



GOD AND THE CHIP

Religion and the Culture of Technology

WILLIAM A. STAHL



EDITIONS SR

Volume 24

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William A. Stahl

Published for the Canadian Corporation for Studies in Religion/
Corporation Canadienne des Sciences Religieuses
by Wilfrid Laurier University Press

This book has been published with the help of a grant from the Humanities and Social Sciences Federation of Canada, using funds provided by the Social Sciences and Humanities Research Council of Canada.

We acknowledge the support of the Canada Council for the Arts for our publishing program.

We acknowledge the financial support of the Government of Canada through the Book Publishing Industry Development Program for our publishing activities.

National Library of Canada Cataloguing in Publication Data

Stahl, William A. (William Austin)

God and the chip : religion and the culture of technology

(Editions SR ; 24)

Includes bibliographical references and index.

ISBN 0-88920-321-0

1. Technology – Social aspects. 2. Technology – Moral and ethical aspects.

3. Computers – Social aspects. 4. Computers – Moral and ethical aspects.

I. Canadian Corporation for Studies in Religion. II. Title. III. Series.

T14.5.S72 1999

303.48'.3

C98-932486-9

© 1999 Canadian Corporation for Studies in Religion / Corporation Canadienne des Sciences Religieuses

Second impression 2001

Third impression 2002

Cover design by Leslie Macredie using an image by William Blake entitled *The Ancient of Days* (© Copyright The British Museum)



Printed in Canada

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Order from:

Wilfrid Laurier University Press

Waterloo, Ontario, Canada N2L 3C5

<http://www.wlupress.wlu.ca>

Acknowledgments

I wish to thank the following publishers for permission to reprint and revise material previously published:

Dianoia, for "Technological Mysticism" Vol. 1, No. 1, Spring 1990: 1-17.

Science, Technology & Human Values, for "Venerating the Black Box: Magic in Media Discourse on Technology" Vol. 20, No. 2, Spring 1995: 234-58 ©1995 Sage Publications Inc. Reprinted by permission of Sage Publications Inc.

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Many people offered help and encouragement over the life of this project. I want to especially thank Reginald Bibby, Nancy Nason-Clark, Lori Walker, Peter Beyer, Lori Beaman, Edward Bailey and the people at the Denton Conferences on Implicit Religion, and, above all, my wife Ruth.

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Introduction

We have a choice of what myths, what visions we will use to help us understand the physical world. We do not have a choice of understanding it without using any myths or visions at all. Again, we have a real choice between becoming aware of these myths and ignoring them. If we ignore them, we travel blindly inside myths and visions which are largely provided by other people. This makes it much harder to know where we are going.

Mary Midgley
Science as Salvation

It is perhaps the greatest irony of our times that in this technological age many, if not most, of our major problems are moral paradoxes. Computers and communications technology are in the forefront of changes which are transforming everyday life, yet we are critically short of ethical and intellectual resources with which to understand and confront these changes. Much of the language with which we discuss issues involving technology is ideological or mystifying. Indeed, much of it is magical and implicitly religious.

This should not, perhaps, be too surprising. Throughout history, most human cultures have surrounded technology with myth and ritual. To engage in creation was to participate in (or to encroach upon) the preserve of the gods, and weavers, potters, and especially smiths were commonly perceived as immersed in the sacred. "'To make' something means knowing the magic formula which will allow it to be invented or to 'make it appear' spontaneously," says Mircea Eliade (1978: 101-102). "In virtue of this, the artisan is a connoisseur of secrets, a magician; thus all crafts include some kind of initiation and are handed down by an occult tradition." Before the modern era, most peoples saw the material world as alive and they often personified nature as female. Those who would penetrate the mysteries of nature thus had to engage in propitiatory rites, particularly miners and metalworkers, who were often perceived as violating Mother Earth and who had to go through elaborate rituals of purification and sexual cleansing (Eliade, 1978; Merchant, 1980). This ambiguity towards technology and those who ply it was reflected in the

Greek myth of Hephaestus (the Roman Vulcan), the god of fire and the forge, who alone among the deities was ugly and lame (in a mythos that equated beauty with virtue and truth) and who was at one time cast out of Olympus (Hamilton, 1942).

