. However, techno-science's publicness is not in and of itself sufficient, for it must be complemented by the cultivation of the

techno-scientific actor's autonomy. Hence, the last part of the paper develops a performative conception of ethical life that integrates ideas of conscience and social responsibility into the subject's modes of self-constitution.

Ultimately, the ethical gap and the democratic lapse with regard to science and technology must be put into question, and eventually remedied. The risks are too high, the time too pressing for the status quo to remain in place much longer. What is at stake can hardly be overstated: the capacity to bind techno-science, ethics and democracy to each other will increasingly inform the socio-historical configurations to be born out of modernity's perpetual dialectic between autonomy and rational mastery. If the commodification and bureaucratization of techno-scientific activities continue unabated, it is probably only a matter of time until the widespread manipulation and sale of human beings proceeds ahead in a manner that will make Faust's bargain with Mephistopheles seem like a benign fate. Not god-like knowledge, then, but its instrumentalized uses stripped of overarching ethical and democratic contexts, is what should truly make our souls quake today.

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Notes

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1 I use the term 'techno-science' to indicate the increasing fusion of scientific and technological activities, that is, the fading of the traditional separation between 'pure' and 'applied' research. Today, the two areas are tightly integrated through the rapid conversion of discoveries into applications.
2 Atomic energy, the internet, and genetic mapping are but three salient examples.
3 H. Jonas, *The Imperative of Responsibility: In Search of an Ethics for the Technological Age*, trans. H. Jonas and D. Herr (Chicago, IL: University of Chicago Press, 1984[1979–81]).
4 J. Ellul, *The Technological Society* (New York: Vintage, 1964[1954]); N. Postman, *Technopoly: The Surrender of Culture to Technology* (New York: Vintage, 1992).
5 Z. Bauman, *Modernity and the Holocaust* (Ithaca, NY: Cornell University Press, 1989); Z. Bauman, *Postmodern Ethics* (Oxford: Blackwell, 1993); Z. Bauman, *Life in Fragments: Essays in Postmodern Morality* (Oxford: Blackwell, 1995); R. Bellah *et al*., *Habits of the Heart: Individualism and Commitment in American Life* (New York: Harper & Row, 1985); R.

Bellah *et al*., *The Good Society* (New York: Vintage, 1991); M. Garber *et al*. (eds), *The Turn to Ethics* (London and New York: Routledge, 2000); N. Haan *et al*. (eds), *Social Science as Moral Inquiry* (New York: Columbia University Press, 1983); E. Lévinas, *Totalité et infini* (The Hague: Martinus Nijhoff, 1971); A. MacIntyre, *After Virtue: A Study in Moral Theory* (Notre Dame, IN: University of Notre Dame Press, 1984[1981]); C. Taylor, *Sources of the Self: The Making of the Modern Identity* (Cambridge, MA: Harvard University Press, 1989); A. Wolfe, *Whose Keeper? Social Science and Moral Obligation* (Berkeley: University of California Press, 1989).

6 A. Feenberg, *Alternative Modernity: The Technical Turn in Philosophy and Social Theory* (Berkeley: University of California Press, 1995); S. Harding (ed.), *The 'Racial' Economy of Science: Toward a Democratic Future* (Bloomington: Indiana University Press, 1993); F.-A. Isambert, *De la Religion à l'éthique* (Paris: Cerf, 1992); Jonas, *The Imperative of Responsibility*; M. Kranzberg (ed.), *Ethics in an Age of Pervasive Technology* (Boulder, CO: Westview, 1980); E. Morin, *La Complexité humaine* (Paris: Flammarion, 1994).

7 G. Canguilhem, *Le Normal et le pathologique* (Paris: Presses Universitaires de France, 1966); P. Feyerabend, *Against Method* (London and New York: Verso, 1975); T. Kuhn, *The Structure of Scientific Revolutions* (Chicago, IL: University of Chicago Press, 1962).

8 D. J. Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (London: Free Association Books, 1991); D. J. Haraway, *ModestWitness@SecondMillennium.FemaleManMeetsOncoMouse: Feminism and Technoscience* (New York and London: Routledge, 1997); B. Latour, *Science in Action: How to Follow Scientists and Engineers Through Society* (Cambridge, MA: Harvard University Press, 1987); B. Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, MA: Harvard University Press, 1999); P. Rabinow, *Essays on the Anthropology of Reason* (Princeton, NJ: Princeton University Press, 1996); P. Rabinow, *French DNA: Trouble in Purgatory* (Chicago, IL: University of Chicago Press, 1999); A. Ross (ed.), *Science Wars* (Durham, NC: Duke University Press, 1996).

