

**Review of Andrew Feenberg, *Technosystem: The Social Life of Reason* (Harvard University Press, 2017), 256 pages, £25.95, Reviewed by Alexander Thomas**

**Abstract**

Feenberg's *Technosystem* offers an engaging, lucid and important critique of technical rationality, the defining feature of modernity. With an approach labeled Critical Constructivism, he develops tools for countering the dominating force of our rational culture by combining insights from Critical Theory and Science and Technology Studies. This review argues that the articulation of the problem he envisages is more persuasive than the proffered solutions. *Technosystem* is nevertheless an urgent and timely contribution presenting progressive and practical ideas.

Andrew Feenberg's *Technosystem* offers a compelling perspective on the nature of modernity. He argues that the all pervasive technical rationality that is the backbone and defining feature of modern culture needs to be overcome from within the system itself by enabling a more privileged role for human experience in shaping social outcomes. Feenberg uses the titular term to 'refer to the field of technically rational disciplines and operations associated with markets, administrations, and technologies' (p.x). Whilst technology constitutes his central concern he recognises the interconnectedness and interdependence of these systems, acknowledging that 'markets nor administrations are conceivable outside a technical framework' and that 'all technology is mediated by markets and administrations' (p.x). In his introduction Feenberg offers a preliminary critique of the 'rationality' that pervades these systems and sets modernity apart from all prior history. Rationality and the power it provides is limited despite the hubristic pretensions it can inspire. In so doing he undermines the illusion that technology facilitates the conquering of nature, because being part of nature ourselves any conquest is self contradictory. Finally he draws a distinction (which will play a vital role later in the book) between science and experience. Science 'criticizes and transcends lived experience' (p.13), that is to say, scientific doctrine regularly refutes our commonsense understanding of nature. On the other hand lived experience provides us with values that 'correspond to realities science may not yet understand, indeed, may never understand, but which are surely real' (p.14). Living with this ambiguity and accepting truth as 'subtly eccentric' is necessary, and ultimately Feenberg wishes to make the technosystem itself reflective of this non-hierarchical, dialectic between science and experience.

The main body of the book is split into seven chapters. The first three fall under the category of 'Method'; Chapter 4 under 'Application'; Chapters 5 to 7 form the 'Theory' section. The 'Method' introduces Critical Constructivism which is the theoretical framework that Feenberg is proposing for addressing the technosystem. It is a hybrid term referencing Critical Theory encompassing Marx, Foucault, and the Frankfurt School (primarily the first generation especially Herbert Marcuse). He also draws heavily on György Lukács and Gilbert Simondon. Together they show us that 'modern societies are organised around rational institutions and artifacts. These thinkers contest the idea that rationality is singular and pure, and situate its various forms within social contexts that establish their powers and limits' (p.15). The 'Constructivism' part of the name comes from two strains of Science and Technology Studies (STS): Social Constructivism and Actor-Network Theory (ANT) which establish that 'technical design is not fully explained by the technical principles it realises but that social forces play a role in the definition, selection and application of those principles' (p.15).

The first chapter re-evaluates aspects of Marx through a Foucauldian lens. Certain key ideas are introduced here which come to play significant roles in developing the Critical Constructivist perspective further on. Notably, Feenberg supplements Marx's critique of the irrationalism of capitalism (which Feenberg argues is most clearly formulated by Lukács' concept of 'reification') with Foucault's understanding that knowledge and power directly imply each other. For Foucault the pervasiveness of the power/knowledge relationship determines that even revolutionary changes to the political landscape can leave much of the complex rational framework of dominance intact. But that pervasiveness allows for changes from below. Feenberg sees potential in Foucault's aims at 'subversive recodification of power relations' that is more inclusive of the 'subjugated knowledge' of those at the bottom of the social order. Of particular import here for Feenberg's overall theory is the idea that resistance to rational dominance is possible in many ways by actors confronting myriad aspects of

cultural and technical dominance. The design code of functional artifacts contains the expression of power within it: there is no context-free rationality determining design, rather systemic interest, formal bias and powerful actors play a role. Indeed, Marx's notion of 'formal' bias opens the possibility for rationality to co-exist with bias. Rationality is thus never pure, rather it is embedded in and builds upon social biases that privilege certain groups and interests. Feenberg connects Marx's class interests with Foucault's notion of 'subjugated knowledge': both elucidate the nexus of dominance caused by systemic rationality, made manifest in the design codes of the technosystem. Technical rationality propagates domination and thus without a countervailing force cannot sustain a moral dimension of progress.

