Between Reason and Experience

Essays in Technology and Modernity

Andrew Feenberg

Foreword by Brian Wynne
Afterword by Michel Callon

The MIT Press
Cambridge, Massachusetts
London, England

This book was set in Stone Sans and Stone Serif by Westchester Book Group.

Printed and bound in the United States of America. Library of Congress Cataloging-in-Publication Data

Library of Congress Cataloging-in-Publication Data

Feenberg, Andrew.
Between reason and experience : essays in technology and modernity / Andrew Feenberg ; foreword by Brian Wynne ; afterword by Michel Callon.
p. cm.— (Inside technology)
Includes bibliographical references and index.
ISBN 978-0-262-51425-5 (pbk. : alk. paper) 1. Technology—Philosophy. 2. Technology—Social aspects. 3. Civilization, Modern. I. Title.
T14.F429 2010
601—dc22

2009037833

10 9 8 7 6 5 4 3 2 1

Preface

Technical creation involves interaction between reason and experience. Knowledge of nature is required to make a working device. This is the element of technical activity we think of as rational. But the device must function in a social world, and the lessons of experience in that world influence design.

In premodern societies technical development was shaped by experience through craft traditions that combined many different registers of phenomena: religious prohibitions, practical lessons, taste, and age and gender roles. Technique was channeled into paths compatible with the local religious beliefs and customs in which the lessons of experience were conserved. Craft also combined knowledge of nature seamlessly with what the community had learned about the disruptive potential of technical achievements. Although some major failures occurred, for example, the gradual deforestation of much of the land bordering on the Mediterranean, on the whole this technical activity was compatible with stable societies that reproduced themselves more or less unchanged for generations.

The modern world develops a technology increasingly alienated from everyday experience. This is an effect of capitalism that restricts control of design to a small dominant class and its technical servants. The alienation has the advantage of opening up vast new territories for exploitation and invention, but there is a corresponding loss of wisdom in the application of technological power. The new masters of technology are not restrained by the lessons of experience and accelerate change to the point where society is in constant turmoil.

Not only is the role of experience in technical affairs reduced, but even where it still has impacts they are frequently invisible. Technology is

perceived as autonomous, and technical disciplines present the effects of past social influences as purely rational specifications. Many technical standards depend on taste, but we are hardly aware of their source until we visit a country with different standards. No technical logic presides over differences in such things as domestic architecture, lighting, the normal height of tables and chairs, the placement of items on the automotive dashboard. Other standards change as health or environmental concerns are articulated and as legislation regulates industrial processes. Soon we forget the origin in public demands of the new methods and devices.

Even medical procedures evolve under the impact of experience. Consider the huge variations in obstetrics from one time and place to another. Not so long ago husbands paced back and forth in waiting rooms while their wives gave birth under anesthesia. Today husbands are invited into labor and delivery rooms, and women encouraged to rely less on anesthetics. The result of scientific discoveries? Hardly. But in both cases the system is medically prescribed and the feminist and natural childbirth movements of the 1970s that brought about the change forgotten. A technological unconscious hides the interaction between reason and experience.

This unconscious masks another important aspect of the modern institution of technology. In traditional societies social identities are stable since the social world is stable. But modern societies construct and destroy worlds and their associated identities at the rhythm of technological change. The extent of the dependency of social groups on the technological underpinnings of their world suddenly becomes visible at the moment of collapse but then quickly fades from view again. This is most obvious when changes in technology eliminate skilled crafts or restructure organizations. Worlds change with technology, and soon the orphaned identities remain alive only in the memories of the victims.

Still more obscure are the processes that generate temporary groups alarmed at new technological risks, but they are becoming more and more important to the future of technologically advanced societies. Take the exemplary case of Love Canal. The inhabitants of this upstate New York neighborhood discovered that their illnesses were caused by a new element in their world, a toxic element boiling up from the waste dump on which their houses were situated. This discovery about the world was also a self-discovery: these neighbors had suddenly become actors in a host of

new relationships to scientists, the government, and the corporate author of their misfortune. Understanding of the world and identity go hand in hand. Both are fluid in modern societies, and both are intertwined with technology.

These examples illustrate the social character of technology. The idea of a pure technological rationality that would be independent of experience is essentially theological. One imagines a hypothetical infinite actor capable of a "do from nowhere."[1] God can act on his objects without reciprocity. He creates the world without suffering any recoil, side effects, or blowback. He is at the top of the ultimate practical hierarchy, in a one-way relation to his realm, not involved with things and exposed to their independent power. He has nothing like what we call "experience."