9 Z. Bauman, *Legislators and Interpreters: On Modernity, Post-modernity and Intellectuals* (Cambridge: Polity, 1987); R. Rorty, *Contingency, Irony, and Solidarity* (Cambridge: Cambridge University Press, 1989).

10 Rabinow, *Essays on the Anthropology of Reason*, p. 155.

11 C. Castoriadis, *The Imaginary Institution of Society*, trans. K. Blamey (Cambridge: Polity Press, 1987[1975]), pp. 156–60, 369–73; C. Castoriadis, 'Done and to be Done', in D. A. Curtis (ed. and trans.), *The Castoriadis Reader* (Oxford: Blackwell, 1997b[1989]), pp. 361–417; J. P. Arnason, 'The Imaginary Constitution of Modernity', *Revue européenne des sciences sociales* 86 (1989): 323–37; J. P. Arnason, 'Modernity as Project and as Field of Tensions', in A. Honneth and H. Joas (eds), *Communicative Action: Essays on Jürgen Habermas's The Theory of Communicative Action* (Cambridge, MA: MIT Press, 1990), pp. 181–213.

12 J. Habermas, *The Theory of Communicative Action*, Vol. II, *Lifeworld and System*, trans. T. McCarthy (Boston, MA: Beacon Press, 1987[1981]), p. 355; H. Arendt, *The Human Condition*, 2nd edn (Chicago, IL: University

of Chicago Press, 1998[1958]), p. 157. 'On the basis of the hidden but apparently self-evident postulate that economy is just about producing more (outputs) with less (inputs), nothing – physical or human "nature," tradition, or other "values" – ought to stand in the way of the maximization process. Everything is called before the Tribunal of (productive) Reason and must prove its right to exist on the basis of the criterion of the unlimited expansion of "rational mastery." ' C. Castoriadis, 'The Retreat from Autonomy: Postmodernism as Generalized Conformism', in D. A. Curtis (ed. and trans.), *World in Fragments: Writings on Politics, Society, Psychoanalysis, and the Imagination* (Stanford, CA: Stanford University Press, 1997[1992]), p. 38; see also Castoriadis, *The Imaginary Institution of Society*, pp. 156–60). Weber himself makes the connection between the rationalization of the state and economic domains: 'The fully developed bureaucratic apparatus compares with other organizations exactly as does the machine with the non-mechanical modes of production. Precision, speed, unambiguity, knowledge of the files, continuity, discretion, unity, strict subordination, reduction of friction and of material and personal costs – these are raised to the optimum point in the strictly bureaucratic administration, and especially in its monocratic form.' M. Weber, *Economy and Society: An Essay in Interpretive Sociology*, ed. G. Roth and C. Wittich (Berkeley: University of California Press, 1978[1921–2]), p. 973.

13 M. Weber, 'Science as a Vocation', in H. H. Gerth and C. Wright Mills (eds and trans.), *From Max Weber: Essays in Sociology* (New York: Oxford University Press, 1946[1919]).

14 Borrowing James Mill's image of polytheism, Weber represents this situation as a struggle between gods. He illustrates the point by evoking Nietzsche's philosophy and Baudelaire's *Flowers of Evil*. M. Weber, 'Science as a Vocation', in Gerth and Wright Mills (eds and trans.), *From Max Weber*, pp. 147–8.

15 M. Foucault, 'On the Genealogy of Ethics: An Overview of Work in Progress', in P. Rabinow (ed.), *The Foucault Reader* (New York: Pantheon, 1984), pp. 340–72; Bauman, *Postmodern Ethics*, pp. 4–5.

16 K. Polanyi, *The Great Transformation: The Political and Economic Origins of Our Time* (Boston, MA: Beacon Press, 1944); Habermas, *The Theory of Communicative Action*, Vol. II.

17 N. Luhmann, *Social Systems*, trans. J. Bednarz, Jr with D. Baecker (Stanford, CA: Stanford University Press, 1995[1984]).

18 Jonas, *The Imperative of Responsibility*.

19 Bauman, *Postmodern Ethics*, pp. 28–9, 46; Castoriadis, 'Done and to be Done', p. 415; Wolfe, *Whose Keeper?*

20 C. B. Macpherson, *The Life and Times of Liberal Democracy* (Oxford: Oxford University Press, 1977), p. 79.

21 Wolfe, *Whose Keeper?* p. 107; Bauman, *Postmodern Ethics*, pp. 182–3.

22 Bellah *et al*., *Habits of the Heart*, p. 46; Bauman, *Postmodern Ethics*, pp. 124–5; C. Castoriadis, 'The Ethicists' New Clothes', in Curtis (ed. and trans.), *World in Fragments*, p. 121. Durkheim's notion of anomie stands as the classical illustration of the pathological outcomes of morality's weakening by way of its displacement. E. Durkheim, *Suicide: A Study in*

Sociology, trans. J. A. Spalding and G. Simpson (London: Routledge & Kegan Paul, 1952[1897]), pp. 291–309.

