

Technological and social changes into the third millennium and the impact on refrigeration

Paul Spoonley *

College of Humanities and Social Sciences, Massey University, Private Bag 102-904, North Shore MSC, New Zealand

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Abstract

A technological revolution based on information technologies is reshaping the nature of society while globalisation has impacted on the location and nature of economic production and ownership. The scope of these changes indicates a transformation that is equal to the extent of the changes associated with the Industrial Revolution. At the beginning of the third millennium, it is possible to anticipate how these transformative changes will impact upon the way societies and people produce, communicate, manage and live. This paper will outline some of the major changes that have occurred, or will be likely to, over the next two decades, with particular attention to the way in which social institutions and social interaction will evolve. It will also pose questions about the implications for facets of refrigeration given the fundamentally different ways in which societies and individuals will interact with, and expect to use, various technologies. © 2001 Published by Elsevier Science Ltd and IIR. All rights reserved.

Keywords: Refrigeration industry; Modernization; Generality; Technology

Changements technologiques et sociologiques au cours du troisième millénaire et leur impact sur l'industrie frigorifique

Résumé

Une révolution technologique fondée sur les technologies de l'information est en train de refaçonner la société en même temps que la mondialisation exerce une influence profonde sur l'emplacement et la nature de la production et la propriété de cette production. L'étendue de ces changements montre que cette transformation est égale à l'étendue des changements associés à la Révolution industrielle. Au début du troisième millénaire, on peut prévoir comment ces changements vont affecter la manière dont les sociétés et les gens produisent, communiquent, gèrent et vivent. Cette communication donne un tour d'horizon de certains changements clés qui ont déjà eu lieu ou vont probablement avoir lieu pendant les deux décennies à venir. Elle met l'accent sur la façon dont les institutions sociales et l'interaction sociale évolueront et pose des questions sur les implications pour certains aspects du froid, tenant compte des approches profondément différentes des sociétés et des individus vis-à-vis de diverses technologies. © 2001 Published by Elsevier Science Ltd and IIR. All rights reserved.

Mots clés : Industrie frigorifique ; Modernisation ; Généralité ; Technologie

* Tel.: +64-9-443-9779; fax: +64-9-443-9650.

E-mail address: p.spoonley@massey.ac.nz

1. Introduction

Refrigeration technologies have been critical in the evolution of the production and distribution systems that have been part of the industrial revolution. As Cleland [1] notes, agriculturally-based nations relied upon such technology for market access, and in more industrialised countries, mass production required ever more sophisticated technology to meet demand. The centrality and diversity of refrigeration technology is now well-established as fundamental to contemporary systems of both production and consumption, from controlled environments for comfort through to new surgical techniques and food preservation, transport and display. But those systems are now changing, often radically, to the point where commentators suggest that industrial capitalism is now being replaced by a new, and quite different, social and economic system. A variety of terms exist to describe what is emerging — post-industrialism, post-Fordism, post-modernism, information age, network society. While the emphasis on what exactly characterises these new systems varies, the consensus is that a classical industrial-capitalism is being supplemented, at times replaced, by fundamentally new forms of production and consumption, and new forms of social organisation. These developments present some interesting challenges for those organisations and technologies which are the product of a period of mass production and consumption. This paper is intended as an invitation to consider some of the broader trends and what it means for those who produce, market and use refrigeration technologies.

2. A new age

One of the most evocative ways of describing twentieth century industrial capitalism is to describe its dominant production system as Fordist. The mass production system which characterised Henry Ford's assembly line for cars marks a significant development of the early part of the century and became a widely used model of organising production. It required a major investment in fixed capital costs, the supply of unskilled and skilled workers, and was typically located in major urban areas which gave access to both labour and markets. It was accompanied by the affluence of post-war decades when consumerism created the necessary demand for the goods of a mass production system. The ability to purchase the goods of this form of industrial capitalism was made possible by a Keynesian approach to welfare. Various types of welfare state emerged as the century proceeded and reduced costs to individuals and households. The provision by the state of health, education, housing and welfare benefits minimised and often eliminated certain core household

and individual costs and meant that there was additional disposable income for consumer goods. The combination of mass production and mass consumption, reinforced by welfare policies, produced the predominant form of production and society which marked most western economies from at least the 1950s through to the 1980s. What has emerged since is vastly different.

Globalisation is a short-hand means of describing what is occurring but the term tends to slide over some of the important characteristics of both social and economic developments. In terms of what existed previously, the mass production of Fordism has increasingly (although by no means totally) given way to production flexibility and the search for low costs, especially given the opportunities presented by technology. De-industrialisation has been a feature of many of the advanced economies, and the old centres of Fordism — Chicago, Liverpool, Glasgow — have been stripped of their productive base as jobs have disappeared and firms have migrated around the globe. A new flexibility is required of organisations, the process of production and workers. Alongside de-industrialisation and deskilling is the reduction or sometimes disappearance of the key tenets of Keynesianism. The welfare state has been dramatically altered in many countries with welfare benefits more tightly regulated, often narrowly targeted and policies are much less protectionist. Instead, many countries tend to emphasise the need to be internationally competitive in the face of major portfolio capital flows, the relocation of firms and production and a new global market for both products and workers. But this still does not capture what has emerged with the decline of Fordism.

Manuell Castells has been an important commentator on these developments, especially with the appearance of his three books as part of a series called **The Information Age : Economy, Society and Culture**. The information age or knowledge society signals the increased importance of intangibles in contemporary production. He also stresses the development of new networks which is made possible by enhanced information technologies. Three aspects mark the information age. One is the centrality of information technology to the processes of production, and the way in which it has altered production on a global scale. The second is the nature of a global capitalism which is marked by greater flexibility and mobility, intensified competition, new multinational firms and weak labour organisations. And the third is the importance of the new social movements which emerged in the late 1960s [2]. Castells, at times, over extends his analysis, and has been criticised for offering a crude stage-theory of development [3] and a failure to identify the weaknesses and limits of informational capitalism [4]. Nevertheless, his approach has provided an important shift in focus.

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