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*The Technological Imperative in Canada: An Intellectual History.* By R. Douglas Francis. (Vancouver: UBC Press, 2009. x + 327 p., bibl., notes, index. ISBN 978-0-7748-1651-9 \$34.95 pb.)

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## A Philosophy of Canadian Technology

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***The Technological Imperative in Canada: An Intellectual History.* By R. Douglas Francis.** (Vancouver: UBC Press, 2009. x + 327 p., bibl., notes, index. ISBN 978-0-7748-1651-9 \$34.95 pb.)

Calgary professor R. Douglas Francis, best known for his co-authorship of the widely used *Origins* and *Destinies* textbooks, has produced a stimulating and thoroughly readable intellectual history of Canadian technology. He examines the writings of some prominent Canadians who have addressed the meaning and significance of technology. They come from a wide variety of disciplinary backgrounds, from practicing engineers to economists to cultural theorists to poets. Some are people all would expect: George Grant, Harold Innis, Marshall McLuhan. Some are a delight to find: T.C. Keefer and W.L.M. King. Others will surprise many: Stephen Leacock and Northrop Frye. Their views, for Francis, are not just illustrative of their times but illustrate as well a development in thinking about technology. First came the techno-optimists, confident we will get morality with, indeed from, technology. After World War One this is no longer tenable. Attitudes are more fearful, more ambivalent; do we want what technology offers and at what price? In the post-Second World War period the terms of the debate change again as technology is seen as inescapable. It is part of what we are; so what do we do about that? Key to all of this is a struggle over the relationship between technology and morality, between that which is technologically determined and that which is morally determined. Also key, though not really identified as such by Francis, is an eschatological view of technology; for Keefer railways were a culmination or end point, for McLuhan it was television while Grant “saw the modern age...as radically different from any previous age” (p.243).

Quite properly, Francis begins outside of Canada, looking at the tradition of thinking about technology in the Western world. He says that the view of technology as a type of knowledge dates from the renaissance, which would come as a surprise to Plato, Vitruvius and Roger Bacon, among many others. Francis offers a useful summary of modern theorists of

technology though myself I would have included Andrew Ure and Leo Marx and given a bit more credit to Taylor for his radical programme of separating the conception of work from its execution. For contemporary theorists he starts as so many do with Lewis Mumford but misses, as so many do, Mumford's debt to Patrick Geddes. He also unfortunately calls Mumford's first technic phase "ecotechnic" (p.11) rather than "eotechnic" the distinction being substantive. This was an early (eo = dawn) pre-industrial phase not one having something to do with environmentalism.

Francis then gets down to business with T.C. Keefer and railroads. Keefer's rhetorical nod to Boethius at the start of his *Philosophy of Railroads* introduced an important intellectual and cultural treatment of his subject. Railroads, as Viv Nelles put it, were explained by Keefer to be trains of consequences and not simply lines of track. Full marks to Francis for actually taking this seriously, even if he is a bit slighting of Keefer's importance as an engineer. That British North Americans needed railways to keep up with but out of the clutches of the Americans allows Francis to introduce a theme of anti-Americanism in Canadian writings on technology. On the one hand, sure, how could it not be there? But let us be careful. To the extent that engineers did preach such a dogma they certainly did not practice it, being part of a thoroughly bi-national North American community of professionals. More to the point, as Bruce Sinclair long ago pointed out, Canadians might have liked British investment in their railways but they preferred American technology. T. C. Haliburton's ideas concerning railways and the unity of BNA before Confederation might also usefully have been compared with Suzanne Zeller's arguments about science. It would have been even more useful in discussions of technology and imperialism in English Canadian thought to have shown how this did or did not relate to Berger's argument about nationalism and imperialism. Inexplicably, Francis ignores Carl Berger's *The Sense of Power*, an especially puzzling omission as his own *Destinies* textbook has a special historiographic section on "The Nature of Imperialism" which highlights Berger's work and the debate it engendered.