23 Bauman, *Life in Fragments*, p. 149; Bauman, *Postmodern Ethics*, pp. 125–9.

24 Bauman terms this process the 'floating' of responsibility. Bauman, *Postmodern Ethics*, pp. 18, 126.

25 Arendt, *The Human Condition*, 2nd edn, p. 229; Bauman, *Postmodern Ethics*, pp. 68–9, 123–4; Bellah *et al*., *The Good Society*, pp. 90–7, 114–19; Habermas, *The Theory of Communicative Action*, Vol. II; Macpherson, *The Life and Times of Liberal Democracy*, pp. 78–9; Polanyi, *The Great Transformation*; Wolfe, *Whose Keeper?*, p. 20.

26 'The honor of the civil servant is vested in his ability to execute conscientiously the order of the superior authorities, exactly as if the order agreed with his own conviction. This holds even if the order appears wrong to him and if, despite the civil servant's remonstrances, the authority insists on the order. Without this moral discipline and self-denial, in the highest sense, the whole apparatus would fall to pieces': M. Weber, 'Politics as a Vocation', in Gerth and Wright Mills (eds and trans.), *From Max Weber*, p. 95.

27 Arendt's haunting analysis of the Eichmann case reveals the existence of all three processes of transformation of ethics. Indeed, the banality of evil becomes fully comprehensible once they are taken in conjunction with one another. Eichmann displaces ethical questions by leaving them to be answered by the state, or by viewing them as private issues (e.g. the inconsistency between his occasional personal interventions to assist Jewish acquaintances and his execution of orders leading to the mass deportation of Jews to extermination camps). Adiaphorization is manifest in the self-understanding of his own decisions as somehow outside of morality or morally neutral because strictly conforming to existing rules or orders. The colonization of ethics is strongly evidenced by his perversion of the Kantian categorical imperative, which becomes interpreted as a moral obligation to obey the law. H. Arendt, *Eichmann in Jerusalem: A Report on the Banality of Evil*, rev. edn (Harmondsworth: Penguin, 1964).

28 The term 'publicness' is employed here to mean public access and control.

29 Bauman, *Postmodern Ethics*, p. 195; Castoriadis, *The Imaginary Institution of Society*, p. 156; Ellul, *The Technological Society*; Postman, *Technopoly*.

30 For instance, the involvement of a researcher's personal emotions and values in an experiment could threaten the possibility of universal replication and testability of the experiments – all cornerstones of positivist science.

31 Bauman, *Postmodern Ethics*, pp. 128–9; C. Castoriadis, 'The Greek Polis and the Creation of Democracy', in Curtis (ed. and trans.), *The Castoriadis Reader*, p. 277; Habermas, *The Theory of Communicative Action*, Vol. II, p. 230.

32 More than 30 years ago, Habermas commented: 'It is only recently that bureaucrats, the military, and politicians have been orienting themselves to strictly scientific recommendations in the exercise of their public functions – indeed, this practice has only existed on a large scale since World War II. This marks a new or second stage of that "rationalization" which Max Weber had already comprehended as the basis for the development of

bureaucratic domination. It is not as though scientists had seized state power; but the exercise of power domestically and its assertion against external enemies are no longer rationalized only through the mediation of administrative activity organized through the division of labor, regulated according to differentiated responsibilities, and linked to instituted norms. Instead they have been structurally transformed by the objective exigencies of new technologies and strategies.' J. Habermas, *Toward a Rational Society: Student Protest, Science, and Politics*, trans. J. J. Shapiro (London: Heinemann, 1971[1968–9]), p. 62.

33 C. Taylor, 'Liberal Politics and the Public Sphere', in *Philosophical Arguments* (Cambridge, MA: Harvard University Press, 1995), p. 259.

34 J. Habermas, *The Structural Transformation of the Public Sphere*, trans. T. Burger and F. Lawrence (Cambridge, MA: MIT Press, 1989[1962]).

