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Design, Technology and Ethics

Visiting with Kockelkoren and Taylor

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Because design is one of the institutions that facilitates technology's embodiment and acceptance, its involvement in the process which intentionally brings into being artifacts, experiences and systems prompts the question: *has the discipline placed itself in ethical jeopardy by its willingness to mediate technology's world (re)making in contemporary society's ever expanding and increasingly artificial realities?*

A manifestation of the human desire to "make a world,"[1] technology is herein considered in an ordinary mechanistic sense, phenomenologically as Heidegger[2] might when discussing 'ready-to-hand' (*zuhanden*) or 'present-at-hand' (*vorhanden*) and more broadly as the embodiment of instrumental reason as in Taylor's view.[3] In their bid to reshape the world, humans have enmeshed themselves in co-creative, mediatory processes in which they use technology and are in turn shaped by its use. Pervasive and powerful, these bi-directional mediations reverberate within individuals, through society and across time as new technologies upset or surmount existing realities or

shape what may become unsustainable futures.[4] Technology's disturbing, pervasive nature sheds doubt on any belief that its development and use can or should occur without scrutiny. Systematic reflection upon the nature, intent and consequences – the ethics of the behavior of any institution that shapes the mythology and metaphors of society has become obligatory.

The question of design or designing's ethical accountability is singularly important. By asking this question, designing is reconstructed as social action and thus open to sociological scrutiny from which it might otherwise be exempt. Further, viewing designing as ssocial action means entertaining the notion that it possesses agency in the "strict and proper sense"[5] – that its actions are freely caused by the exertions of some agent endowed with will and understanding. By extension then, designing becomes open to ethical scrutiny. Verbeek[6] captures the argument this way: technology and the efforts to domesticate it – the fruits of designing – "co-shape the existence and experiences of people [and thus] their design is unavoidably a moral activity." [7]

Further, asking and attempting to answer ethical questions about designing's social and moral agency in technology's domestication broadens and extends the currently influential social constructivist discourse in technology studies. It does so by interjecting (design's agency and) ethical discourse into these studies – a vital commitment to new insights in light of past attacks on some social constructivist's methodologically-driven disdain for evaluative stances and their reticence to invoke ethical or political principles.[8]

This essay will offer some possible answers to its question by examining one instance of design's complicity in technology's domestication. In order to situate design's role socially and clarify it ethically, two steps will be taken. First, the inquiry will ground the process theoretically by visiting with two philosophers: Petran Kockelkoren[9] and Charles Taylor.[10] It will then move to an historical intersection where design helped normalise electricity in Nineteenth Century Britain. Design's role will be examined from a sociological perspective and then from both Kockelkoren and Taylor's respective ethical vantage points. By moving from empirical/analytical observation to philosophical reflection, this examination will bridge micro-social observations[11] to macro-evaluative stances[12] and bring sharper focus to the ethical question.

Framing Kockelkoren and Taylor

Kockelkoren and Taylor are not the individuals who immediately come to mind as do Heidegger,[13] Ellul,[14] Ihde,[15] Latour[16] and Borgmann[17] when the philosophy of technology is mentioned. Nevertheless, Kockelkoren and Taylor bring a provocative discernment and keen insight to the question of technology's relationship with society and by extension, design's symbiosis

with both. Among other philosophical questions, Kockelkoren and Taylor both consider ways in which technology becomes entrenched or stabilised through the efforts of institutions or 'socio-technical constituencies'. Both examine divergent positions on the important concepts of the nature of technology's power and institutional support – a position from which to engage their respective philosophies of technology.

Although sharing common philosophical concerns, Kockelkoren and Taylor view technology and its relationship with society from significantly different perspectives. Generally, Kockelkoren takes a neutral to a more positive stance towards technology, viewing any disruptions it may cause as inevitable but for the most part psychologically localised. Technology for him is woven into the fabric that envelops the human condition. Moreover, its disruptive nature is tempered by its self-mediating qualities. Technology embraced allows individuals to continually re-centre themselves and unites them as they collectively pursue the new realities their technologies open for them. Taylor, on the other hand, believes that humans must struggle against technology's unreflective prestige and acceptance, the modern embodiment of unbridled instrumental reason. For Taylor, this ideology and its embodiment cause disruptions across a wide register – social, political and personal. These disturbances in turn (and ironically) cause society to clamour for ever more advanced technological solutions. From Taylor's perspective, society must come to grips with a world in which technology and instrumental reason encourage political apathy, fragment social bonds and create spaces in which individuals ricochet off each other like social atoms.

