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Department of Sociology, Lancaster University, Lancaster LA1 4YL

'The State and the Contradictions of the Knowledge-Driven Economy'

Bob Jessop

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The modern world is swept by change. New technologies emerge constantly, new markets are opening up. There are new competitors but also great new opportunities. Our success depends on how well we exploit our most valuable assets: our knowledge, skills and creativity. These are the key to designing high-value goods and services and advanced business practices. They are at the heart of a modern, knowledge driven economy. This new world challenges business to be innovative and creative, to improve performance continuously, to build new alliances and ventures. But it also challenges Government: to create and execute a new industrial policy. … The Government must promote competition, stimulating enterprise, flexibility and innovation by opening markets. But we must also invest in British capabilities when

> companies alone cannot: in education, in science and in the creation of a culture of enterprise. And we must promote creative partnerships which help companies: to collaborate for competitive advantage; to promote a long term vision in a world of short term pressures; to benchmark their performance against the best in the world; and to forge alliances with other businesses and with employees (Blair 1998).

This quotation from Tony Blair's foreword to the Department of Trade and Industry's White Paper on *Building the Knowledge Driven Economy* encapsulates several key themes in this chapter. (1) But my approach to them is very different, inspired as it is by the regulation school and neo-Marxist state theory (see Boyer and Saillard 1995 and Jessop 1990 respectively). In particular I address four issues: the general relationship between technological change and capitalist development; the changing articulation of the structural forms and contradictions of capital accumulation; the state's changing roles in developing the information economy and society; and the repercussions of these changes upon the state's institutional architecture.

Technological Change and Capitalist Development

Discussions of the information revolution or informational capitalism often treat knowledge as a factor of production similar to land, capital, enterprise, or labour. This is linked with a periodisation of modes of development based on changes in the primary factor of production for wealth creation. A common periodisation sees a transition from agriculture (land) through industrialism (capital and manual labour) to 'informationalism' (information and communication technologies and intellectual labour). Such analyses tend to naturalise factors of production, obscuring the conditions under which they enter the economic process and get combined to produce goods and services. They thereby reproduce the fallacy, criticised by Marx, that value is rooted in immanent, eternal qualities of things rather than in social relations (Marx 1976: 993; Schiller 1988: 32).

Focusing on social relations is important not only for a general understanding of the capital-labour relation but also for analysing the role of information, knowledge, and intelligence in so-called post-industrial economies. For labour and knowledge are both fictitious commodities. One must ask under what conditions each gains the form of a commodity. On the one hand, since labour-power is not produced by capitalists for profit, it acquires a commodity form only insofar as it enters labour markets and is employed in the labour process. On the other hand, as knowledge is collectively produced and is not inherently scarce (in economic terms, it is a 'non-rival' good), it only acquires a commodity form insofar as it is made artificially scarce and access thereto depends on payment of rent (Kundnani 1998-9: 54-55; Frow 1996: 89). Hence, instead of naturalising knowledge, one should assume that 'information is not inherently valuable but that a profound social reorganisation is required to turn it into something valuable' (Schiller 1988: 32). It is the state's role in this regard that concerns us below.

Marx (1859) suggested that the most fundamental contradiction in *class-based* modes of production is that between the increasing socialisation of productive forces and private control of the means of production. A key issue today is whether the move from industrialism to informationalism changes this contradiction enough to justify the claim that capitalism has given way to a new mode of production. This claim is advanced in Castells's analysis of the information economy. But his account is ambivalent in three respects. First, although he notes that information and communication technologies (ICTs) have specific historical roots in the military-industrial complexes of advanced capitalism, he also tends to naturalise knowledge as a factor of production and thus locates its origins outside specific class relations. Second, although he emphasises that informationalism (or at least the production of knowledge) involves a new kind of social organisation, namely, a *networking* logic, he also claims that capitalism has used this to reinvigorate itself after its mid-1970s crisis. And, third, although Castells argues that the reflexive use of knowledge can enhance the socialisation of the productive forces 'in a cumulative feedback loop between innovation and uses of innovation' (1996: 32), he also notes that this reflexivity is mostly practised by specific fractions of capital in their own interests (1996: 52, 58-60, 81-90).

Such ambivalence in a noted theorist of contemporary social transformation suggests a tension between the dynamics of informationalism and capitalism. This prompts the question whether the increasing socialisation of the productive forces in a knowledge-driven economy (expressed in dynamic forms of networking and learning) is coming into conflict with capitalist dominance in the social relations of production. This could involve capital hindering the realisation of an information society and/or informationalism eroding private control through its emerging networked forms of governance. These may not, of course, be the only alternatives. But exploring potential contradictions between informationalism and capitalism certainly provides an interesting way to think about the state's role in what is often described as 'knowledge-driven economy'.

The Contradictions of Capital Accumulation

Marx explored the implications for capitalism's dynamic of treating labour power *as if* it were a commodity. For this shapes the forms of economic exploitation, the nature and stakes of class struggle between capital and labour in production, and the competition among capitals to secure the most effective valorisation of labour-power. It also affects the forms and stakes of politics and the overall nature of societalisation. An analogous argument can be made for knowledge. Knowledge has always been important economically and especially in the major shifts associated with long waves of technological innovation. What is novel in the current period is the growing application of knowledge to the production of knowledge in developing the forces of production; and the increased importance of knowledge as a fictitious commodity in shaping the social relations of production. This does not mean that knowledge is a real commodity or that its exchange-value equals the costs of the commodities consumed in its reproduction. For knowledge is a collectively generated resource and, even where specific forms of intellectual property are produced in capitalist conditions for profit, this depends on a far wider intellectual commons. The exchange-value of commodified knowledge is also hard to measure, of course, owing to the well-known peculiarities of the economics of information. These include the phenomenon that the use-value of knowledge *qua* non-rival good does not diminish when that knowledge is shared – and may even increase thanks to network economies – with corresponding problems for a purely market-led determination of output and price. The complexities of knowledge generation and its different forms of embodiment and embeddedness – especially in a networked economy – also make it hard to establish how knowledge in its various forms contributes to surplus-value and profits. All of this renders implausible a naturalised 'knowledge theory of value' (Bell 1974: 127) but it does still permit a *'value theory of knowledge'* that would assess the implications of treating knowledge *as if* it were a commodity.