Feenberg goes on to map the Critical Constructionist position advancing that it 'is concerned with the threat to human agency posed by the technosystem' (p.38). Marcuse's notion of 'technical rationality' updates Marx's critique of market rationality: 'Efficiency is said to be rational and commands respect in every area of social life. Rationality thus serves as the justification and alibi for domination' (p.42). In its process of reification capitalism limits the purpose of human experience to conformity with the 'rational' demands of the system: 'a rational culture privileges technical manipulation over all other relations to reality' (p.42). Rationality is thus 'instrumental': a system for economic growth and efficiency that 'inscribes an entire culture; it projects a historical totality – a "world"' (Marcuse cited in Feenberg, 2017, p.42). Critical Constructivism also attempts to build on the anti-determinist and anti-positivist understanding of STS by offering an explicit theory based on reconstituting the technosystem through democratic interventions. Social Constructivism is utilised to undermine determinist notions of technological development by identifying the influence of social factors on the design of artifacts. Thus values and interests play a role in design: again 'rationality' is contingent, not context-free. Feenberg connects this conceptualisation with the Marxist notion of capitalist interests dominating the design process of technology. Latour's Actor-Network Theory (ANT) meanwhile introduces the notion of 'agency' which applies to non-human actors as much as human actors – it is the hybrid network of people and things that generate social forces. ANT is used to counterbalance the overemphasis on human intention as a determining factor, thus undermining further the naïve conception of human instrumentalism and rationalism.

Simondon's notion of 'concretization' is the central concept of the next chapter. Feenberg describes it as akin to technical 'elegance': 'In contrast to a design in which each structure is restricted to a single function, an elegant structure serves many functions at once' (p.72). Thus technologies with a high level of structural integration are 'concrete' and those with a low level are 'abstract'. The notion appeals to Feenberg as it is suggestive of a progressive potentiality. Progress in terms of moral value must be embedded in the design and functionality of technology itself rather than posited exogenously, as the technosystem is so pervasive and opposition to 'technification' is futile. To realise this potential Feenberg combines Simondon's concept with the STS concept of actors which 'yields a new and more powerful theory that takes into account both the internal technical dimension and the role of influential actors in shaping design' (p.82). This attempt to represent experiential reality along with technical, rational considerations in one framework, the technosystem, points towards the ultimate trajectory of Feenberg's argument in the 'Theory' section of the book.

Feenberg cites Don Ihde's call for a 'gestalt switch in sensibilities [that] will have to occur from within technical cultures' (Ihde cited in Feenberg, 2017, p.115). Thus Feenberg rejects revolutionary solutions to the hegemonic instrumental rationality of modernity, as well as spiritual panaceas, which, like traditional worldviews and religions, provide moral frameworks entirely external to the technical culture of society. Instead by understanding that the rationality behind functional design is at once causal and cultural, and that neither lay actors nor experts have a monopoly on this rationality, Feenberg seeks to fix the technosystem from within. This stance is enabled by 'instrumentalization theory' which attempts 'to account for functionality as a social phenomenon... Designs invariably reflect the double aspects of technical functionality. *There is no purely technical; the technical is always already cultural*' (p.153). Recalling Simondon's account of 'concretization', a truly 'concrete' version of the technosystem would include the rational interests of the social world within its logic. As such, a progressive process is opened up in which the technosystem can become more inclusive in

encompassing the interests of lay actors as functional design is never fixed. Higher levels of concretization are possible by opening the 'black box' and 'resignifying' the rationality of the system. The technosystem in its current guise aims at 'control of the environment, whether natural, economic, or administrative' (p.159) and it 'strives to be all-encompassing' (p.160). Resultantly, for Feenberg, power is concentrated in the domain of impersonal technical action; blind spots lead to serious unintended consequences (such as environmental degradation); and as cultural meanings are technically manipulated nihilism sets in. His answer is not to rein in this all-encompassing technosystem because modern society is too 'technified' for any hope of a reversal. Rather democratic interventions are needed to address the pathologies of modernity.

The dualities of cause and culture, fact and belief, lay and expert, technical rationality and democratic intervention recall the dichotomy of science and experience that Feenberg invoked in the introduction. The social contingency of the technosystem established by social constructivism and Feenberg's instrumentalization theory opens the door to multiple accounts of technical rationality depending on the interests and beliefs of the actors involved. There is no inviolate position in his reckoning: he rejects a 'context-independent concept of justice' (p.170). However, this is not to give up on justice entirely. Rather Feenberg argues that instead it 'must be located in the concrete social world as an emergent achievement of public debate over oppression and discrimination' (p.171). Public protest, the voice of 'subjugated knowledges', thus become key actors in enabling the switch within the technosystem that Feenberg endorses. He argues that rhetoric is the vital way in which these weaker social positions and the 'tactics' they engage in can overcome the 'strategies' of institutions and their more formalized scientific language (following de Certeau). Feenberg provides a set of 'technical topologies' as 'the bases of argument over technical artifacts and systems...[focusing on] the rational operations that mediate the relationship between causality and culture...to challenge the given form of objects'. (p.176). The aim is to enable an alternative to technocratic rationality and to ensure that a more balanced co-production of the technosystem is imaginable.