Kockelkoren and Taylor: Domesticated Technology

When examining technology as a supported human endeavor, Kockelkoren points out that groups vested in technology hasten its normalisation by employing, in Foucaultian[18] terms, overt and covert cultural conditioning. While only lightly sketching the motivations of these groups in his book *Technology: art, fairground and theatre*, Kockelkoren does cite numerous examples of their institutional handiwork. One specific example was an attraction at the 1900 Paris World Exhibition. Offered to the public as a novelty, this exhibit nonetheless simulated the sensory disorientation felt to be common to travel by train. Viewers sat in imitation coupés and watched three independently moving panoramas roll past at differing speeds. "People stared at exotic panoramas and in doing so appropriated the art of perceiving in motion."[19] Kockelkoren offers another example but one of a more diffused nature – art's response to the industrial revolution. Claude Monet's (1840–1926) steam shrouded locomotives are singled out along with Futurism's celebration of the machine age and its quickening pace in the

scenes painted from moving trains and cars by Giacomo Balla (1895–1911) and Umberto Boccioni (1882–1916).

In a general sense then, Kockelkoren believes that institutions – including the arts – offer images, spectacle and metaphors whose sole purpose is to help domesticate technology. The 1900 Paris World Exhibition gave spectators a vicarious ride on the Trans-Siberian Express; Monet and the Futurists celebrated mechanised transport's rapid pace. Far from being "refuges from cultural conditioning, they were in fact the reverse: they function as cultural normalising machines par excellence."[20] For the most part, Kockelkoren adopts a neutral ethical stance when describing institutional support for technology. Further, Kockelkoren's ethical neutrality appears to mediate his belief in the deterministic nature of institutional support when he refers to the "[p]rocesses of cultural appropriation … that have taken place in an unbroken succession in the course of history."[21]

Taylor too sees technology supported by external concerns. However, rather than seeing visionaries opening new horizons or socio-technical constituencies attempting stabilisation,[22] he sees technological 'boosters' and impersonal socio-economic mechanisms or bureaucracies working for the benefit of the system or its membership. Taylor points to Marx and Weber when discussing how these impersonal mechanisms – Weber's 'iron cages'[23] – are empowered by and empower technology. Taylor defines technological boosters as individuals or groups who believe technology is the key to solving many, if not most, of contemporary life's social, political and personal problems. United in their utopian belief in technology's promise, this group is, however, politically divided. According to Taylor, while conservatives believe technology is the engine of change for progress and control, liberals call on the same engine to power a re-enchantment with the natural world and a rapprochement among humans. Both utopian visions, Taylor believes, occlude the more fundamental problem that exists when instrumental reason and technology operate as "an insistent, unreflected imperative."[24] For Taylor, those caught in a society organised by instrumentality – right and left – often learn that instrumental reason and technology are less windows on some future economic progress or political empowerment than keys to a narrow, present success or even basic survival.

At the Intersection: Technology and Design

In order to recalibrate design as a social endeavor and place it at the centre of Kockelkoren and Taylor's philosophical differences, this essay will now move to its second step. Here, design's participation in the institutional attempts to domesticate electricity will be examined from a social constructivist perspective. These empirical/analytical observations will then be augmented with the explication of philosophical reflections framed by Kockelkoren

and Taylor's respective positions. In doing so, pertinent social analysis and divergent ethical conclusions will emerge for further consideration.

Electricity: Learning to Love the 'Fuel of the Future'

Architectural historian Adrian Forty (1986) examines electricity's ascendancy in *Objects of Desire: Design and Society Since 1750*. He does so primarily through the lens of product design and its ability through style and functionality to reframe the public's ideas and perspectives about electricity. However, Forty also suggests that along with electric appliances, advertising, marketing and other visual forms of cultural conditioning persuaded reluctant consumers to welcome electricity into their homes.[25]

According to Forty, early British electricity suppliers faced three principal obstacles to increased domestic demand: the high price of electricity, the lack of wired homes, and the public's fears of this invisible but powerful force. The first two obstacles were eventually overcome through economic means, building practices and product design.

The Electrical Development Association (EDA) was established in part to help overcome the third obstacle. Set up under the Electricity Act of 1919, the EDA spurred domestic demand by having designers create advertisements, marketing brochures and showroom sales events. Here, the term designer does not characterise a discipline or specialisation in the ways they are now known. Rather, it is describing visual communicators who sought "to provide audiences with [rhetorical] reasons for adopting a new attitude or taking a new course of action."[26] Describing these designers in this way – as moral actors instead of members of a particular discipline – centralises their agency and privileges its moral dimensions. Further, when considering collective rather than individual culpability, separating the term designer from its disciplinary characterisation prevents this group from being reduced to a self-evident but morally vacuous entity.

