



Networks and Neighbourhoods: Household, Community and Sovereignty in the Global Economy

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Summary. New forms of information and communication technology are linking the household to an increasingly complex public realm of formal and informal, spatial and non-spatial relationships. Increasingly, households in both 'advanced' and 'developing' regions are simultaneously sites of production and consumption, exhibiting characteristics of both pre- and post-industrial societies. A simplistic division between public and private realms is being superseded by a complex 'layering' through class and gender relations. It is not just the unskilled or élite sectors of the labour market who are obliged to trade their labour across regional and national boundaries (whether through physical migration or through communication networks). Middle-range players are finding themselves competing in a globalised arena of outsourcing, downsizing and home-based self-employment contracting. Melvin Webber's view of 'community without propinquity' is used to examine some of the social, political and economic implications of this situation for intelligent urban planning.

Introduction

Developed nations have promoted a modernist view of the nuclear family functioning in spatially separate public and private spheres of production and consumption. However, in these countries, the coalescence of communications and information technologies has given rise to 'office automation' and 'business process re-engineering'. This has both destabilised employment and problematised the concept of organisational boundary. Networked alternatives to conventional firms challenge established relationships between size and performance: small home-based businesses are able to confront much larger competitors beyond their immediate vicinity. At the same time, the same technologies are

allowing the state to relocate functions such as health care and confinement to the home. This disintermediation is an aspect of the economic globalisation which is opening communities in both 'underdeveloped' and 'overdeveloped' economies to direct competition from across national and cultural boundaries. This paper argues that a key consequence is that access to appropriate information and communication technologies has become as significant to households and communities as their physical location.

Space, Place and Access

The electronic mobility now available to the

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suburban and domestic labour force through telecommuting opens a two-way street, with electronic access to and from the home redefining a sphere of both production and consumption. The homely notion of the 'tele-cottage' contrasts with the grimmer reality of home-based white-collar work, such as telephone sales, but the prominence accorded to the productive dimension of the household facilitated by new information and communications technology is not of itself innovative. This coalescence of domestic and working space recalls the pre-industrial household which was a locus of production, although the separation of domestic and productive activity achieved in industrial economies is at best partial. Such perspectives are, however, absent from the technological utopianism evident in the current promotion of the 'electronic superhighway' and related technical innovations such as 'optical fibre to kerb' which form the infrastructure of the networked household. Instead, many descriptions of the 'information society' place a strong emphasis on the uniqueness of the present situation, and suggest seamless, integrated technical change, leading to a globalisation of social life and economic opportunity. Nor is such hype of emergent technologies itself new. Similar claims were made for the telegraph and for domestic electricity at the turn of the 19th century (Marvin, 1988). Without an awareness of these continuities, current developments might appear as novel intrusions of economic life upon the private, household sphere.

This paper takes the opportunity to inform debates of the place of the networked household in a globalised economy with definitions of community in both physical and electronic forms. There are appropriate views of the nature of place and community which pre-date these debates. In particular, Melvin Webber's notion of 'community without propinquity' (Webber, 1964) can be used to separate physical and non-locational dimensions of place and community. This will be used to evaluate the implications of electronic access to and from the household.

Non-place Realms and Non-place Communities

In 1964, Melvin Webber challenged the notions of community and centrality used in urban studies by demonstrating that 'community without propinquity' was emerging within certain social networks. He argued that individuals were enmeshed in an overlapping range of groups, and that increasingly these social networks were not limited by physical or geographical location. His view is

oriented to metropolitan *processes* (a verb view) from which it seeks to identify the matching spatial *form* (a noun view), and hence it seeks to pose a dynamic portrait of metropolitan *form in action* (a gerund view) (Webber, 1964, p. 80; emphasis in original).

This approach switches the emphasis of urbanity from physical built form to the quality of interaction in cultural life through the exchange of information. This definition implies that suburban and ex-urban dwellers enjoy a measure of urbanity not previously acknowledged.

In established practice, plans are formulated in spatial terms, with a view of social and spatial interaction derived from an examination of population distribution and density. However, such an approach is poorly equipped to account for the

dynamic, locational patterns of human communication that occur through space but transcend any given place (Webber, 1964, p. 90).

Planning must deal effectively with three components of metropolitan social structure:

- spatial flows of money, people and goods;
- location of the physical channels and adapted spaces that physically house activities;
- locations of activity places (Webber, 1964, p. 96).