Feenberg claims his theory is neither revolutionary nor 'merely reformist, confined to minor tinkering with the established system' (p.117). Feenberg elucidates the hegemonic instrumental rationality of the technosystem very effectively, but the progressive ideas he diligently offers by way of a solution are perhaps less than entirely persuasive. His use of Simondon's concretization, for example, is problematic. Feenberg explains the theory in terms that avoids the accusation of determinism, a spiritual teleology or an Aristotelian essence. However, it may be argued the concept is then rendered simply as a descriptive conception of the level of integration within a technical artifact (or with Feenberg's inclusion of the STS concept of actors, it describes how well the technosystem integrates the concerns of actors alongside technical considerations). Feenberg argues 'concretization cancels the false dilemma of rationality versus ideology' (p.83). However, in reality the dilemma remains because the hegemony the critical theorists describe persists. Reconceptualising design to include the interests of a wider variety of actors is an aspiration not a fact. The theoretical description does not in actuality undermine the forces that facilitate the power of rationality under advanced capitalist logic and its formal biases. The progressive notion that we should include the interests of 'subjugated knowledges' in assessing the 'concreteness' of the technosystem does not transcend the conflicts of interests, or upset the power differentials from their current state. Without further means, this does not feel revolutionary or necessarily reformist. The catalyst for the ends so admirably posited by Feenberg remains elusive.

Whilst Feenberg's desire to offer hope of positive change and emancipatory outcomes is commendable, it is girded by perhaps an overly optimistic interpretation of existent achievements of protest at curbing the worst excesses of capitalism. Whilst protest is indeed a vital and necessary force in challenging advanced capitalist logic, it is far from convincing that it is a force that is prevailing. In discussing the orientation of future development, Feenberg states 'Ownership is of course an important resource...but it is not the only resource and at times is overshadowed by social and political factors in domains where the market is less central' (p.29). In the context of increasing global inequality, the concentration of ownership is surely an important hegemonic factor in determining future outcomes, and its growing imbalance is powerful evidence of the current trajectory. Feenberg frequently refers

to environmental democratic interventions. Yet environmental degradation continues at a rapid and dangerous pace, despite its elevated position in the public consciousness. Again the logic of advanced capitalism, made manifest by the rational structures of the technosystem, seem to be wielding more force in determining outcomes than are achieved by democratic interventions. A central contention of Feenberg's argument is that 'Progress is not technical *or* moral but technical *and* moral' (p.203). In other words, interventions must make sense in technical terms, and cannot be stated as external moral claims separate from the technical rationality of the prevailing system. Whilst this may well be true and is an important insight, it is worth remembering the complexity of the system with which we are dealing. As Saskia Sassen states in *Expulsions*, 'today the oppressed have mostly been expelled and survive a great distance from their oppressors. Further, the "oppressor" is increasingly a complex system that combines persons, networks, and machines with no obvious centre' (Sassen, 2014, p.10). Indeed, whilst Feenberg engages with ANT, his analysis could be enriched by a more extensive engagement with systems theory scholarship and in particular the notion of 'differentiated complexity' (eg. Cudworth and Hobden, 2011). This may further challenge the notion that lay actors are in a position to counter capitalist hegemony and technocratic rationality through the use of rhetoric that may provide a gestalt switch.

Finally, *Technosystem* primarily engages with theorising the notion of technology at large, arguably at the expense of engaging in detail with specific technologies. The exception is Feenberg's analysis of the internet in the chapter 4, comprising the 'Application' section of the book. Feenberg critiques Christian Fuchs' Marxist analysis and Jodi Dean's cultural appraisal of the failings of the internet. Whilst constituting an engaging discussion, the complexity of the issue perhaps requires more room than Feenberg affords it. At the outset of the book Feenberg touches upon technologies which provide an illusion of godlike power. He rightly criticises such simplistic, instrumental and hubristic notions. However, given the emergence of potentially radical technologies such as nanotechnology, certain biotechnologies and artificial intelligence, it seems a lacuna in Feenberg's analysis that these potentialities are not more thoroughly addressed. Feenberg acknowledges that most democratic interventions 'are "a posteriori," occurring downstream after the release of technologies into the public world' (p.53). It therefore seems that the role of lay actors in evaluating the potential impact of radically potent technologies may arrive too late. This potentiality would make Feenberg's call for a gestalt switch all the more pressing. Notwithstanding these minor reservations, *Technosystem* is an engaging, lucid and illuminating discussion of some of the most urgent questions about the nature of modernity. His 'topologies' provide useful theoretical tools with which to challenge the 'rationality' of our sociotechnical reality. Most importantly he elucidates the vital political challenges facing humanity and offers practical, optimistic and progressive suggestions for change.

#### References

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