Today, however, we claim to be different from our ancestors. We live in a secularized society. We are realists. Nature for us is dead matter, shaped by the impersonal forces described by science. Myth and ritual, to the extent they have any meaning at all, are matters of individual preference. We leave symbols to the poets and guide policy with fact and reason. Or so we claim.

The problem with these claims is that they strip technology and the world of the systems of meaning through which people have made sense of their lives and guided their actions. The language we use shapes and defines issues and problems. Part of the reason for our moral deafness is that the usual way of speaking about technology in our society is too restrictive. If today technology seems so paradoxical and morally baffling, it is in part because we no longer pay conscious attention to the kinds of symbols and rituals through which our ancestors regulated their interactions with nature and the material world. I say "pay conscious attention" because technology is still permeated with symbol and myth, but now they are implicit and hidden. So long as they remain hidden we give them power over us and we are subject to manipulation and self-deception. So ironically, the first step in the recovery of meaning is demythologization. Only when we have killed the idols, as Paul Ricoeur says (1970: 531), can we begin to make sense of the changes going on around us and in us, and begin to develop social ethics for an information age.

Historically, technology has not only been immersed in sacred myth and ritual, in many cultures certain technologies became central metaphors through which the theology, philosophy, literature and science of that society understood reality. J. David Bolter (1984) calls these "defining technologies." To the ancient Greeks, he claims, the spindle and the potter's wheel played such a role. In the Renaissance and early modern Europe, clocks were the defining technology, as exemplified by the clockwork imagery used by Descartes, Leibnitz, and Newton in describing nature. The nineteenth century used the steam engine as its metaphor of power and progress. Today, Bolter says, the computer is becoming a defining technology. Certainly, computers and other information technologies are on the cutting edge of social and economic changes. They are also changing the way we communicate, and therefore the way we think. There is a double aspect to these technologies. They are part of the content of discourse, they are also the medium of discourse—they are both what we publicly talk about and means by which we talk in public. Both aspects are shaped by cultural conventions and myths even as the

technology reshapes them. For example, one of the means through which film and television communicates is camera angles (Tuchman, 1978; Hall, 1969). Technology creates the phenomenon of the camera angle, yet what these angles communicate are the meanings attributed to different perspectives which have developed in the West since the Renaissance (e.g., a shot looking up connotes authority, a close-up conveys intimacy). In doing this the technology both reproduces and reshapes cultural meanings at the same time. It is this double aspect of information and communication technology that makes them so important. Therefore I will use them as the focus for this work and the means by which we may understand technology more generally.

The study of technology is one of the preoccupations of the modern world. Unfortunately, this study is fragmented—historians of technology rarely cite sociologists, and vice versa (Staudenmaier, 1985, 1994), philosophers and theologians rarely consult social scientists, scientists and engineers, with a few notable exceptions, usually speak only to each other. In this work I try to overcome this fragmentation through an interdisciplinary approach. I will put the sociology of religion and science, technology, and society studies (STS) in conversation with each other, with comments from computer science, feminism, philosophy and theology.

I also deliberately try to blend critical analysis with a prophetic stance. I want to avoid either the uncritical celebration of the new technologies or a doomsaying jeremiad, two approaches which are far too common in public debates over technology. Too much of what passes for social ethics today is impassioned pleading deficient in social scientific analysis. Too much of what passes for social science today is devoid of moral perspective. Only by combining the best insights of theology and ethics with the most advanced tools of social science can there even be a hope of unraveling the moral paradoxes of modern technology.