It is worth noting here at least three processes involved in transforming knowledge into a fictitious commodity: the first is its formal transformation from a collective resource ('intellectual commons') into intellectual property (e.g., patent, copyright) as a basis for revenue generation; the second is the formal subsumption of knowledge production under exploitative class relations through the separation of intellectual and manual labour and the transformation of the former into wage labour producing knowledge for the market; and the third is the real subsumption of intellectual labour and its products under capitalist control through their commoditisation and integration into a networked, digitised production-consumption process that is controlled by capital (on the first, see, for example, Aoki 1998; Dawson 1998; on the second, Schiller 1988: 33 and Sohn-Rethel 1978; on the third, see Menzies 1998: 92-3; and Kelly 1998: 77).

These changes transform the contradiction between the socialisation of the productive forces and the private appropriation of profit. This is now reflected in the contradiction between knowledge as intellectual commons and as intellectual property. This is hardly surprising. For this fundamental contradiction has distinctive forms in different times and places. In the case of capitalism, for example, its core contradictions can be analyzed in terms of: (a) the general contradictions inherent in the commodity form – as reinforced by (b) the specific contradictions inherent in generalising this form to money, land, and, above all, labour-power and (c) the inevitable dependence of the commodity form not only on fictitious commodities but also on various non-commodity forms of social relations. The very process of commodification rooted in the spread of the market mechanism generates contradictions that

cannot be resolved by that mechanism itself. For example, the commodity is both an exchange-value and a use-value; the worker is both an abstract unit of labour power substitutable by other such units (or, indeed, other factors of production) and a concrete individual with specific skills, knowledge, and creativity; the wage is both a cost of production and a source of demand; money functions both as an international currency and as national money; productive capital is both abstract value in motion (notably in the form of realised profits available for re-investment) and a concrete stock of time- and place-specific assets in the course of being valorised; and so forth. These contradictions are linked to strategic dilemmas concerning the relative primacy of their different 'moments'. They are also more or less manageable depending on specific 'spatio-temporal fixes' and the nature of the institutionalised class compromises with which these fixes may be associated.

Spatio-Temporal Fixes

Reproducing and regularizing the capital relation involves imposing a 'spatio-temporal fix' on its extra-economic as well as economic moments and seeking some structural coherence in handling the contradictions inherent in its various structural forms and strategic dilemmas as they present themselves in particular periods. This fix has both strategic and structural dimensions. (2) Strategically, since the contradictions and dilemmas are insoluble in the abstract, they can only be resolved – partially and provisionally at best – through the formulation-realisation of specific accumulation strategies in specific spatio-temporal contexts (Jessop 1983). Such strategies seek to resolve conflicts between the needs of 'capital in general' and particular capitals by constructing an imagined 'general interest' that marginalises at least some capitalist interests. Moreover, since capital accumulation depends on extra-economic as well as economic conditions, accumulation strategies also seek to institutionalise class compromise and address more general problems of social cohesion. (3)

Accumulation strategies and/or hegemonic projects typically displace the costs of such institutionalised compromise beyond the social, territorial, and temporal boundaries of that compromise. This can involve super-exploitation of internal or external spaces outside the compromise, super-exploitation of nature or inherited social resources, deferral of problems into the future, and the exploitation and/or oppression of specific classes or social categories. Success in hegemonic struggles over these strategies always depends on particular spatio-temporal fixes which cannot be guaranteed; and is often secured only through a trial-and-error search that reveals the requirements of 'capital in general' more through repeated failure than sustained success (Jessop 1983; 1999). Different aspects of capital's structural contradictions and/or alternative horns of resulting strategic dilemmas may be handled through a scalar division of labour within or across different institutions, apparatuses, or agents. There may also be a temporal division of labour with different institutions, apparatuses, or agencies specialising in action over different time horizons. In both cases there may also be scope for 'meta-governance' activities to re-balance the role of these institutions, apparatuses, or agencies in various ways (on metagovernance, see Dunsire 1996; and Jessop 1998).

Regulating Atlantic Fordism

Atlantic Fordism benefitted from a spatio-territorial matrix based on the congruence between national economy, national state, national citizenship, and national society; and from institutions relatively well adapted to combining the tasks of securing full employment and economic growth and managing national electoral cycles. Given the terms of the Fordist industrial paradigm and the temporality of its business cycle, the various contradictions of capitalism were dealt with largely in a national context by treating the wage relation as the primary site of contradiction and articulating its regularisation primarily to the money form. This is the core significance of the Keynesian welfare national state (hereafter KWNS). Thus, within relatively closed national economies which had been institutionally-discursively constituted as the primary objects of economic management, national states aimed to achieve full employment by treating wages primarily as a source of (domestic) demand and managed their budgets on the assumption that money circulated primarily as national money. The diffusion of mass production (and its economies of scale) through expanding Fordist firms as well as the development of collective bargaining indexed to productivity and prices were the

primary means through which wages as a cost of production were brought under control. And the combination of the Bretton Woods monetary regime and the GATT trade regime ensured that the (still limited) circulation of free-floating international currencies need not seriously disturb Keynesian economic management based on state control over the national money. Welfare rights based on national citizenship helped to generalise norms of mass consumption and thereby contributed to full employment levels of demand; and they were sustained in turn by an institutionalised compromise involving Fordist unions and Fordist firms. Securing full employment and extending welfare rights were in turn important axes of party political competition and were a political reflection of the institutionalised class compromise.