In similar fashion, while the various advertisements and marketing literature created for the EDA could be viewed as specialised visual expressions, these materials could also be regarded as artifacts sharing a common creative process and shared vision. They were solutions to a need, in this case the EDA's desire to modify people's attitudes about electricity as a domestic power source. In fact and effect, these artifacts were more the material evidence of these designer's adopted ideological or rhetorical position than they were the expressions of any disciplinary affiliation.

Building on three messages then – electricity was safe and efficient, electricity liberated its users from domestic drudgery and electricity was the 'fuel of the future' – the EDA 'designers' produced a number of these artifacts. All in their own way targeted what Pinch and Bijker call 'relevant social groups'.[27]

In this case, the group included potential and existing domestic electricity customers. As evidenced in its multiple messages, the EDA realised that although this group shared some common views on electricity as an energy source, it was not homogenous. Thus, the organisation's messages were tailored to address the group's divergent fears, aspirations and dreams. In this way, the EDA could retain interpretative flexibility,[28] in the way social groups construe technologies, by allowing the various 'electrically curious' sub-groups to choose the message-inspired meanings with which they felt most comfortable.

From today's perspective, fears surrounding electricity and its use seem irrational; but prior to its domestication, electricity caused deeply felt misgivings among a British public coming to grips with its presence. The electricity producers of the time took such fears seriously and produced materials that addressed this concern. At the general meeting of the Electrical Development Association of 1934, the chairman said:

> One of the greatest bugbears to be contended with in the development of electricity [is] the haunting spectre of fear.[29]

The EDA also poured enormous time and effort into other materials that reinforced its other two messages: electricity's capacity to reduce workloads and its futurity.

For instance, in an EDA advertisement from 1928 a woman is pictured stepping through her front door into a sunny spring day. Smartly dressed and obviously comfortable with her place in a newly electrified world, she carries a set of golf clubs while hailing a ride.

"No longer tied down by housework" as the ad proclaims, her spring-cleaning it seems was completed earlier with the simple touch of an electrical switch. While overtly selling electricity, the advertisement also connotes efficiency and convenience. Efficiency – the presence of unseen appliances that released her from hours spent on domestic chores. Convenience – the woman's "ability to shift and juggle obligations and to construct and determine [her] personal schedule."[30]

The EDA's efficiency and convenience messages stated that electricity would power an array of time-saving home appliances and thus give housewives or homeowners more time to enjoy less onerous pursuits. However, according to Forty, this message also spoke at a deeper level to couples aspiring to middle-class status and women troubled by domestic work's class association. It reinforced what Forty calls the myth of the 'mechanical servant':

> The pretence that housework was not work could seem more convincing if there were some alternative to the [disappearing] servant, a substitute which could appear to do the laborious and degrading part of [a housewife's] work.[31]

Reading the same EDA advertisement in this light, another message becomes apparent: domestic utopia – the possibility that a 1930's middle-class British housewife would have ample occasion for golf outings when electricity relieved her of her afternoon household duties. No doubt men perceived the underlying class message too. However, at the time being largely divorced from housework, their conception was more likely formed from the vantage point of status acquired from the ownership and display of electrical appliances rather than their use.

The EDA's first two messages attempted to alleviate fears of electricity and deep-seated class anxieties; with its third message, it adopted a utopian stance. It recast electricity as "a miraculous source of energy that would take away all the troubles of the world."[32] Forty writes that these millenarian accounts of a new, all-electric age were common during this period. For example:

> … with the coming of electricity a new era has dawned. One of the great powers of nature has been tamed and harnessed to the service of man, making life clean, wholesome and simple.[33]

Electrical millenarianism – the promise of a bright, toil-free world – found voice in prose and films. The industry also enlisted advertising to convince potential consumers that electricity "was indeed the fuel of the future."[34] For instance, in a series of posters designed to support a 1927 campaign, the EDA introduced a genie-like figure holding an illuminated (and corded) electrical orb while triumphantly hovering over a brightly lit city. The posters' imagery implies that electricity would magically carry out all the modern world's disagreeable tasks. The slogan "For Health's Sake, Use Electricity", was also utopian insofar as it implied "new practices of cleanliness and indicated a reconfiguration of social ideals and orders within, but perhaps also between and across societies."[35]