Chapter Three shrewdly focuses on the advocates of technical education—a better topic for a book such as this I could not imagine. Francis surveys the views of, among others, Galbraith, Loudon, Daniel Wilson and Henry Bovey as advocates of applied science and technical education; I might have added Nova Scotia's F.H. Sexton both for regional balance and to continue from Haliburton. I must take issue however with the thrust of Francis' discussion. His statement (p.65) that the "advocates of technical education faced an uphill battle, since the existing education system was based on a belief that the classics, literature, and history were superior subjects for cultivating the moral imperative to science and technology,

which were considered to be ‘practical’ subjects,” is at best simplistic and at worst wrong. I would contrast this with Oisín Rafferty’s more nuanced account of how the change from apprenticeship to technical education in public schools reflected a dialectic between cultural and utilitarian conceptions of technical education. Francis quotes Queen’s professor Nathaniel Fellowes Dupuis as saying that the Church specifically and conservatism generally obstructed the progress of science, especially practical science not least of all in the universities in Canada. Dupuis was wrong then and his views haven’t improved with age. Canadian universities founded in the 19<sup>th</sup> and early 20<sup>th</sup> centuries were happily involved with research for industry from the get go. If we want evidence that Canada’s universities embraced the gospel of practical science we don’t have to look at the writings of engineering Deans; we can find it in the words of St. Francis Xavier College’s Vice President Rev. Jimmy Tompkins or Laval’s Rector O.-E. Mathieu among many others. And while Francis continues forward the debates over technical education to look at the creation of the National Research Council and its relationship with Canada’s universities he might have improved his discussion by an examination of testimony given at the Cronyn Committee hearings.

Francis’ discussion of W.L.M. King and technology is a solid highlight of the book. He traces carefully the impact on King of Toynbee’s “Lectures on the Industrial Revolution” and other intellectual influences, and presents a stimulating and original reading of King’s *Industry and Humanity*. Francis makes an inspired linkage of King’s middle class anxieties to Wiebe’s “search for order,” though as he continues his discussion to the middle class’s search to impose (their) order the Gramscian concept of hegemony and Bledstein’s *The Culture of Professionalism* would further have helped. That the Great War changed everything in Western culture is an argument made effectively by Fussell; little is needed to convince us that for some, technological optimism gave way to brooding about the dark side of technology and the irrational. But how far should we push this? Those writing on technology in the interwar years variously expressed hope and fear, saw promise and threat. What is surprising though is how little impact these negative feelings about technology had, as many went right back to technological enthusiasm. What was perhaps the greater challenge to the enthusiasms for Machine Civilization was the Great Depression which Francis virtually ignores. Were Canadian intellectuals silent? Surely at the very least the economist Innis was not. Francis argues strongly, and I would say correctly, for the unity of Innis’ writing on staples and communication. But his observation that whatever Innis is writing about he is telling us about Canada in his own time is nothing more than a statement of why we do historiography.

It has, for Innis, already been drawn out more effectively by Berger in *The Writing of Canadian History*.

Francis takes us into the brave new post-World War Two era with a very nice summary of McLuhan. Then continuing with Northrop Frye, he talks about Frye's relationship to both Innis and McLuhan. Unfortunately, much of what Francis tells us about Frye's historical musings is a bit embarrassing. Frye identifies, from Innis and McLuhan, the importance of a supposedly Canadian special circumstance of a large country most of it empty or with the population strung out along a narrow belt. The uniqueness of either would surprise Australians and Chileans (and Saudis and Mongolians...). Frye's suggestion that Americans have put their imaginative energy into engineering not literature is an outrageous slander on American letters. And his argument for a particularly Canadian attitude to quantifications, as proved by fur traders keeping account books and missionaries tallying conversions, is just silly.

The last chapter covers the familiar ground of George Grant's criticism of modernity and secularism. Grant is presented as a synecdoche for the development described in this book in his own intellectual journey from technological enthusiasm, to doubt, to despair. Francis tries very hard to link Grant's ideas with those of earlier Canadian writers on technology but were they in fact so linked? His *Lament for a Nation* is famous but Grant and Diefenbaker were by that time the last gasp of conservative anti-Americanism, dinosaurs after the asteroid hit. The book then concludes with a discussion of contemporary critics of technology and a summary of the argument.

A hazard of this genre of intellectual history is the representativeness, or lack thereof, of the figures discussed. Francis is aware of this and, fairly enough, identifies the problem and disclaims any attempt at representativeness. Fine, but I'm not sure we can entirely let him off the hook. In uncomfortably large measure this is a history of what middle-class Anglo males associated with McGill or the University of Toronto thought about technology. Francis claims that A.H. Hoodless was the only Canadian female of the past "who reflected at length on the meaning of technology" (p.4) but what about views of prairie women like Violet McNaughton, Abigail DeLury and Zoa Haight who directly engaged the importance of technology in women's work? In the conclusion he brings Ursula Franklin in as a major new thinker and describes briefly gender critiques of technology, however without mentioning Carolyn Merchant or the feminist epistemology debate (Sandra Harding et al.). Could we not also have heard a worker's voice? R.E. "Lefty" Morgan comes to mind as a good candidate. And if we are going to hear the voices of the writers of fiction, which we do in this book, then how about visual

artists? To take only the most obvious, Group of Seven artists painted the industrial landscape of the Toronto waterfront but perhaps more to the point they deliberately erased signs of technology (resource exploitation) from some of their works. As this book is without illustrations this could have been an opportunity for some welcome visual material.