35 Many of the contributions to Calhoun provide other instances of the contemporary pluralization of public spheres as well as of the meaning of public life. Also, see Calhoun's critique of Habermas's unitary conception of the public sphere. 'The language of "spheres" may mislead. If we are speaking about a mode of establishing relationships between human beings, then publicness can be instantiated in a variety of social spaces by no means all of which are institutionalized as political by their relationship to the state.' C. Calhoun (ed.), *Habermas and the Public Sphere* (Cambridge, MA: MIT Press, 1992). C. Calhoun, 'Plurality, Promises, and Public Spaces', in C. Calhoun and J. McGowan (eds), *Hannah Arendt and the Meaning of Politics* (Minneapolis: University of Minnesota Press, 1997), pp. 232–59. Benhabib's contrast of Arendt's 'agonistic' view of public space and Habermas's 'discursive' understanding of the concept provides a different interpretation, one that privileges the latter over the former. S. Benhabib, 'Models of Public Space: Hannah Arendt, the Liberal Tradition and Jürgen Habermas', in C. Calhoun (ed.), *Habermas and the Public Sphere* (Cambridge, MA: MIT Press, 1992), pp. 73–98. In his later work, Habermas has attempted to pluralize his understanding of the contemporary public sphere by incorporating within it a notion of civil society composed of overlapping networks of collective social actors. J. Habermas, *Between Facts and Norms: Contributions to a Discourse Theory of Law and Democracy*, trans. W. Rehg (Cambridge, MA: MIT Press, 1996[1990]), pp. 352–86.

36 H. Arendt, *On Revolution* (Harmondsworth: Penguin, 1963); Arendt, *The Human Condition*, 2nd edn; Calhoun, 'Plurality, Promises, and Public Spaces', in Calhoun and McGowan (eds), *Hannah Arendt and the Meaning of Politics*; Castoriadis, 'The Greek Polis and the Creation of Democracy', in Curtis (ed. and trans.), *The Castoriadis Reader*; C. Castoriadis, 'The Greek and the Modern Political Imaginary', in Curtis (ed. and trans.), *World in Fragments*.

37 For a stimulating and detailed discussion along these lines, see J. Bohman, *Public Deliberation: Pluralism, Complexity, and Democracy* (Cambridge, MA: MIT Press, 1996).

38 N. Fraser, 'Rethinking the Public Sphere: A Contribution to the Critique of Actually Existing Democracy', in Calhoun (ed.), *Habermas and the Public Sphere*, pp. 110–11.

39 Arendt, *On Revolution*, p. 253; Arendt, *The Human Condition*, 2nd edn, pp. 50–1. This is not to deny that, both in the past and the present, publicness has been undermined by existing socio-economic inequalities. See Fraser, 'Rethinking the Public Sphere', in Calhoun (ed.), *Habermas and the Public Sphere*, pp. 118–21.

40 Arendt, *On Revolution*, pp. 93–4, 174, 225–7, 245; Arendt, *The Human Condition*, 2nd edn, pp. 57, 175–6, 220–1; Bellah *et al*., *The Good Society*, pp. 138–40, 292–3, 304–6; Castoriadis, 'The Greek Polis and the Creation of Democracy', in Curtis (ed. and trans.), *The Castoriadis Reader*, pp. 272, 280; Castoriadis, 'Done and to be Done', in Curtis (ed. and trans.), *The Castoriadis Reader*, p. 413.

41 In addition, it should be noted that democratization depends upon two significant realities which lie beyond the immediate scope of this paper: public education to cultivate an informed citizenry, one that is better able to understand and interpret techno-science; and socio-economic justice, the struggle for the equal distribution of material and symbolic resources.

42 Bellah *et al*., *The Good Society*, p. 306. As early as in *Toward a Rational Society*, Habermas (1970: 61) warns us about societal dependence on expertise: 'Only if we succeed in directing the mediation of technical progress and the conduct of social life, which until now has occurred as an extension of natural history; its conditions being left outside the framework of discussion and planning. The fact that this is a matter for reflection means that it does not belong to the professional competence of specialists. . . . Our only hope for the rationalization of the power structure lies in conditions that favor political power for thought developing through dialogue. The redeeming power of reflection cannot be supplanted by the extension of technically exploitable knowledge.'

43 Arendt, *On Revolution*; Arendt, *The Human Condition*, 2nd edn; Castoriadis, 'The Greek Polis and the Creation of Democracy', in Curtis (ed. and trans.), *The Castoriadis Reader*; Castoriadis, 'Done and to be Done', in Curtis (ed. and trans.), *The Castoriadis Reader*, p. 407; Castoriadis, 'The Greek and the Modern Political Imaginary', in Curtis (ed. and trans.), *World in Fragments*; Castoriadis, 'The Ethicists' New Clothes', in Curtis (ed. and trans.), *World in Fragments*, pp. 117, 122.