Some costs of the Fordist compromise and the KWNS were borne within Fordist societies themselves by the relative decline of small and medium firms, by workers employed in disadvantaged parts of segmented labour markets, and by women subject to the dual burden of paid and domestic labour. Other costs were borne beyond Fordist societies by economic and political spaces that were integrated into international regimes (such as those for cheap oil or migrant labour) necessary to Atlantic Fordism's continued growth but not included within the Fordist compromise. Atlantic Fordism was also enabled through a Janus-faced temporal fix. On the one hand, it depended on the rapid exploitation of non-renewable resources laid down over millennia (notably the 'subterranean forest' of fossil fuels as well as raw materials); and, on the other hand, it produced environmental pollution and social problems that it did not address within its own temporal horizons – as if working on the principle of *après moi, la déluge* (see, for example, Altvater 1993; Brennan 1995; Stahel 1999).

The crisis of Fordism is inevitably overdetermined. But a major contributing factor was the undermining of the national economy as an object of state management – notably through the internationalisation of trade, investment, and finance. This led to a shift in the primary aspects of its two main contradictions. Thus the wage (both individual and social) came increasingly to be seen as an international cost of production rather than as a source of domestic demand; and money came increasingly to circulate as an international currency, thereby weakening Keynesian economic demand management on a national level. This shift in the primary aspect of the contradiction in the money form is related to the tendency for the dynamic of industrial capital to be subordinated to the hypermobile logic of financial capital and the tendency for returns on money capital to exceed those on productive capital. At the same time the relative exhaustion of the Atlantic Fordist growth dynamic posed problems of productivity growth and market saturation (which combined to intensify an emerging fiscal crisis of the state) and problems of how best to manage the transition to the next long wave of economic expansion (which entails changes in the temporal horizons of state economic intervention and thus in the forms and mechanisms of such intervention). The crisis of US hegemony is also reflected in struggles over the shaping of new international regimes and the extent to which they should serve particular American interests rather than the interests of capitalism more generally. New conflicts and/or forms of struggle have also emerged that escape stabilisation within existing structural forms: two major examples are the crisis of corporatism and the rise of new social movements. New problems have also emerged, such as pollution and new categories of risk, which are not easily managed, regularised, or governed within the old forms. Finally we should note that, relative to the growth phase of Atlantic Fordism, some contradictions have increased in importance and/or acquired new forms. Three of these are directly relevant to the knowledge-driven economy.

New Contradictions in a Globalizing, Knowledge-Driven Economy

This section discusses three of these new (or newly important) contradictions together with a major conflict that marks the current transition from Fordism to post-Fordism. The contradictions comprise: first, a dissociation between abstract flows in space and concrete valorisation in place; second, a growing short-termism in economic calculation vs an increasing dependence of valorisation on extra-economic factors that take a long time to produce; and, third, the contradiction between the information economy and the information society as a specific expression of the fundamental contradiction between private control in the relations of production and socialisation of the forces of production. In addition, although it does not as such constitute a structural contradiction, serious conflicts arise over the appropriate horizons of action for the spatio-temporal fix, if any, within which the old principal

contradictions of Atlantic Fordism and the newly important contradictions of the current period might prove manageable.

The first contradiction is an expression of the fact that 'the new economy operates in a "space" rather than a place, and over time more and more economic transactions will migrate to this new space' (Kelly 1998: 94). This is a complex, non-propinquitous, multidimensional, cyberspace with novel spatial dynamics grounded in the possibilities that cyberspace offers for simultaneous co-location of myriad entities and relationships. Nonetheless cyberspace is not a neutral, third space between capital and labour, market and state, public and private: it is a new terrain on which conflicts between these forces, institutions, and domains can be fought out. An often-cited expression of this contradiction is the institutional separation of hypermobile financial capital from industrial capital – with the former moving in an abstract space of flows, the latter still needing to be valorised in place. But it also appears in the individual circuits of financial, industrial, and commercial capital as well as within their interconnections. For, however much capital migrates into cyberspace, it still depends on territorialisation. In the case of global finance capital, of course, this 'fix' is provided by the grid of global cities (Sassen 1996). In the case of industrial capital, it is innovation milieus, industrial districts, etc., as well as the physical infrastructure described by Harvey (1982). Even e-commerce needs such an infrastructure, even if it involves a 'celestial jukebox' sending digitised music on demand. Thus, the globalizing knowledge-driven economy does not signal the final transcendence of spatial barriers but effects 'new and more complex articulations of the dynamics of mobility and fixity' (Robins and Gillespie 1992: 149).

The second contradiction is grounded in the paradox that '(t)he most advanced economies function more and more in terms of the extra-economic' (Veltz 1996: 12). The paradox rests on the increasing interdependence between the economic and extra-economic factors making for structural or systemic competitiveness. This is linked to the growth of new technologies based on more complex transnational, national, and regional systems of innovation, to the paradigm shift from Fordism with its emphasis on productivity growth rooted in economies of scale to post-Fordism with its emphasis on mobilising social as well as economic sources of flexibility and entrepreneurialism, and to the more general attempts to penetrate micro-social relations in the interests of valorisation. It is reflected in the increasing emphasis given to social capital, trust, and communities of learning as well as to the increased importance of competitiveness based on entrepreneurial cities, an enterprise culture, and enterprising subjects.