Forty's study suggests that British consumers adopted electrical technology for reasons over and above economic value. No doubt, the continuing improvement of appliances in both style and function contributed to electricity's domestic adoption. However, equally important and appearing well before these new appliances were the advertisements, marketing literature and showroom sales events created by designers at the EDA to convince individuals to form "favourable ideas about electricity [along with] the desire to use it despite all their prejudices and objections."[36] Economics, architectural infrastructure (home wiring) and product design eventually contributed to British electricity's economic stabilisation. The EDA's designers also did their part to stabilise this new technology with attempts at rhetorical closure: blending persuasion with facts to "shape the meaning which social groups give to [electricity]."[37]

Kockelkoren and Taylor: Two Ethical Perspectives on Design and Yechnology's Domestication

This essay began by asking whether design places itself in ethical jeopardy by its willingness to help domesticate technology. It will end by speculating on how each philosopher might answer this question in light of a particular historical instance when designers encouraged electricity's domestication by attempting rhetorical closure.

Before moving to its conclusion, however, this essay will briefly consider the types of moral agency Kockelkoren and Taylor might discern when addressing this ethical question. First, the two philosophers might consider the nature of the 'agent' being examined. Whether the EDA's designers should be judged individually or collectively and if the circumstances surrounding these actions should excuse or condemn them individually or as a group. Second and more importantly, Kockelkoren and Taylor might consider the nature of the 'agency' itself. In this case, whether designers at the EDA should be held accountable or commended for any social or moral consequences that might have resulted from the messages found in what they created for the organisation.

Individual or Collective Responsibility

Insofar as *individuals* created the EDA's advertisements, marketing materials and sales events of their own volition, any ethical review of their actions is appropriate but also contingent. Context is crucial:

> … the designer is a member of a social group and thus comes under specific social and economic conditions, shares certain values and belief, and, in the widest sense of the term, represents in his or her work an ideological position.[38]

Without primary documentation or testimonial review, it is impossible to ascertain any individual designer's unique motivations for, or involvement in, creating these artifacts. For some, it might simply have been a question of needing their salary to survive; others may have believed the messages expressed or embedded in what they created for EDA. Still others may not have encountered any substantial contradictory evidence or lived examples that would cause them to doubt the veracity of their work. Because of this, it is possibly unfair to posit sweeping ethical pronouncements about this group's collective actions. However, this stance would not necessarily preclude assessment of individual designers.

For instance, it might be granted that for the designers who were swept up in the rhetoric of what they were producing, a countervailing balance could have been provided by their respective spouse's ongoing domestic reality. Would not these designers' observation of this domestic drudgery – in spite or because of electrical appliances – fray their work-related utopian vision?

Would not then any continued belief on their part in this vision of reality be either delusional or self-serving? And if not delusional and somehow excusable, would not any continued belief in and actions promoting these 'truths' merit some measure of individual ethical opprobrium?

On the other hand, insofar as many, if not most, of these individual designers likely saw themselves as operating under some form of shared professional standards or business decorum, their actions could be considered collectively and subject to what Martin calls:

> [the] consensus paradigm or the [internal] shared mandatory requirements developed as a consensus within a profession and imposed on all its members equally.[39]

Further, if these individual designers positioned themselves as professionals in this or any other strong sense, they bound themselves to a longstanding and widely understood social norm. They join other professional groups – doctors, lawyers and clergy for instance – and became subject to a collective moral standard: their group's awareness of and concern for the public good.

Artifacts and Responsibility

Sensitivity to context is also important when examining the ethical merits of the EDA's promotional materials. To begin, these artifacts were neither created nor consumed in a vacuum. They came to life and existed alongside other social discourses both large and small, such as: the EDA's internal culture and stated goals; British social and economic policy; a neighbor's comment about their new washing machine's efficacy; and the availability of "prepayment ('coin in the slot') meters."[40]

Moreover, the causal relationship between the promotional activities and any action they may have precipitated will forever remain trapped in a discourse of advertising and design agency that bounces between a belief in the exculpatory fairy tale of consumer discernment and the Mephistophelean fantasy of advertising's overweening power.[41]

Nevertheless, the EDA's designed activities and materials existed in the public realm, were considered in relation to other discourse and had purposeful messages with discernable agent causation.[42] They defined electricity as both object and sign. Object in that electricity's use defined its own internal value; sign in that electricity's use also defined its users. Belief in these messages' efficacy could be supported in part by electricity's rapid domestic adoption despite early high prices and residual fears.[43] As a result, the social and moral consequences of these messages and by extension the agency of the designers who created them appear to be open to ethical scrutiny.[44]

As observed earlier, the three main messages created for, and anchoring, the EDA's advertisements, marketing materials and showroom events were: electricity is safe, electricity is liberating and electricity is the 'fuel of the future'. How might these artifacts, their messages and, by extension, those who created them be viewed from Kockelkoren and Taylor's perspectives?