One of the major problems of any interdisciplinary work is to translate the jargon of specialized subdisciplines so that others may understand it. I will try to keep jargon to a minimum. There are two central ideas which need some definition before we can begin, however, *implicit religion* from the sociology of religion and *constructivism* from STS.

What Is Implicit Religion?

Much of our language about technology is implicitly religious, a term that needs some explanation. I define implicit religion as those symbols and rituals directed to the numinous which are located outside formal religious organizations (e.g., churches) and which are often unrecognized, unacknowledged, or hidden. This definition does several things, which I will

name now and develop more fully as we go along. Most obviously, implicit religion is implicit. It is not to be found, as such, in those institutions devoted to "explicit religion," although a number of studies (e.g., Bailey, 1983, 1990; Nesti, 1990; ter Borg, 1992) have shown that there are often close links between them. Nor is it usually open or acknowledged, and indeed people may be quite unaware of it as "religion." This is no more than the truism that "you can't expect a fish to discover water," or as Clifford Geertz said rather more profoundly, any religion clothes its symbols "with such an aura of facticity" that they "seem uniquely realistic" (Geertz, 1973: 90). In most cases, to the extent that an implicit religion is viable it will be "invisible."¹

The most pointed question students of implicit religion have to answer is: "Is it *really* religion?" A flippant answer is to respond: "It depends on what you mean by religion." One thing that implicit religion is *not*, at least for me, is an excessively functionalist understanding of religion. Over the past seventy years a number of sociologists of religion have defined religion by what it does, that is, by the functions it performs in society. While this may have some merit, there is a danger in this approach that religious symbols and rituals can disappear into all their functions without remainder. Religion is more than what it does, it is, as Robert Bellah says, first and foremost "a set of symbolic forms and acts" which relate people to "the ultimate conditions of their existence" (Bellah, 1970: 21). We have to look to the substance of symbols and rituals to find how they ground meaning and identity in the transcendent.

Most students of implicit religion have followed Weber's dictum that it is only possible to define the essence of religion at the conclusion of empirical study (Weber, 1922/1963: 1). Thus Edward Bailey, for example, circles the question, describing implicit religion progressively as "commitments," "personal depths," "integrating foci," and "intensive concerns with extensive effects" (Bailey, 1983: 70-71). Similarly, Arnaldo Nesti traces its antecedents and central lines of research before declaring:

Implicit religion is a request for meaning that originates in the subject's life-world, expressing itself by means of a complex system of symbols and practices. These in addition to a series of paths replete with meaning have the effect of reassuring the subjects themselves on the unconditional relevance of their existence here and now. (1990: 432)

¹ The phrase is, of course, Thomas Luckmann's (1967). While some might consider Luckmann to be the "founder" of the study of implicit religion, a review of the literature leads me to trace its main concepts to Durkheim. Although Luckmann's work contains many valuable insights, in this area at least it has not proven to be particularly fruitful for further research. Nesti (1990:425) rejects the dichotomy "visible-invisible" along with all the other dichotomies with which religion has been yoked and Luckmann is not cited very frequently by students of implicit religion.

Several themes emerge as the locus of implicit religion in these studies. One is a focus on the *lifeworld*, as described by Schutz (1973), rather than on beliefs, doctrines, or institutions. Implicit religion is found in how people live and, especially, in how they create meaning and community. Second is the role that symbols, especially metaphors, play in the search for meaning. The lifeworld is a symbolic reality (Bellah, 1970). What we call “reality” is constituted through, and mediated by, symbols which create structures of meaning.² Many of these structures, which form the building blocks of our culture, are implicitly religious. Third is a focus on questions of identity and authority. Like all religions, implicit religion tells us who we are, and also prescribes how we are to treat our kin, our community, and strangers. Together these themes describe phenomena which are religious, albeit not in the conventional, institutional sense.

What is Constructivism?