This generates major new contradictions that affect the spatial and temporal organisation of accumulation. Thus, temporally, there is a major contradiction between short-term economic calculation (especially in financial flows) and the long-term dynamic of 'real competition' rooted in resources (skills, trust, heightened reflexivity, collective mastery of techniques, economies of agglomeration and size) that may take years to create, stabilise, and reproduce. Paradoxically, reflexivity enhances this contradiction: it takes time to create collective learning capacities but '(t)hose firms, sectors, regions and nations which can learn faster or better (higher quality or cheaper for a given quality) become competitive because their knowledge is scarce and cannot be immediately imitated by new entrants or transferred, via codified and formal channels, to competitor firms, regions or nations' (Storper 1998: 250). Spatially, there is a fundamental contradiction between the economy considered as a pure space of flows and the economy as a territorially and/or socially embedded system of extra-economic as well as economic resources and competencies. The latter moment is reflected in wide range of emerging concepts to describe the knowledge-driven economy – national, regional, and local systems of innovation, innovative milieus, systemic or structural competitiveness, learning regions, social capital, trust, learning-by-doing, speed-based competition, etc. This poses new dilemmas if the capital relation is to be stabilised over an expanding range of scales and over increasingly compressed as well as extended temporal horizons of action.

A third contradiction that becomes important once again in the after-Fordist (or, at least, the post-industrial) accumulation regime is that between the increasing socialisation of the productive forces and private control in the social relations of production. For the nature of networked knowledge-driven economies – in which economies of agglomeration and 'economies of networks' gain in importance – heightens the contradiction from both sides.

Two features enhance the socialisation of productive forces in networked knowledge-driven economies. First, 'economies of networks' are generated in and through multi-actor, polycentric, and multiscalar networks rather than by single (or quasi-vertically integrated) organisations, which are better able to realise economies of scale. Second, almost exponentially increasing returns to network size mean that 'each additional member increases the network's value, which in turn attracts more members, initiating a spiral of benefits' (Kelly 1998: 25). These two features pose collective action problems rooted in the conflict between socialisation and private appropriation – problems that are linked to tendencies to market failure noted even in orthodox studies of the 'economics of information'. In particular, the socialisation of knowledge production makes it hard to distinguish legally between different firms' intellectual property (Kundnani 1998-9: 56) and this reinforces the tendency for network economies to be captured by the network – albeit often asymmetrically – rather than by a single firm (Kelly 1998: 26-28). This suggests the need for new forms of enterprise able to capture such network economies without destroying any broader network(s) involved in generating them. 'Virtual' firms and networked firms are said to correspond to this need (e.g., Castells 1996: 151-200). However, unless the 'virtual' firm becomes co-extensive with all those involved in production, the contradiction is still reproduced on the side of the social relations of production. For, whereas every capital wants free access to information, knowledge, and expertise, it also wants to charge for the information, knowledge, and expertise that it itself can supply.

A fourth site of problems concerns the appropriate horizons of action for the spatio-temporal fix, if any, within which the old principal contradictions of Atlantic Fordism and the newly important contradictions of the current period might prove manageable. This is closely related to a new complexity of time-space in informational capitalism due to the interaction of new forms of 'time-space distantiation' and 'time-space compression'. Time-space distantiation stretches social relations over time and space so that they can be controlled or coordinated over longer periods of time (including into the ever more distant future) and over longer distances, greater areas, or more scales of activity. In this regard, then, globalisation results from increasing spatial distantiation reflected in the growing spatial reach of divisions of labour in different fields and is enabled by new material and social technologies of transportation, communication, command, control, and intelligence. Conversely, time-space compression involves the intensification of 'discrete' events in real time (4) and/or increased velocity of material and immaterial flows over a given distance. This is linked to changing material and social technologies enabling more precise control over ever shorter periods of action as well as 'the conquest of space by time'. Differential abilities to stretch and/or compress time and space help to shape power and resistance in the emerging global order. Thus the power of hypermobile forms of finance capital depends on their unique capacity to compress their own decision-making time (e.g., through split-second computerised trading) whilst continuing to extend and consolidate their global reach. It is the differential combination of time-space distantiation and time-space compression that was facilitated by new ICTs and enthusiastically embraced by some fractions of capital (and some states) that contributed to the erosion of the spatio-temporal fix of Atlantic Fordism.

This is now reflected in a 'relativisation of scale' (Collinge 1996). The current period involves a proliferation of spatial scales (whether terrestrial, territorial, or telematic, cf. Luke 1994), their relative dissociation in complex tangled hierarchies (rather than a simple nesting of scales), and an increasingly convoluted mix of scale strategies as economic and political forces seek the most favourable conditions for insertion into a changing international order. The national scale has now lost the taken-for-granted primacy it held in the economic and political organisation of Atlantic Fordism; but this does not mean that some other scale of economic and political organisation (whether the 'global' or the 'local', the 'urban' or the 'triadic') has acquired a similar primacy. Indeed there is intense competition between different economic and political spaces to become the new primary anchorage point of accumulation. As yet the new politics of scale as yet unresolved – although I suspect that 'triads' will eventually replace the nation as the primary scale for managing, displacing, and deferring the contradictions and dilemmas of a globalizing, knowledge-driven economy.

Knowledge and Its Contradictions

I now focus on knowledge and some of the economic issues it raises. If knowledge is becoming fictitiously commodified, one can see it as a site of contradictions analogous to labour-power, land, or money (Polanyi 1957). Five issues can be mentioned here.