Modern philosophy takes this imaginary relation as the model of rationality and objectivity, the point at which humanity transcends itself in pure thought. But in reality we are not gods. Human beings can act only on a system to which they themselves belong. This is the practical significance of embodiment and implies participation in a world of meanings and causal powers we do not control. Finitude shows up as the reciprocity of action and reaction. Every one of our acts returns to us in some form as feedback from our objects. This is obvious in everyday communication where anger usually evokes anger, kindness evokes kindness, and so on.

The technical subject is finite too, but the reciprocity of finite action is dissipated or deferred in such a way as to create the space of a necessary illusion of transcendence. We call an action "technical" when the actor's impact on the object is out of all proportion to the return feedback affecting the actor. But this appears to be true only from a narrow view of the process. In a larger context or a longer time frame there is always plenty of feedback. This is certainly the case with causal impacts such as pollution. Identities and meanings are also at stake in technical action.

For example, we hammer in nails, transforming a stack of lumber into a table, but we are not transformed. All we experience is a little fatigue. This typical instance of technical action is narrowly framed here to highlight the apparent independence of actor from object. In the larger scheme of things, the actor is affected by his action: he becomes a carpenter or a hobbyist. His action has an impact on his identity, but that impact is not visible in the immediate technical situation where big changes occur in the wood while it seems that the man wielding the hammer is unaffected.

This example may seem trivial, but from a systems point of view there is no difference of principle between making a table and making an atom bomb. When J. Robert Oppenheimer exploded the first bomb at the Trinity test site, he suddenly recalled a passage from the Bhagavad Gita: "I have become death, shatterer of worlds." In this case the similarity between technical labor and divine action is all too clear. Technology appears to make possible a partial escape from the human condition. But Oppenheimer was soon attempting to negotiate disarmament with the Russians. He realized the shatterer could be shattered. Presumably Shiva, the god of death, does not have this problem.

Without wishing to return to traditional arrangements, we can nevertheless appreciate their wisdom, based as they were on a longer-term view of the wider context of technology than we are accustomed to today. Tradition was overthrown in modern times and society exposed to the full consequences of rapid and unrestrained technical advance, with both good and bad results. The good results were celebrated as progress, while the unintended and undesirable consequences of technology were ignored as long as it was possible to isolate and suppress the victims and their complaints. The dissipated and deferred feedback from technical activity, such unfortunate side effects as pollution and the deskilling of industrial work, were dismissed as the price of progress. The illusion of technique became the dominant ideology.

The philosopher Martin Heidegger understands this illusion as the structure of modern experience, the way in which "being" is revealed to us. While objects enter experience only insofar as they are useful in the technological system, the human subject appears as pure disincarnated rationality, methodically controlling and planning as though external to its own world. In this book I relate what Heidegger calls the "technological revealing" not to the history of being but to the consequences of persisting divisions between classes and between rulers and ruled in the many technically mediated institutions of modern societies.

These divisions culminate in a technology cut off to a considerable extent from the experience of those who live with it and use it. But as it grows more powerful and pervasive, technology has consequences for everyone that cannot be denied. In the final analysis it is impossible to insulate technology from the demands of the underlying population. Feedback from users and victims of technology eventually affects the technical codes that preside over design. Early examples emerge in the labor movement around issues of

health and safety at work. Later such issues as food safety and environmental pollution signal the widening circle of affected publics. Today these interactions are becoming routine, and new groups emerge frequently as "worlds" change.

In the literature of technology studies, this is called the "co-construction" of society and technology. The examples cited here show how technology and society "co-construct" each other in ever tighter feedback loops, like the *Drawing Hands* in M. C. Escher's famous print of that name. I want to use this image to discuss the underlying structure of the technology-society relationship.