Kockelkoren would likely not object to efforts at educating the public about electricity's safety and efficacy. He would view these programs as simply efforts to mediate a new technology: to make electricity familiar and therefore less prone to the dread that humans habitually associate with the unknown. Through their advertising and promotional labours, the designers at the EDA were simply attempting to control "… visions of the future and [this technology's] guiding metaphors."[45] Kockelkoren would derive this position from his stance that artists (institutionally speaking) have always contributed 'at the level of images and genesis of meaning' to normalise technology. Further, Kockelkoren might support this position with his belief that modernity was redrawing art's boundaries. That "the sharp dividing line between autonomous [fine] and applied arts was increasingly disappearing."[46] In Kockelkoren's view then, the designers at that time and place – like other artists – were acting from within a synthetic centre in which the mythical clash between the humanities and the sciences was becoming increasingly mediated.

It is also hard to see Taylor objecting to this educational process or its creators, as long as electricity was in fact as safe as gas and more efficient. However, Taylor would take exception if those disseminating these messages ultimately caused middle-class British consumers to reframe what they believed to be their authentic identity in terms of "culturally meaningful services that happen to depend on a supply of … electricity"[47] or economically driven notions about appropriate levels of cleanliness and comfort. Taylor also might object to the vigorous promotion of a new technology and its dependent appliances if this process introduced social mechanisms that supported escalating levels of consumption linkec to: inappropriate comparison, acquisitive matching or gender based specialisation.[48]

Kockelkoren would likely not object to the EDA's second message either. Neither its overt assertion that electricity is liberating nor its subtler implications: that electricity frees class-conscious housewives from the taint of servitude or grants status to the men who own electrically powered appliances. For him, this message at every level would be the natural location around which electricity suppliers would want humans to recentre. Operating as agents[49] for these companies, their designers would quite naturally create justificatory metaphors that they hoped would allow individuals to overcome their hesitancy towards a new technology. Kockelkoren would suggest that this is just a particular instance

of a broader recurrent process, one that has been going on since humans first began using technology.

On the other hand, Taylor might hold that neither attempts to construct such metaphors nor the myths that flow from them are without taint; both the liberating nature and the futurity of electricity directly impact how individuals perceive themselves and their authentic or social nature. Because of this, he would find this second message and efforts to promote it troubling. He might support an argument against its use in this way: As did Forty, he might first suggest that housewives trap themselves in a self-defeating myth if they define their self-worth in terms of efficiency supported by mechanised servants – a criterion that, until these devices were promoted, was not generally part of their self-image. He could then offer up this observation: while it is true that electric appliances do reduce the labour necessary to complete individual tasks, studies have shown that their widespread adoption has not reduced time spent on housework.[50] Taylor might then logically submit that any liberation from drudgery or class anxiety that electricity was to afford housewives instead becomes a new form of servitude (or alienation in Marxist terms). And, those housewives accepting the notion of efficiency and emancipation introduced in the EDA's advertisements (and subsequently inscripted into electrical appliances) could chain themselves to a false belief in their ability to achieve ever-increasing levels of domestic excellence. Taylor could then conclude that those who craft these disingenuous messages in the hopes of their adoption are engaged in ethically questionable behavior.

The third and final message the EDA offered was that electricity was the 'fuel of the future'. Consumers needed only to fire their imagination with this newly harnessed natural power in order to move forward to a "life clean, wholesome and simple."[51] What would Kockelkoren or Taylor make of this vision?

Kockelkoren might applaud this utopian stance and its promotion. Utopias are after all, built on the ashes of what comes before. For Kockelkoren, what always comes before is a psycho-cognitive centre that must ultimately give way to technology's disruption and subsequent mediation. These inevitable disruptions foster a psycho-cognitive dislocation that, although initially disturbing, is ultimately beneficial. To that end, technology opens up new forms of experience and perceptual horizons. For Kockelkoren, "you only get a grip on your world once you have learnt to decentre in your imagination."[52] Therefore, from his point of view, efforts to bring about this mediation and eventual recentreing are at the very least neutral and perhaps even meritorious.