- The *primitive accumulation* of capital (in the form of intellectual property) through private expropriation of the collectively produced knowledge of past generations. This enclosure of knowledge takes several forms, including: (a) the appropriation of indigenous, tribal, or peasant 'culture' in the form of undocumented, informal, and collective knowledge, expertise, and other intellectual resources and its transformation without recompense into commodified knowledge (documented, formal, private) by commercial enterprises (Frow 1996: 97-99; Coombe 1998) – bio-piracy is the most notorious example; (b) divorcing intellectual labour from the means of production – embodying it in smart machines and expert systems; and (c) a creeping extension of the limited nature of copyright into broader forms of property right with a consequent erosion of any residual public interest (Frow 1996: 104).
- The role of 'intellectual technology' in the real subsumption of intellectual as well as manual labour. Bell himself notes how this plays a role analogous to that of machinofacture in the subordination of manual labour to capitalist control (Bell 1974: 29; 1979: 167) and Robins and Webster also note how it serves to appropriate the knowledge of the collective labourer (1987: 103).
- The dynamics of *technological rents* generated by new knowledge and their disappearance once the new knowledge (whether as knowledge or as intelligent means of production) becomes generalised and thereby comes to define the socially necessary labour time embodied in commodities. This problem is intensified by reflexive accumulation. For 'the conditions which a firm, region or production system must now satisfy in order to win are manufactured and remanufactured more thoroughly and more rapidly than ever before, creating a moving target for success and a shifting minefield of risks of failure' (Storper 1998: 249-50). This increases the pressure on firms, regions, or production systems to stay ahead of their competitors so that ever-renewed technological rents and increasing market share can alleviate the normal tendency for super-profits to be competed away. It also encourages attempts to protect vulnerable *monopolies in knowledge or information* by embedding them in technology, standards, tacit knowledge, or legally entrenched intellectual property rights.
- These considerations underline the self-defeating character of the informational revolution from the viewpoint of capital, insofar as each new round of innovation is prone to ever more rapid devalorisation.
- This in turn has implications for social inequality and polarisation within and across national societies. If firms in the information economy are to maintain profit rates despite the tendency for technological rents to be competed away, less technologically advanced sectors must secure below average profits. This is one of the driving forces behind globalisation and the tendencies towards unequal exchange and uneven development with which it is associated. In the longer term, however, this poses problems of demand for the products of the information economy on a global scale.

The contradictions and conflicts considered above are especially clear in the currently dominant neo-liberal form of globalisation. This is reflected in a general tension between neo-liberal demands to accelerate the flow of abstract (money) capital through an increasingly disembedded space and the need for the more concrete forms of capital to be 'fixed' in time and place as well as embedded in specific social relations as a condition for their valorisation. The state has a key role in managing this tension.

The Nature of the State

Capitalism rests on the institutional separation of the economic and extra-economic. This is needed to secure the appropriate balance between the inherent capitalist drive to commodification and its dependence on non-commodity forms of social relations. This

separation is traditionally (but inadequately) understood in terms of the trinity of market-state-civil society. But the changing forms of competitiveness associated with globalizing, knowledge-driven economies also involve redefinition of the economic and extra-economic. This is reflected not just in changing forms of state intervention into the operation of market forces but by a more fundamental restructuring, rescaling, and retemporalisation of market-state-civil society relations. This complex process provides the focus of this and the next section.

Let us begin with a brief (and far from exhaustive) list of functions that the state might perform vis-à-vis the information economy and/or informational capitalism. They include: (a) managing the fundamental contradiction between the socialisation of productive forces and the relations of production as expressed in the general tension between information society and information economy; (b) re-designing the relationship between the economic and extra-economic in the light of the changing forms of competitiveness associated with the knowledge revolution, reflexivity, and learning; (c) articulating the (de/re-)commodification of knowledge in this context – especially given the fictitious nature of knowledge as a commodity – and dealing with its more general articulation with intellectual and manual labour; (d) articulating the interlinked processes of (de/re-)territorialisation and (de/re-)temporalisation associated with new forms of time-space distantiation and time-space compression in order to create a new spatio-temporal fix for managing the contradictions of the capital relation; and (e) addressing the political and social repercussions of the changing forms of appearance of the structural contradictions and strategic dilemmas of accumulation. Some of these issues were noted above, some are reviewed later. Only the first two are explored in this section.

First, states at all levels help in managing the contradictions rooted in the distinction between the intellectual commons and intellectual property. On the one hand, '(t)he intellectual commons is fundamental to the production of knowledge' (Dawson 1998: 281); and, on the other, intellectual property is a key basis of accumulation in informational capitalism. This contradiction was recognised in Bell's claim that a free circulation of knowledge offers no incentives to firms to produce it so it must be created by some 'social unit, be it university or government' (1979: 174). With hindsight one can see that Bell's proposal is rooted in the earlier logic of the Fordist mixed economy rather than the emerging logic of the networked economy. Nonetheless one can agree with his broad conclusion that states must commit themselves to designing 'a socially optimal policy of investment in knowledge' (1979: 175). Different states are, of course, situated differently in this regard. They tend to polarise, firstly, around interests in protecting or enclosing the commons (e.g., North-South) and, secondly, around the most appropriate forms of intellectual property rights and regimes on different scales from global to local. Thus some states are more active than others in promoting the primitive accumulation of intellectual property, in privatising public knowledge, and in commoditising all forms of knowledge; others are more concerned to protect the intellectual commons, to promote the information society, and to develop social capital. Given its competitive advantage in ICT products and the knowledge revolution, the US state is especially important in promoting the neo-liberal form of the knowledge revolution on a global scale.

In all cases states must attempt to resolve various contradictions and dilemmas whilst eschewing any direct, hierarchical control over knowledge production. For example, they 'must balance the need to protect and maintain the intellectual commons against the need to stimulate inventive activity' (Dawson 1998: 278); and, even in the latter context, they need to balance the protection of individual intellectual property (to encourage technological rents) and the general diffusion of its applications 'by creating open systems, by moving key intellectual properties into the public domain, by releasing source code democratically' (Kelly 1998: 28) with the result that individual technological rents are competed away. In many cases this is perhaps best achieved through state promotion of innovation and diffusion systems (including social capital), broad forms of 'technological foresight', co-involvement and/or negotiated 'guidance' of the production of knowledge, and the development of suitable meta-governance structures (see Messner 1997; Willke 1997). This is reflected in the state sponsorship of information infrastructures and social innovation systems on different scales; in the development of intellectual property rights regimes and new forms of governance and/or regulation for activities in cyberspace; and in the movement away from national utility

structures with universal supply obligations suited to an era of mass production and mass consumption to more flexible, differential, multi-scalar structures suited to a post-Fordist era.

