



# The shift towards intellectual capitalism — the role of infocom technologies<sup>1</sup>

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*Whether this propensity [“to truck, barter, and exchange one thing for another”] be one of those original principles in human nature, of which no further account can be given or whether, as seems more probable, it be the necessary consequence of the faculties of reason and speech, it belongs not to our present subject to enquire. Adam Smith*

## 1. Introduction

Despite various prophecies to the contrary — wishful or not — capitalist economic systems are as strong as ever after the post-war rise of competitive Asian economies, the downfall of the Soviet Union, and the resurgence of the US economy in the 1990s.

Capitalism comes in many varieties and evolves in various ways, however. Much has also been written on diverse types of capitalism, seen as emerging in contemporary society, such as “alliance capitalism”, “corporate capitalism”, “Japanese capitalism”, “informational capitalism”, etc.<sup>2</sup>

This article argues that capitalism is now being transformed into a most important new form, what can be called *intellectual capitalism*. In broad terms intellectual capitalism can be interpreted as resulting from a confluence of a capitalist economy and a knowledge or information economy in which intellectual capital in some sense is dominant. Despite palpable problems to account for intellectual capital — an emerging research area in itself — an unfolding shift towards intellectual capitalism is suggested by a variety of indicators, as will be described in this article.

The purpose of this article is, moreover, to argue that one main driving force behind this transformation or shift is technological change and the accumulation of new technologies in general. In particular, it is argued that the family of information and communication technologies, *infocom technologies* or ICTs

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<sup>2</sup> See Williamson (1985), Dunning (1988), Gerlach (1992), Rosenberg (1992), Rosenberg and Birdzell (1986), Johnson (1993), Thurow (1996) and Castells (1998).

for short, plays a pivotal role in the emergence of intellectual capitalism.<sup>3</sup> The role of ICTs is then not unlike the role played by the family of material and energy technologies in the emergence of earlier forms of capitalism.<sup>4</sup> Through a number of key functionalities (enhancing, e.g., codifiability of information and connectivity and excludability among agents), ICTs enable faster, more inexpensive and differentiated production and distribution of various old and new types of information that are of value to larger sets of users. ICTs also enable information to be commercially transactable at lower transaction costs. Most importantly ICTs enable more adequate privatization of gains from production and distribution of information on a commercial basis. The traditionally recognized malfunction of competitive information markets due to appropriability problems thereby becomes mitigated.<sup>5</sup> Human communication and information exchange, be it on a habitual, altruistic or barter basis, then become more easily commodified and commercialized through these ICT functionalities. Expanding opportunities to profit from invention and information asymmetries together with increasing competitive pressures at all levels in society will make information and communication far more subjected to commercial transactions than we have as yet expected, let alone hoped for. In brief, intellectual capitalism, with its propensity to truck, barter and exchange knowledge and information on a commercial quid pro quo basis, may thus be looked upon as a further consequence of the technologically enhanced faculties of information and communication in line with Adam Smith's conjecture en passant above.

However, it would obviously be overly technocentric to argue that ICTs in themselves are the only driving force behind the emergence of intellectual

capitalism. The arguments surrounding the shift towards intellectual capitalism could be made at greater length than possible in this article, pertaining to the individual, profession, company, industry, market, national, technology, management, institutional and international levels (see further Granstrand, 1999). Besides the role of technology in general and ICTs in particular, the role of the IPR (Intellectual Property Right) institution will be dealt with here. Finally, the article gives a brief speculative outlook on possible future technology related shifts in society.

## 2. Concepts

### 2.1. *Intellectual capital*

Intellectual capital comprises all non-material (or intangible) resources that could be considered as capitalizable assets of an economic agent.<sup>6</sup> Defined in this way capital in general is decomposed into material (tangible) and non-material (immaterial, intangible) capital. Material capital in turn is commonly decomposed into physical capital (natural resources, machinery, etc.) and financial capital (money, securities, etc.) Intellectual capital could be decomposed in various ways. Here it will be decomposed from the point of view of a firm into IPRs (in patents, databases, trade secrets, trademarks, etc.),<sup>7</sup> relational capital (related to qualities in internal and external relations incorporating organizational capi-

<sup>3</sup> The concept of ICTs is here taken to encompass information and communication technologies for computers, telecommunication networks, media, etc.

<sup>4</sup> See Freeman et al. (1982) for a good overview of attempts to link "Kondratieff waves" of new technology systems (i.e., families of interrelated technologies) to fundamental changes in the economic system or changes in the "techno-economic paradigm" in the words of Freeman and Perez (1988).

<sup>5</sup> For a classic work on market failures in information markets, see Arrow (1962).

<sup>6</sup> What intellectual capital should precisely encompass is subject to a demarcation debate of course, but the concept commonly includes IPRs as well as human competence (or capital or capability) and good-will. There are moreover large problems in valuation of IC and any of its components, of course. This is a subject for accounting research, which will be left aside here. See further, e.g., Kaplan and Norton (1996).

<sup>7</sup> IPRs could be exclusive as well as non-exclusive, registered as well as unregistered. The firm's know-how in form of trade secrets (like business ideas, business models or methods and business plans) is an important part of unregistered IPRs. (Some business methods have since 1998 become patentable in the US, however.) Databases, organizational routines and "orgware" also constitute intellectual property, although not necessarily protected by exclusive IPRs. (Database protection is available in Europe since 1996 and is likely to become available in the US, see Reichman and Samuelson, 1997.)

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