Taylor would most likely take a different view. He might hold that the unencumbered utopian vistas sketched in the EDA's advertisements and other materials fostered their reader's social irresponsibility and atomism in the present. Consumers buying

into the promise and its corresponding "disburdenment"[53] could begin to slide into an atomistic stance in which they began to view the world as Heidegger's standing reserve[54] – merely a means by which they could achieve the ends they seek. From Taylor's perspective, this technology-fueled slide towards self-centredness typifies a deviant individualism or inauthentic nature. Taylor might also suggest that – like Fry – "any future is made by actions in the past and present."[55] And as such, the future promised by EDA would ultimately deliver "short-term gains [at the expense of] long-term losses of … planetary sustainments."[56] Unlike his philosophical colleague Kockelkoren, it is unlikely that Taylor would condone actions or messages that enveloped technology within any such utopian mythologies.

Conclusion

What then is the final answer to the question? Was design's domestication of electricity meritorious or deplorable? Yes – depending on which philosophical stance is adopted. From Kockelkoren's ethical perspective, design's actions to normalise electricity in early twentieth century Britain were largely without moral blemish. Practitioners were simply participating in what he considers a recurrent process whereby institutions attempt to promote technology by creating metaphors and mythologies to encourage its adoption. The opposite would be true from Taylor's vantage point. He would hold design morally responsible for fostering technological dominance, normalising inauthentic expectations and de-legitimising 'horizons of [external] significance'. This debate will remain unsettled as long as philosophers of technology such as Kockelkoren and Taylor and those who draw from them hold differing opinions about the matter. Kockelkoren is correct that technology and its incursions weave themselves into the fabric of human existence. Taylor is also correct. Discerning individuals, designers and society have a say in how this fabric is cut, coloured and worn.

More broadly, however, judgments or purported resolutions resulting from particular ethical debates, while important, should defer to the following overarching realisations. First, design's incursions into society and its ability to domesticate technology open it to social and ethical scrutiny. Thus, the discipline should refrain from claiming immunity for its actions.[57] Being morally accountable, the discipline should continue to explore ways in which to imagine and act more reflexively and ethically – connecting craft knowledge to an insight into the broader social and ethical milieu in which its agency is interwoven. Second, this 'wisdom' is gained in part by design's desire for self-examination coupled with its ability to move fluidly between self-interpretative frames – between sociological and philosophical discourse. When asking and attempting to answer difficult questions about its agency's

social and moral nature, design should leverage the strengths of social constructivist methodologies. The discipline should also realise that these methodologies become more productive and yield additional insights when they are extended into the ethical realm. Social observations take on new dimension and clarity when they are linked to and illuminated by philosophical refection.

Notes

1. Tony Fry *A New Design Philosophy: An Introduction to Defuturing* Sydney: UNSW Press, 1999, 24.
2. Martin Heidegger *Seins und Zeit*, Tübingen, 1927.
3. Taylor defines instrumental reason as the kind of rationality drawn on when calculating the most economical means to a given end, with maximum efficiency its measure of success. Taylor sees this ideology embodied in, and expressed by, the widely held view that technology should be the default solution to contemporary social or political problems. Charles Taylor *The Ethics of Authenticity* Cambridge: Harvard University Press, 1991, 5.
4. See: Tony Fry *A New Design Philosophy: An Introduction to Defuturing* Sydney: UNSW Press, 1999.
5. Robert Audi, ed*., The Cambridge Dictionary of Philosophy* Cambridge: Cambridge University Press, 1999, 14–15.
6. Peter-Paul Verbeek is a Dutch philosopher who, like Kockelkoren, combines insights from contemporary philosophy of technology with newer strands of science studies. In his latest book, *What Things Do: Philosophical Reflections on Technology, Agency and Design* Pennsylvania State University Press, 2005, Verbeek considers how technologically driven materiality mediates humans' perceptions of and interactions with the world.
7. Peter-Paul Verbeek *What Things Do: Philosophical Reflections on Technology, Agency and Design*, Pennsylvania: Pennsylvania State University Press, 2005, 234.
8. Langdon Winner 'Upon Opening the Black Box and Finding it Empty: Social Constructivism and the Philosophy of Technology', in Pitt, J., and E. Lugo, eds., *The Technology of Discovery and the Discovery of Technolog*y, VA: Society for Philosophy and Technology. For context see Philip Brey's examination of Langdon's essay in light of social constructivism's critics and generally in relation to its ongoing relationship with the philosophy of technology: Philip Brey 'Philosophy of Technology Meets Social Constructivism', Society for Philosophy and Technology 3–4:2, (1997).
9. Petran Kockelkoren (b. 1949) holds the chair of Art and Technology, Department of Philosophy and Social Sciences at the University of Twente in the Netherlands. In addition, he

is reader in Art and Technology at ArtEZ, Hogeschool voor de kunsten.