Second, insofar as 'structural' or 'systemic' competitiveness is held to depend not only on an extensive range of long-acknowledged economic factors but also on a broad range of formally extra-economic institutional forms, relations, resources, and values, etc., there is a fundamental redefinition of the 'economic sphere'. This encourages a transition to a Schumpeterian workfare orientation. This orientation can be described as Schumpeterian because it promotes innovation, competitiveness, and entrepreneurship tied to long waves of growth and to the more recent pressures for perpetual innovation. It can be described as workfare because social policy is increasingly being tied to the demands of flexibility, reskilling, and reflexivity in a 'learning economy'. This is linked to the creation of new capabilities and skills (including, of course, ICT literacy both as producers and consumers) and a growing commitment to life-time learning. States thereby get locked into the pursuit of technological rents on behalf of capital and this leads to the subordination of the totality of socio-economic fields to the accumulation process so that economic functions come to occupy the *dominant place* within the state. Other functions thereby tend to gain direct economic significance for economic growth and competitiveness and this tends in turn to politicise those formerly (or still formally) extra-economic domains that are now direct objects of state intervention. In this context states also get involved in managing the conflicts between time horizons associated with time-space distantiation and compression – especially in regard to protecting the social capital embedded in communities, promoting longer-term economic orientations, and designing institutions that sustain innovation. But this expanding field of intervention means that the state finds it harder to reconcile its responses to ever more insistent economic imperatives with the more general demands of securing general political legitimacy and social cohesion (Poulantzas 1978).

The overall consequence of these changing functions is a transformation in the state. In Atlantic Fordism, this involves a shift from nationally specific versions of the Keynesian welfare national state (KWNS) to nationally specific versions of what I have called the Schumpeterian workfare post-national regime (SWPR). In East Asia, it involves a shift from forms of Listian workfare national state (5) to other versions of the SWPR. Indeed, it was in part the apparent superiority of East Asian economies in catching up with the West and, especially, Japan's record of innovation in some knowledge-based industries that prompted the reorientation of Atlantic Fordist economies in a more Schumpeterian workfare direction. Economically, the SWPR tries to promote flexibility and permanent innovation in open economies by intervening on the supply-side and tries to strengthen as far as possible the competitiveness of the relevant economic spaces and their extra-economic supports. This in turn leads to increased pressure to subsume these factors under the logic of capital. Indeed valorising the extra-economic is a key dimension of current accumulation strategies oriented to so-called 'strong' competition based on flexibility and innovation. The process and pace of the re-articulation of the economic and extra-economic have been reinforced and economic strategies have become more concerned with the social and cultural embeddedness of innovation and competitiveness as well as more reflexive about how to promote accumulation.

Three Trends in the State and their Counter-Trends

These shifts in function are associated with three general trends in the nature of the state. First, there is a general trend towards the de-nationalisation of the state. This is reflected in the 'hollowing out' of the national state apparatus with old and new state capacities being reorganised territorially and functionally on subnational, national, supra-national, and trans-local levels. State power moves upwards, downwards, and sideways as state managers on different territorial scales try to enhance their respective operational autonomies and strategic capacities. This shift is closely related to the state's new economic roles in the globalizing, knowledge-driven economy – especially its turn to the supply-side (including the need to penetrate the micro-pores of society), to the management of self-reflexivity and 'connexity' (Mulgan 1996), to the governance of cyberspace, and interscalar articulation intended to improve overall economic policy 'coordination' across different states in the face of a 'relativisation of scale'.

Second, there is a trend towards the de-statisation of the political system. This is reflected in a shift from govern*ment* to govern*ance* on various territorial scales and across various functional domains. This trend is closely related to the changing nature of the economy, which is too complex, dynamic, etc., to be managed by top-down government. It is also related to the emergence of a complex, multidimensional, non-propinquitous cyberspace that undermines 'concepts such as sovereignty and the use of distinctions such as public/private, ownership/access, foreign/local, external/internal, and economic/political' (Katsh 1995: 1717). Guiding these activities requires a bottom-up, self-organising approach akin to a giant networked information processing grid. Accordingly there is a movement from the central role of the official state apparatus in securing state-sponsored economic and social projects and political hegemony towards an emphasis on partnerships between governmental, para-governmental, and non-governmental organisations in which the state apparatus is often only first among equals. Governments have always relied on other agencies to aid them in realising state objectives or projecting state power beyond the formal state apparatus. This reliance has been re-ordered and increased. The relative weight of governance has increased on all levels – including not only at the supra-national and local or regional levels but also in the trans-territorial and inter-local fields. This increase in governance need not entail a loss in the power of government, however, as if power was a zero-sum resource rather than a social relation. Indeed, resort to governance could enhance the state's capacity to project its influence and secure its objectives by mobilising knowledge and power resources from influential non-governmental partners or stakeholders.

Third, there is a complex trend towards the internationalisation of policy regimes. The international context of domestic state action has extended to include a widening range of extra-territorial or transnational factors and processes; and it has also become more significant strategically for domestic policy. The key players in policy regimes have also expanded to include foreign agents and institutions as sources of policy ideas, policy design, and implementation. This trend is reflected in economic and social policies as the state becomes more concerned with 'international competitiveness' in the widest sense. Of increasing significance for the globalizing, knowledge-driven economy, of course, is the World Trade Organisation with a remit that has extended to intellectual property issues. This trend affects local and regional states below the national level and is linked to the growth of inter-regional and cross-border linkages across different national formations.