Constructivism is a research program developed within science, technology, and society studies. Weibe Bijker, one of its leading practitioners, defined its aims as “an integration of case studies, theoretical generalizations, and political analyses...both *to understand* the relations between technology and society and *to act* on issues of sociotechnical change” (1995: 6).

Science, technology, and society studies is itself an interdisciplinary approach. While it has a number of predecessors, such as the criticism of science made by the Frankfurt School (e.g., Horkheimer, 1947/1974, 1972) and the long-neglected work of Ludwik Fleck (1935/1979), STS became an intellectual and social movement in the 1960s (cf. Edge, 1995; Restivo, 1995). Inspired by the revolutionary work of Thomas Kuhn (1970) and Berger’s and Luckmann’s *The Social Construction of Reality* (1966), STS was active within both the university and the nuclear disarmament, anti-war, and environmental movements. As a research program within STS, constructivism took form in the 1970s and 1980s, inspired in part by the “strong program” in the sociology of scientific knowledge (Bloor, 1976) and a number of exemplary studies of scientific work (Latour and Woolgar, 1979; Knorr-Cetina, 1981).

Constructivism has several distinctive characteristics. First, constructivists believe that both technology and society are socially constructed. They reject the notion that technology determines society or that society determines technology. Since, as we will see, technological determinism is the dominant way of talking about technology today, much of their work is sharply critical of this orthodoxy. Constructivists see both

² See chapter five for a more complete discussion of how symbols create meaning.

technology and society as inextricably linked (they often use metaphors such as “seamless web” or “network” to describe their relationship). They do not speak of *the* social, *the* technical, *the* scientific, or *the* political (Bijker, 1995:13) but instead see all as interwoven constructions of social actors. None have priority over the others. The task of the analyst is to discover their interrelationships.

Second, constructivists believe that whether or not a technology “works” is what needs to be explained and cannot serve as the explanation. Both “success” and “failure” need to be treated the same, that is, “the useful functioning of a machine is the result of sociotechnical development, not its cause” (Bijker, 1995: 13). In other words, the analyst cannot assume that either nature or technical feasibility are causes or explanations, nor that there is “one right way” for a technology to develop.

While constructivism is a bold and fruitful approach to the study of technology and society, it does have some limitations. So far, its practitioners have focused most of their research on the development of technology, but have spent relatively little time on its application and use. They do not pay sufficient attention to the questions raised by feminism, and would benefit from greater integration with feminist analysis. While constructivism began as a movement for reform, (Bijker, 1995) many (but by no means all) of its practitioners have been diverted into a relativism which eviscerates social ethics and political action. And most seriously, constructivism has yet to develop an adequate theory of community. Scientists and engineers are too often seen as self-interested individuals building networks over each other (cf. Latour, 1987, 1996), which is at best an incomplete picture. As a consequence, constructivists under-emphasize both the institutional aspects of technology as a practice—including institutionalized norms and values—and the formative role played by language. One of the aims of this book is to address some of these deficiencies in order to make constructivism a more useful tool for social ethics.

The Plan of This Book

This book is an analysis of our discourse, our public talk, about technology. As we debate the meaning of the new technology, we define and shape it. Some people may feel threatened by the new technology, others will try to appropriate it for themselves. I will examine the debates—and conflicts—over the meaning and appropriation of computers.

I will proceed in most chapters through a series of case studies of how people speak and write about technology, which should reveal the often implicit meanings surrounding it. My approach will follow what Paul Ricoeur (1970) calls a “double hermeneutic.” Part I, “A Critique of

Technological Mysticism,” is an exercise in suspicion. It criticizes what I call technological mysticism, the implicitly religious understanding of technology that has developed in our society. I will try to strip away the masks and make explicit what is hidden. Many of the symbols and myths surrounding technology are destructive and lead to injustice. Until we can liberate ourselves from their power they will frustrate our ethics and distort our policies.

Also woven through the first part is a second story, an account of the dynamics of technological change, which provides it with a systematic framework. Together with each case study of the implicit religion of technology is a discussion of some of the central ideas of constructivism which aim to place the details of the case study in a broader theoretical context.