10. Canadian philosopher Charles Taylor (b. 1931) is known for his viewpoints on morality and western modern identity of individuals and groups. One time calling Oxford home, Taylor is now professor emeritus at McGill University in Montreal, Canada. This essay draws on two of his major works: *Sources of the Self: The Making of the Modern Identity* Cambridge: Harvard University Press, 1989 and *The Ethics of Authenticity* Cambridge: Harvard University Press, 2003.
11. For a description of this taxonomy, see Elizabeth Shove *Comfort, Cleanliness + Convenience: The Social Organisation of Normality*, Oxford: Berg, 2003, 68.
12. Taking an evaluative stance involves invoking moral or political principles or taking ethical positions when evaluating events, individual or collective agency or their consequences.
13. See: Martin Heidegger 'The Question Concerning Technology', in *The Question Concerning Technology and Other Essays*, trans. William Lovitt, New York: Harper Torchbooks, 1977.
14. For a comprehensive bibliography of Ellul's work, see: Joyce Hanks 'Jacques Ellul: A Comprehensive Bibliography', Supplement 1 of *Research in Philosophy and Technology*, Frederick Ferre, ed., Greenwich, CT: JAI Press, 1984.
15. See: Don Ihde *Technology and the Lifeworld: From Garden to Earth*, Indiana: Indiana University Press, 1990.
16. See: Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* Oxford: Oxford University Press, 2005.
17. See: Albert Borgmann *Technology and the Character of Contemporary Life* Chicago: University of Chicago Press, 1984 and Holding On to Reality: The Nature of Information at the Turn of the Millenium, Chicago: University of Chicago Press, 1999.
18. Kockelkoren describes this process from Foucault's perspectives on diffused power in society. Kockelkoren cites Foucault's belief that power is embodied in language, technology, architecture, medicine and other fields. Recast in Pinch and Bijker's SCOT framework, the process would be characterised as attempts at achieving stabilisation or resolving a problem or problems among relevant social groups.
19. Petran Kockelkoren *Technology: art, fairground and theatre*, Rotterdam: NAi Publishers, 2003, 26.
20. Ibid., 26.
21. Ibid., 26.
22. According to Brey, "Most social constructivists including SCOT scholars, attribute the stabilisation of an artifact to an agreement or settlement between different social groups, which arrive at a similar interpretation of a technology, as the result

of a series of controversies and negotiations." Because these scholars believe technology has no objective fixed properties, that is has interpretive flexibility, attitudes towards its functional and socio-cultural attributes shape its social construction or social reality. See: Philip Brey 'Philosophy of Technology Meets Social Constructivism' *Society for Philosophy and Technology* 3–4:2 (1997): 3.

23. Weber was more pessimistic than Marx or Durkheim about modernity's eventual outcome. As a result, he foresaw a bureaucratically organised social order in which blind rationality bound humans within its iron cage.
24. Charles Taylor *The Ethics of Authenticity*, Cambridge: Harvard University Press, 2003, 96.
25. Forty draws from two main sources for this chapter: H.H. Ballin *The Organisation of Electricity Supply in Great Britain*, London, 1946 and L. Hannah *Electricity Before Nationalisation*, London, 1979.
26. Abraham A. Moles 'The Legibility of the World: A Project of Graphic Design', ed. Victor Margolin *Design Discourse: History, Theory, Criticism*, Chicago: The University of Chicago Press, 1989, 92–93.
27. Trevor J. Pinch, Wiebe E. Bijker 'The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit From Each Other', *Social Studies of Science* 14:3 (1984): 414.
28. Ibid., 421–424.
29. Quoted from D.A Wilson Thesis: 169. Adrian Forty *Objects of Desire: Design and Society Since 1750*, London: Thames and Hudson, 1986,190.
30. Elizabeth Shove *Comfort, Cleanliness + Convenience: The Social Organisation of Normality*, Oxford: Berg, 2003, 171.
31. Adrian Forty *Objects of Desire: Design and Society Since 1750*, London: Thames and Hudson, 1986, 209.
32. Ibid., 190.
33. *Electrical Review*, 94, (1924): 928. Cited in Adrian Forty *Objects of Desire: Design and Society Since 1750* London: Thames and Hudson, 1986, 190.
34. Adrian Forty *Objects of Desire: Design and Society Since 1750* London: Thames and Hudson Ltd, 1986, 190.
35. Elizabeth Shove *Comfort, Cleanliness + Convenience: The Social Organisation of Normality*, Oxford: Berg, 2003, 82.
36. Adrian Forty *Objects of Desire: Design and Society Since 1750* London: Thames and Hudson Ltd, 1986, 200.
37. Trevor J. Pinch, Wiebe E. Bijker 'The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit From Each Other', *Social Studies of Science* 14:3 (1984): 427.