This book is intellectual history not history of technology and that sometimes shows. Lauding the unique genius of A.G. Bell in inventing the telephone overlooks the fact that Bell invented a piece of crap that got onto the patent examiner's desk a few hours early. Radio did not make telegraph cables obsolete. The mechanical view of the world was not a nineteenth century creation but goes back to the mechanisation of the world picture in the Scientific Revolution. Finally, there is nothing Canadian about imagining that technology could overcome constraints of nature, especially winter. LeRoy Dresbeck has shown this is in a medieval context. (Francis also sets Edward Gibbon in the nineteenth century, a mistake that an historian just shouldn't make.) Francis also seems to have a rather tenuous sense of when industrialization happened in Canada and elsewhere and of the current scholarly debates over it, with Canadian industrialization wandering around in time. At one point it is "at the turn of the century when Canada was undergoing its industrial revolution" (p.135) but then Canada is still having an industrial revolution in Innis' time (p.166). He then quotes Heather Menzies as seeing computers bringing a second industrial revolution (p.271). Francis' assertion that "[t]he beginnings of newspapers in America coincided with an improvement in print technology, when pulpwood replaced rags as a better and more economical way to make paper. The cost of newsprint dramatically declined [between 1875 and 1897]" conflates the events of a century.

I more welcome this book than I can endorse its conclusions. That someone outside of our history of Canadian science and technology community takes all this seriously is great. That it has been done is welcome and that it has been done by someone other than us is doubly welcome. That the Canadian Historical Association nominated the book for its Macdonald Prize would have been cause for uncorking the champagne had it won. But I do not find the book's argument compelling. Francis borrows from Carl Mitcham to examine technology as an object, knowledge, process and volition, wanting technology to be all those things but also, confusingly, to be a sequence of things or a process. To this he adds his own notion of a technological "imperative" though nowhere in this book do we get a really clear account of what an "imperative" is. To "technology" are ascribed so many meanings by so many people that it is robbed of any common meaning. It is also not

always clear that people are really talking about technology but instead science, modernity, capitalism, industrialization or something else. Similarly, “mechanical” is a tricky concept in its various metaphorical meanings. Matters are not helped by some vague and colossal generalizations as with Francis’ awkward reference to “the dominant liberal-technological paradigm that had dominated Western thought for the past 400 years” (p.247). Francis’s thumbnail intellectual biographies and summaries of individuals’ positions are deft and effective. The best of them—Keefer, King, Innis, McLuhan—are truly outstanding. While we get a good sense of what influenced these people, we are less well informed about how they influenced each other and much less about how they were part of a peculiarly Canadian dialogue or tradition of thinking about technology. In the end, I see the book succeeding more in its parts than the whole. While I won’t be assigning it as a text I will be recommending specific chapters to students early and often.

## La voix des maîtres

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L’ouvrage que signe Francis est l’un des plus excitants à s’inscrire dans le champ de l’histoire des techniques au Canada depuis des lustres. Il se veut une histoire de la pensée canadienne sur le sujet des techniques et aussi une démonstration de la définition par les principaux penseurs canadiens-anglais d’un impératif technique responsable d’une mentalité nouvelle s’affranchissant de l’impératif moral traditionnel. Auteurs, poètes, professeurs, ingénieurs et inventeurs sont appelés à la barre par Francis, qui regroupe leurs idées en fonction de leur conception de la « technologie ».

Écrivant en anglais, Francis adopte naturellement le terme reconnu de *technology*, vocable labile qui recouvre à la fois les réalisations techniques concrètes et une essence platonicienne qui leur serait commune, caractérisée par la recherche d’un savoir-faire pratique et l’instrumentalisation efficiente de ce savoir. Le français a conservé plus longtemps que l’anglais le souvenir d’un sens plus restreint du mot « technologie », désignant depuis la fin du XVIII<sup>e</sup> siècle une maîtrise théorique des principes et des choses