All three trends have been presented in a one-sided and undialectical manner. Each is linked to a counter-trend that both qualifies and transforms its significance for political class domination and accumulation. Countering the de-nationalisation of statehood are national states' growing involvement in interscalar articulation. Whilst it might be thought that there is a simple continuity of function in this regard, a major discontinuity has been introduced through relativisation of scale. Nonetheless, without a supranational state with equivalent powers to those of national states, de-nationalisation is linked to the attempts by the latter to re-claim power by managing the relationship among different scales of economic and political organisation. Not all states are equal in this regard, of course; within each regional bloc there is usually one hegemon and, on a global scale, the USA is the key political force in the rescaling of politics.

Countering the shift towards governance is government's increased role in *meta-governance*. Governments on various scales are becoming more involved in organising the self-organisation of partnerships, networks, and governance regimes. They provide the ground rules for governance; ensure the compatibility of different governance mechanisms and regimes; deploy a relative monopoly of organisational intelligence and information with which to shape cognitive expectations; act as a 'court of appeal' for disputes arising within and over governance; seek to re-balance power differentials by strengthening weaker forces or systems in the interests of system integration and/or social cohesion; try to modify the self-understanding of identities, strategic capacities, and interests of individual and collective actors in different strategic contexts and hence alter their implications for preferred strategies and tactics; and also assume political responsibility in the event of governance failure. Such tasks are conducted by the state not only in terms of their contribution to particular state functions but also in terms of their implications for political class domination.

Somewhat ambiguously countering yet reinforcing the internationalisation of policy regimes are national states' efforts to shape international policy regimes in the interests of the capitals most important for their economic growth. This is clear in struggles over international regimes for IPR, WTO, TRIPS, etc. As Aoki notes, for example, '(w)idely divergent concepts of property and ownership, originating in extremely diverse political, economic, and social circumstances, provide the fuel for hotly contested and seemingly unresolvable disputes' (1998: 462-3). The United States is currently most influential in promoting international policy regimes for a globalizing, knowledge-driven economy and it promotes thereby 'the sovereignty of domestic U.S. intellectual property owners' (Aoki 1998: 461). There are, of course, comparable conflicts on the triadic level – notably in attempts to harmonise regimes across the European Union. A second, and equally ambiguous countertrend, is the '*interiorisation*' of international constraints as the latter become integrated into the policy paradigms and cognitive models of domestic policy-makers. However, 'interiorisation' is not confined to the level of the national state: it is also evident at the local, regional, cross-border, and inter-regional levels as well as in the activities of so-called 'entrepreneurial cities'. The relativisation of scale makes such 'interiorisation' significant at all levels of economic and political organisation.

Concluding Remarks

This chapter has covered much ground in an effort to provide a firm theoretical basis for analysing the changing form and functions of the state in relation to the globalizing, knowledge-driven economy. At the same time too little ground has been covered. I have not been able to explore how informationalism and networking are transforming the understanding of warfare (e.g., in the US advocacy of 'network-centric warfare'), the approach of the state to disciplinary normalisation and surveillance, the prospects for a decentralised cyber-democracy, or the cultural field. I have also related informationalism to the logic of capital rather than to other aspects of the system- or life-worlds. Some of my future work will address these issues and correct the one-sidedness of the present contribution. In this sense the arguments set out above should be interpreted as defining a research agenda rather than presenting firm empirical conclusions.

Nonetheless the above analysis is based on four broad, theoretically-informed remarks that are worth restating. First, the globalizing, knowledge-driven economy cannot be adequately understood by regarding knowledge as a natural(ised) factor of production. Instead it is based on the contradictions between knowledge as a collective resource and as intellectual property – contradictions which are rooted in its fictitious commodification. Second, the increased importance of knowledge in this contradictory sense is related to changes in the primary modalities of competitiveness that transform the relationship between the economic and the extra-economic and thus the modalities of state intervention. Third, information and communication technologies have played a key role in extending and re-articulating time-space distantiation and time-space compression. This too has implications for the modalities of competitiveness, for re-scaling and re-temporalising of competition, and for the relative dominance of different fractions and sectors of capital. Fourth, as a consequence of the above, the globalizing, knowledge-driven economy involves a transformation not only in the primary and secondary aspects of the contradictions of capitalism but also in the relative importance of different contradictions.

Together these changes have had major repercussions on the economic and social mode of regulation of the emerging accumulation regime and thus on the role of the state and politics in helping to secure some of the conditions for profitable accumulation and the reproduction of labour-power as a fictitious commodity. They also have major repercussions on the spatio-temporal fixes that are appropriate to the current stage of capitalism and thus on the role of the state and politics in 'chronotopic governance', i.e., the management of the spatialities and temporalities, the spatial and temporal horizons, of capital accumulation. And, finally, they have major implications for the relationship between government, governance, and meta-governance. It is hardly surprising, then, that these are 'interesting times' for capital, labour, and state managers and that there is, as yet, still no stable accumulation regime that has replaced the Atlantic Fordist model that dominated in the thirty golden years of postwar western capitalism.

Footnotes

(1) This paper has benefitted from discussions with Markus Perkmann, Ngai-Ling Sum, Andrew Sayer, Chao-Ming Tseng, John Urry, and members of 'TeamTheory'.

(2) The idea of a spatial fix was introduced by Harvey (1985: 149). Harvey referred mainly to the spatial fixity or immobility of a part of total capital as a precondition for the mobility of other parts; he also gave the term a primarily physical, infrastructural character. The concept has since been extended to include different forms of socio-cultural as well as material embeddedness. I use the term in this broader sense.

(3) The forms and content of institutionalised compromises and the associated ways of addressing social cohesion depend on the specificities of the state and political systems as well as on accumulation regimes.