38. Clive Dilnot 'The State of Design History: Part I: Mapping the Field' ed. Victor Margolin *Design Discourse: History, Theory, Criticism* Chicago: The University of Chicago Press, 1989, 227.
39. Mike W. Martin *Meaningful Work: Rethinking Professional Ethics* Oxford: Oxford University Press, 2000, 32.
40. Leslie Hannah *Electricity Before Nationalisation: A Study of the Development of the Electrical Supply Industry in Britain to 1948* London: The MacMillan Press, 1979, 206.
41. Antoine Hennion, Cecile Meadel, Geoffrey Bowker 'The Artisans of Desire: The Mediation of Advertising between product and Consumer' *Sociological Theory*, 7:2 (1989) 198.
42. Robert Audi, ed., *The Cambridge Dictionary of Philosophy* Cambridge: Cambridge University Press, 1999, 125.
43. Leslie Hannah *Electricity Before Nationalisation: A Study of the Development of the Electrical Supply Industry in Britain to 1948* London: The MacMillan Press LTD, 1979, 183–184.
44. Care must be taken when evaluating past events using contemporary ethical standards. Critical judgment must be balanced with temporal and social context. For instance: gender relationships and domestic expectations were different in 1920's Britain than now; class divisions were not only more delineated but generally more accepted as a matter of course; and if raised then, calls for husbanding the planet's resources would likely have been met with incredulity.
45. Petran Kockelkoren *Technology: art, fairground and theatre* Rotterdam: NAi Publishers, 2003, 34.
46. Petran Kockelkoren *Technology: art, fairground and theatre* Rotterdam: NAi Publishers, 2003, 8.
47. Elizabeth Shove Comfort*, Cleanliness + Convenience: The Social Organisation of Normality* Oxford: Berg, 2003, 11.
48. Ibid., 161.
49. There is an extensive body of discourse concerned with distinctions between individual and professional responsibility. See for instance: Albert Flores; Deborah G. Johnson 'Collective Responsibility and Professional Roles', *Ethics* 93:3 (1983); 537–545., Kevin Gibson 'Contrasting Role Morality and Professional Morality: Implications for Practice', *Journal of Applied Philosophy* 20:1 (2003): 18–29., Alan H. Goldman 'Business Ethics: Profits, Utilities, and Moral Rights', *Philosophy and Public Affairs* 9:3 (1980): 260–286.
50. A survey in 1950 showed that full-time housewives spent an average of 70 hours a week on housework. Another one in 1970 showed an average of 77 hours. Cited in Adrian Forty *Objects of Desire: Design and Society Since 1750* London: Thames and Hudson Ltd, 1986, 210.

51. *Electrical Review*, 94 (1924): 928. Cited in Adrian *Forty Objects of Desire: Design and Society Since 1750* London: Thames and Hudson Ltd, 1986, 190.
52. Petran Kockelkoren *Technology: art, fairground and theatre* Rotterdam: NAi Publishers, 2003, 13.
53. Albert Borgmann *Technology and the Character of Contemporary Life* Chicago: University of Chicago Press, 1984, 43 ff.
54. "Heidegger believes nature is seen differently through technology. We no longer understand nature to be an obstacle or barrier: it is now 'standing-reserve'. (QCT 17) It sits idle, waiting for us to come and use it. Through technology we see nature as profit that we can develop or extract for ourselves. (QCT 19)," optdesign, http://www.optdesign.com/ Philosophy/ Heidegger2.htm (July 13, 2006).
55. Tony Fry *A New Design Philosophy: An Introduction to Defuturing* Sydney: UNSW Press, 1999, 12.
56. Ibid., 12.
57. Keith Owens 'Creating Responsible Designers: Recognising and Responding to Professional Immunity Claims', *Visual Communications Quarterly* 13.3 Forthcoming (2006).