The first chapter is an overview of technological mysticism and a clarification of the issues. It begins with a discussion of how we talk about technology, laying out several commonly encountered positions and showing how this discourse shapes the possibilities for ethical action. Following a definition of technology as a practice involving technical, organizational, and cultural aspects, I look at manifestations of technological mysticism encountered in each aspect. The mystification of the technical aspect is the “technical fix,” a belief that limits all options to the technical. Organizations often conceal their exercise of power behind a “technological veil,” while cultural myths surrounding technology create meanings and implicit assumptions which form the framework of our discourse.

In the second chapter, I look at how technological mysticism frames debates over technological change, using contemporary utopias as an example. Some have claimed we are going through a transformation comparable to the industrial revolution which will usher in a qualitatively different kind of society based on information technology. Their claims contain assumptions which set out options and imperatives which, once accepted, control discourse. I will critically analyze these claims, finding in their work a continuation of a form of theological prophecy.

Women have often felt inhibited by, or excluded from participation in, computer technology. The third chapter explores some of the reasons why computers are perceived as a “masculine machine.” Feminists debate whether computers are essentially masculine, that is, the machines are an inherent expression of male values, or the technology has been appropriated by men through various socialization and gatekeeping techniques. The first approach sees the problem in the culture of technology practice, the second in the power relationships of the organizational aspects. Two case studies illustrate both sides of this debate.

Chapter four analyzes the language used to describe computers in the mass media. The aim is to understand some of the strategies used to

stabilize and close debate, turning technology into a *black box* and making what was once problematic appear “natural” and “universal.” I use a historical case study here, following ten years of reporting on computers in *Time* and other news magazines, in which 36 percent of the articles used language which was explicitly magical or religious.

The fifth chapter, “Faust’s Bargain,” looks at the Faust story as one of the central myths of our time. At the beginning of the scientific revolution, Francis Bacon equated knowledge with power and defined technology as a means of control. Power and control are still the dominant themes in technological discourse today. But are power and control illusions? When we look at people’s experience with computers, frustration is often more frequent than the promised empowerment. We are caught in Faust’s bargain and need to find the wisdom to escape.

The suspicion characteristic of Part I is only the first step, however. The recovery of meaning requires two steps. First, we have to get to the root of the problem, separating real issues from the muddle of “technobabble” and mystification. Part I addresses the first task. Second, we have to discover theological and ethical alternatives. Borrowing a phrase from Ursula Franklin (1990), I call Part II “Redemptive Technology.” This section investigates the place of values and moral decision making in the development of technology in order to lay the groundwork for an ethically responsible alternative. It tries to get behind technological mysticism to fundamental questions of meaning. The theme is that by reopening discourse we may begin to turn the direction of technological change in a more just, equitable, and democratic direction.

The sixth chapter engages two philosophers, George Grant and Frederick Ferré, and a metallurgist, Ursula Franklin, in a debate over technology and modernity. For nearly two centuries analysts have found technology at the heart of the modern world. Both philosophers agree. Grant’s deeply pessimistic view, grounded in the tradition of Greek philosophy and Biblical religion, measures what we have lost. Ferré looks for ways a postmodern future may be different. Franklin offers a vision of an alternative way to practice technology. From their ideas emerge six principles for a redemptive technology.

The final chapter looks at the history of technology assessment and why it failed to live up to its promise. If technological change is to become more equitable and democratic, we will have to change the model of assessment to incorporate human agency, and therefore values, into the process. The chapter concludes by examining the place of information technology in a vision of a good society. We need to articulate such a vision if we are to make informed, ethical decisions about technology. We also need institutional support. Following Robert Bellah and his associates

(1991), we will look at institutions as the place where both technological and ethical decision making occurs.

Part I

A CRITIQUE OF TECHNOLOGICAL MYSTICISM