(4) This can occur either by reducing the time a given 'event' takes to produce within a given spatial frame of action; or by increasing the ability to discriminate more steps in an 'event' and so enhancing opportunities to modify its course or outcome by intervening into the event as it happens.

(5) The principal exception among the leading East Asian economies was the Ricardian workfare colonial regime in Hong Kong. On this, see Sum (1998).

References

Altvater, E. (1993) *The Future of the* Market, London: Verso.

Aoki, K. (1998) 'Considering Multiple and Overlapping Sovereignties: Liberalism, Libertarianism, National Sovereignty, "Global" Intellectual Property, and the Internet', *Indiana Journal of Global Legal Studies*, 5 (2), 443-474.

Bell, D. (1974) *The Coming of Post-Industrial Society*, London: Heinemann.

Bell, D. (1979) 'The Social Framework of the Information Society', in Michael L. Dertouzos and Joel Moses, eds, *The Computer Age: A Twenty-Year View*, Cambridge: MIT Press, 163-211.

Blair, T. (1998) 'Foreword', in Department of Trade and Industry, *Building the Knowledge Driven Economy*, London: Department of Trade and Industry.

Brennan, T. (1995) 'Why the Time is Out of Joint. Marx's Political Economy without the Subject, Part I', *Strategies: Journal of Theory, Culture and Politics*, 9-10, 18-37.

Boyer, R. and Saillard, Y., eds (1995) *Théorie de la Régulation. L'État Des Savoirs*, Paris: La Découverte.

Castells, M. (1996) *The Rise of Network Society*, Oxford: Blackwell.

Collinge, C.J. (1996) 'Spatial Articulation of the State: Reworking Social Relations and Social Regulation Theory', Birmingham: Centre for Urban and Regional Studies.

Dawson, A.C. (1998) 'The Intellectual Commons: A Rationale for Regulation', *Prometheus*, 16 (3), 275-289.

Dunsire, A. (1996) 'Tipping the Balance: Autopoiesis and Governance', *Administration and Society*, 28 (3), 299-334.

Frow, J. (1996) 'Information as Gift and Commodity', *New Left Review*, 219, 89-108.

Harvey, D. (1982) *The Limits to Capital*, Oxford: Blackwell.

Jessop, B. (1983) 'Accumulation Strategies, State Forms, and Hegemonic Projects', *Kapitalistate*, 10, 89-111.

Jessop, B. (1990) *State Theory: Putting the Capitalist State in its Place*, Cambridge: Polity.

Jessop, B. (1998) 'The Rise of Governance and the Risks of Failure: the Case of Economic Development ', *International Social Science Journal*, 155, 29-45.

Jessop, B. (1999) 'Reflections on the (Il)logics of Globalisation', in K. Olds et al., eds., *Globalisation and the Asia Pacific: Contested Territories*, London: Routledge, 19-38.

Katsh, M.E. (1995) 'Rights, Camera, Action: Cyberspatial Settings and the First Amendment', *Yale Law Journal*, 194, 0000-00.

Kelly, K. (1998) *New Rules for the New Economy*, London: Fourth Estate.

Kundnani, A. (1998-9) 'Where do you want to go today? The Rise of Information Capital', *Race and Class*, 40 (2-3), 49-72.

Luke, T.W. (1994) 'Placing Power/Siting Space: The Politics of the Global and the Local in the New World Order', *Environment and Planning D: Society and Space*, 12 (4), 613-628.

Marx, K. (1859) 'Preface to the Contribution to the Critique of Political Economy'.

Marx, K. (1976) *Capital vol I*, Harmondsworth: Penguin.

Menzies, H. (1998) 'Challenging Capitalism in Cyberspace', in R.W. McChesney, E. Meiksins Wood, and J.F. Bellamy, eds*, Capitalism and the Information Age*, New York: Monthly Review Press, 87-98.

Messner, D. (1997) *The Network Society: Economic Development and International Competitiveness as Problems of Social Governance*, London: Cass.

Mulgan, G. (1997) *Connexity. How to Live in a Connected World*, London: Chatto and Windus.

Polanyi, K. (1957) *The Great Transformation: The Political and Economic Origins of Our Time*, Boston: Beacon Press.

Poulantzas, N. (1978) *State, Power, Socialism*, London: New Left Books.

Robins, K. and Webster, F. (1987) 'Information as Capital: a Critique of Daniel Bell', in J. Slack and F. Fejes, eds, *The Ideology of the Information Age*, Norwood, NJ: Ablex Publishing, 95-117.

Robins, K. and Gillespie, A. (1992) 'Communication, Organisation and Territory', in K. Robins, ed., *Understanding Information: Business, Technology, and Geography*, London: Belhaven, 148-162.

Sassen, S. (1996) *Losing Control? Sovereignty in an Age of Globalisation*, New York: Columbia University Press.

Schiller, D. (1988) 'How to Think about Information', in V. Mosco and J. Wasko, eds, *The Political Economy of Information*, Madison: University of Wisconsin Press, 27-44.

Sohn-Rethel, A. (1978) *Intellectual and Manual Labour*, London: Macmillan.

Stahel, A. W. (1999) 'Time Contradictions of Capitalism', *Culture, Nature, Society*, 10 (1), 101-132.

Storper, M.J. (1998) *Regional Worlds*, New York: Guilford.

Sum, N-L. 1998) 'Theorizing the Development of East Asian Newly Industrializing Countries: A Regulationist Perspective', in I. Cook et al., eds, *Dynamic Asia*, Aldershot: Ashgate, 44-78.

Veltz, P. (1996) *Mondialisation villes et territoires: l'économie archipel*, Paris: Presses Universitaires de France.

Willke, H. (1997) *Supervision des Staates*, Frankfurt: Suhrkamp.