44 This distinction between two versions of the public good partially follows Berlin's juxtaposition of negative and positive concepts of liberty, as well as Taylor's arguments in favour of the latter *vis-à-vis* the former. I. Berlin, 'Two Concepts of Liberty', in *The Proper Study of Mankind: An Anthology of Essays* (New York: Farrar, Straus & Giroux, 1997[1969]), pp. 191–242. C. Taylor, 'What's Wrong with Negative Liberty', in *Philosophy and the Human Sciences: Philosophical Papers 2* (Cambridge: Cambridge University Press, 1985), pp. 211–29.

45 Jonas, *The Imperative of Responsibility*.

46 Bauman, *Modernity and the Holocaust*, p. 171.

47 Bellah *et al*., *Habits of the Heart*.

48 Castoriadis, 'The Ethicists' New Clothes', in Curtis (ed. and trans.), *World in Fragments*, p. 122.

49 Bauman, *Postmodern Ethics*; Bauman, *Life in Fragments*.

50 Taylor, *Sources of the Self*.
51 In the modern era, this pre-societal view of ethics extends from Rousseau's ideas of animal compassion and pity to Bauman's concept of 'the moral impulse'. J.-J. Rousseau, *A Discourse on the Origin of Inequality* in *The Social Contract and Discourses*, trans. G. D. H. Cole (London: Dent, 1973[1755]); Bauman, *Postmodern Ethics*; Bauman, *Life in Fragments*. Ferrara has made a case for an intersubjective approach to authenticity which addresses some of the flaws of an under-socialized conception of conscience. A. Ferrara, *Reflective Authenticity: Rethinking the Project of Modernity* (London and New York: Routledge, 1998).
52 E. Durkheim, *Professional Ethics and Civic Morals*, trans. C. Brookfield (London: Routledge & Kegan Paul, 1957[1950]); E. Durkheim, *Moral Education: A Study in the Theory and Application of the Sociology of Education*, ed. E. K. Wilson, trans. E. K. Wilson and H. Schnurer (New York: Free Press, 1973[1925]); E. Durkheim, *The Division of Labour in Society*, trans. W. D. Halls (London: Macmillan, 1984[1893]); Bauman, *Modernity and the Holocaust*, pp. 170–5; Bauman, *Postmodern Ethics*, pp. 312–14; Wolfe, *Whose Keeper?*
53 M. Weber, 'The Social Psychology of the World Religions', in Gerth and Wright Mills (eds and trans.), *From Max Weber*, pp. 292–3.
54 P. Hadot, *Philosophy as a Way of Life: Spiritual Exercises from Socrates to Foucault*, ed. A. I. Davidson, trans. M. Chase (Oxford: Blackwell, 1995); Foucault, 'On the Genealogy of Ethics', in Rabinow (ed.), *The Foucault Reader*, pp. 340–72; M. Foucault, *The History of Sexuality*, Volume 2, *The Use of Pleasure*, trans. R. Hurley (New York: Vintage, 1985[1984]); M. Foucault, *The History of Sexuality*, Volume 3, *The Care of the Self*, trans. R. Hurley (New York: Vintage, 1986[1984]); M. Foucault, 'The Ethic of Care for the Self as a Practice of Freedom', in J. Bernauer and D. Rasmussen (eds), *The Final Foucault* (Cambridge, MA: MIT Press, 1988[1984]); M. Foucault, 'Truth, Power, Self: An Interview', in L. H. Martin, H. Gutman, and P. H. Hutton (eds), *Technologies of the Self: A Seminar with Michel Foucault* (Amherst: University of Massachusetts Press, 1988); M. Foucault, 'Technologies of the Self,' in ibid.; M. Foucault, 'The Political Technology of Individuals,' in ibid. What is useful for the purposes of this paper is less Foucault's interest in the care of the self as an aesthetics of existence than his vision of the individual's training and search for the good as an affirmative mode of subjectivity.
55 Calhoun, 'Plurality, Promises, and Public Spaces', in Calhoun and McGowan (eds), *Hannah Arendt and the Meaning of Politics*, p. 247.
56 Taylor, *Sources of the Self*, pp. 3–4, 27, 33–6, 42.
57 Taylor, *Sources of the Self*.
58 Arendt, *The Human Condition*, 2nd edn, p. 45; Bauman, *Postmodern Ethics*, p. 126.
59 This distinction partly follows Jonas's differentiation between formal and substantive conceptions of responsibility. Jonas, *The Imperative of Responsibility*, pp. 90–3.
60 Weber, 'Politics as a Vocation', in Gerth and Wright Mills (eds and trans.), *From Max Weber*; Jonas, *The Imperative of Responsibility*.
61 Jonas, *The Imperative of Responsibility*, pp. 21–2.