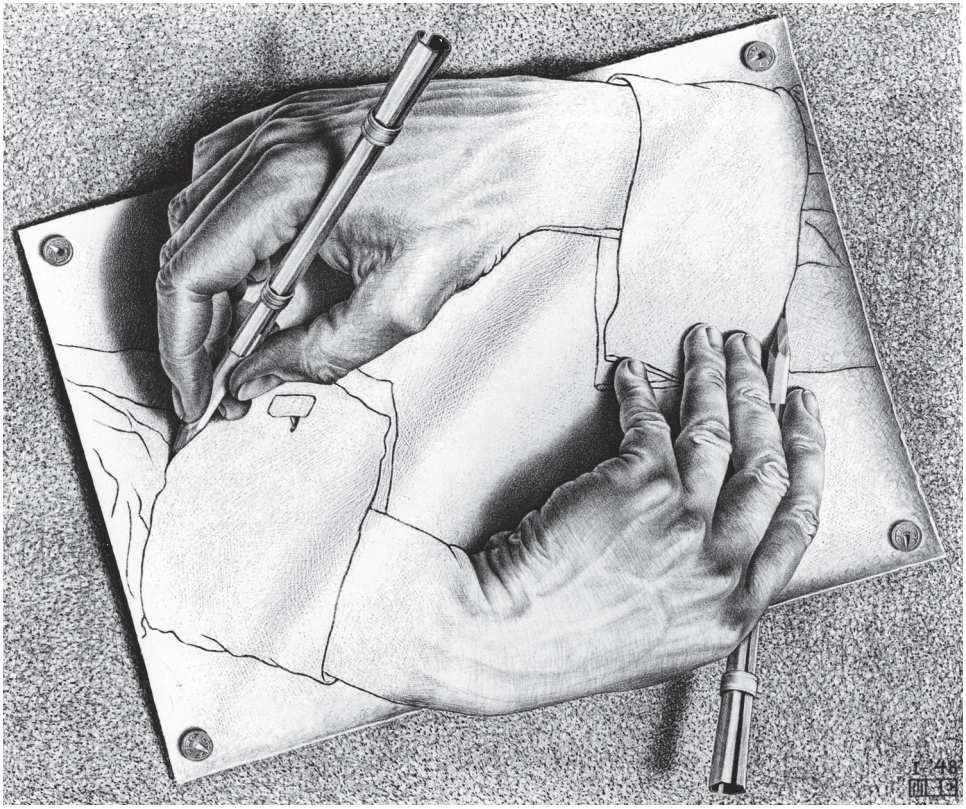

Figure I.1
M. C. Escher's *Drawing Hands*

Escher's self-drawing hands are emblematic of the concept of the "strange loop" or "entangled hierarchy" introduced by Douglas Hofstadter in his book *Gödel, Escher, Bach* (Hofstadter 1979, 10–15). The strange loop arises when moving up or down in a logical hierarchy leads paradoxically back to the starting point. Relationships between actors and their objects, such as seeing and being seen or talking and listening, are logical hierarchies in this sense. The active side stands at the top and the passive side at the bottom of these hierarchies.

In the Escher print, the paradox is illustrated in a visible form. The hierarchy of "drawing subject" and "drawn object" is "entangled" by the fact that each hand plays both functions with respect to the other (Hofstadter 1979, 689–690). If we say that the hand on the right is at the top of the hierarchy, drawing the hand on the left, we come up against the fact that the hand on the left draws the hand on the right and so is also located at the top level. Thus neither hand is at the top, or both are, which is contradictory.

As I have described it here, the relation between technical reason and experience is an entangled hierarchy. Social groups form around the technologies that mediate their relations, make possible their common identity, and shape their experience. We all belong to many such groups. Some are defined social categories, and the salience of technology to their experience is obvious. Such is the case with factory workers, whose organization and employment depend on the technology they use. Other groups are latent, unconscious of their commonalities until disaster strikes. The inhabitants of Love Canal may have been indifferent neighbors, but when toxic waste was discovered in the land they inhabited they were alerted to a shared danger. As a conscious collective, they recruited scientists to help them understand it and made demands on the government. Such encounters between the individuals and the technologies that bind them together in groups proliferate with consequences of all sorts. In every case, social identities and worlds emerge together and form the backbone of a modern society.[2]

Once formed and conscious of their identity, technologically mediated groups influence technical design through their choices and protests. This feedback from society to technology is paradoxical. Insofar as the group is constituted by the technical links that associate its members, its status is that of the "drawn" object in Escher's scheme. But it reacts back on those

links in terms of its experience, "drawing" that which draws it. Neither society nor technology can be understood in isolation from each other.

Hofstadter's scheme has a limitation that does not apply in the case of technology. The strange loop is never more than a partial subsystem in a consistent, objectively conceived universe. Hofstadter evades ultimate paradox by positing an "inviolate level" of strictly hierarchical relations above the strange loop that makes it possible. He calls this level "inviolate" because it is not logically entangled with the entangled hierarchy it creates. In the case of the Escher drawing, the paradox exists only because of the unparadoxical activity of the actual printmaker Escher, who drew it in the ordinary way without himself being drawn by anyone. Escher, as Hofstadter presents him, appears as a kind of God in relation to his own artistic output, uninvolved in the contradictions of the world he creates.

But there is no equivalent of this "Escher" in the real world of coconstruction, no inviolate god creating technology and society from the outside. All the creative activity takes place in a world that is itself created by that activity. Only in our fantasies do we transcend the strange loops of reason and experience. In the real world, there is no escape from the logic of finitude.

The nine chapters of this book concern various aspects of the technology/experience nexus. They introduce the main themes of critical theory of technology, the approach I have developed over the last twenty years. Critical theory of technology draws on insights from Heidegger, Foucault, the Frankfurt School, and constructivist sociology of technology. Each source contributes elements toward a better understanding of the relation between reason and experience.

This first part explores the dystopian critique of technology that arose as "progress" became identified with bureaucracy, propaganda, and genocide in the twentieth century. Scientific-technical rationality so dominates dystopia that no room is left for freedom and individuality. But this vision is fading as the paradigmatic technology of our time shifts from the industrial behemoths of the previous century to the new information technologies, especially the Internet. The Internet is not a finished product but is still in process. User initiative has played a major role in transforming its design. The environmental movement also gives rise to democratic interventions into technology. These two movements promise an

end to dystopia if only we can find a way to protect and develop their liberating potential.

The second part presents methodological applications of critical theory of technology. The case of the French Minitel illustrates the social shaping of technology. An early domestic computer network, the Minitel system was subverted by hackers and transformed from an information utility into a communication medium. This part also focuses on the relationship between national culture and technical development, with Japan as an exemplary case. The discussion concerns the impact of globalization on Japanese modernization and the philosophical theories that accompanied it before World War II.

The third part treats the themes of this book at the philosophical level. Modernity and technology are indissolubly linked, but the disciplines that ought to collaborate in studying this connection have so far failed to communicate with each other. The core issue concerns the understanding of rationality as it is institutionalized in modern technologies and social systems. Understanding these peculiar modern institutions requires rethinking the connection of reason and experience. That process has already begun where it is most urgent, in relation to environmental issues. Philosophical reflection can contribute to this trend. The concluding chapter argues for informing expertise with the wisdom gained by living with technologies and their impacts. In a modern context, this cannot be accomplished by tradition but requires a more democratic technological regime. The gradual extension of democracy into the technical sphere is one of the great political transformations of our time.

The following chapters of this book are revised from previously published articles:

"Subversive Rationalization: Technology, Power, and Democracy," *Inquiry* (Sept.–Dec. 1992).

"From Information to Communication: The French Experience with Videotex," in *Contexts of Computer-Mediated Communication*, ed. M. Lea. (Harvester-Wheatsheaf, 1992).

"Looking Forward, Looking Backward: Reflections on the 20th Century," *Hitotsubashi Journal of Social Studies*, vol. 33, no. 1 (July 2001).

"Modernity Theory and Technology Studies: Reflections on Bridging the Gap," in *Modernity and Technology* (MIT Press, 2003).

"Technology in a Global World," in R. Figueroa and S. Harding, eds., *Science and Other Cultures: Issues in Philosophies of Science and Technology* (Routledge, 2003).

"Critical Theory of Technology: An Overview," *Tailor-made Bio-technologies*, vol. 1, no. 1 (April–May 2005).

"Between Reason and Experience," *Danish Philosophical Yearbook*, vol. 42 (2008).

"From the Critical Theory of Technology to the Rational Critique of Rationality," *Social Epistemology*, vol. 22, no. 1 (2008).

Acknowledgments

Many people have helped me in various ways to produce the essays collected here. I would like to thank Yoko Arisaka, Michael Benedikt, Catherine Bertho, Alison Cassells, Jean-Marie Charon, Gerald Doppelt, Arne Elias, Anne-Marie Feenberg, Simon Glynn, Marc Guillaume, Alastair Hannay, Douglas Kellner, Clive Lawson, Andrew Light, Marie Marchand, Tom Misa, Steven Moore, Robert Pippin, Hans Radder, Mayuko Uehara, and Tyler Veak.