Webber suggests (p. 97) that the first component can be derived from the effectiveness

with which communications systems may substitute messages for physical movement of persons or goods. Railroad location in North American development is an indication of the importance of the second component in determining urban form. The subsequent significance of streetcar and suburban rail lines, and our current concerns with freeways and light rail networks confirm its continuing importance. While developments in telecommunication capability and capacity had been equally instrumental in freeing access and range of locational choice, face-to-face communication is still seen as a special need. Traditional central locations are still sought for many forms of business. The permanence of building stock, as well as the character of interaction, is significant here, but the creation of this building stock is still regarded as an end in itself by architects and urban planners.

The third component is approached through the traditional land-use view of development. Webber points out that

patterns of functional interdependence will become increasingly complex at the same time that major developments in transportation and communications systems will be opening up unprecedented possibilities for whole new spatial patterns (p. 107).

He constructs a matrix to facilitate the exploration of the character of accompanying change in spatial structures.

The traditional notions of 'place' in planning are less than helpful in this context: the functional processes which must be acknowledged are not 'place-like' or 'regional-like' at all. Webber therefore formulates a 'non-place community' in terms of interest-communities. Rather than the propinquity aspect of 'place', accessibility is the necessary condition for this form of community (p. 109).

The recognition of the significance of access rather than location is what gives this work its contemporary value in the context of the shifting balance between public and private spheres facilitated by information and communications technologies. His formu-

lation of 'non-space realms' permits solidarities and collectivities beyond the physical limits of neighbourhood and household. Webber argues that such a 'place community' is in fact a special case of a larger genus. With developments in technology and education allowing wider participation in non-place groups, a hierarchical continuum from highly specialised communities spanning the entire world via less specialised intranational networks, to metropolitan and neighbourhood networks may be envisaged. Individuals can expect to play roles at a number of these levels at any one time. At each level, the appropriate spatial field is shared by a number of interest-communities, and Webber calls such levels of interdependence and interaction "urban realms" (p. 114). These are distinguished from the established notion of an urban region by their lack of specific spatial location.

This work influenced, and was influenced by, an orientation towards non-physical aspects of community and a participatory approach to design which emerged more strongly during the 1970s. The result is a relationship between urbanity, density and community radically at variance with that being advanced by Jacobs (1961) at the same period, and pre-figuring the celebration of southern Californian urbanism by Banham (1971) and subsequent commentators. Webber argues that, if an analysis of the distribution of each individual's time between realms were possible, it would reveal that rich and diverse human communication was present in conditions of low density and low concentration. He suggests that, in his terms, the urbanity of Los Angeles may not be that different from that of New York. Webber adds that certain approaches to the classification of urban centres were more amenable to the consideration of the range of interactions which he identifies, but that any reconsideration of definitions of centrality in the terms he outlines would call into question the traditional notions of centre and hinterland.

Continued developments in technology and economic scale in the 30 odd years since

Webber's paper appeared have led both to the internationalisation of economic activity and to the emergence of environmental consequences beyond the capacity of even industrially advanced individual states to manage. Re-examination of Webber's work in the light of current information technology offers insight into redefinitions of centre and periphery and the implications for existing urban infrastructures. The work offers a framework against which to assess the many claims made for IT as a panacea for marginalised or peripheral groups, but its predominantly North American structure must be opened out to accommodate the multicultural nature of a global economy. While initiatives such as the Malaysian Multimedia Super Corridor and, indeed, the 'wired island' concept of the Singapore government appear to reflect an appreciation of 'placelessness', other centres, such as Shanghai seem determined to provide the definitive version of the 'modern' city in much more traditional terms. It is therefore worth considering some of the most radical formulations of 'placelessness' in relation to Webber's formulations.

Networks, Utopias and Dystopias

The emergence of 'cyberspace', a non-place realm of computer-supported relationships, has taken Webber's original conceptions considerably further. Benedikt (1991) traces the term to William Gibson's dystopian novels (see, for example, Gibson, 1984). Benedikt demonstrates the direct influence of such speculative fiction on the developers of the technical infrastructure of 'cyberspace'. It is worth considering the set of dystopian scenarios found in the cyberpunk genre of science-fiction writing. These could easily be derived from Webber's perspective.

Subsequent to his 1964 paper, Webber identifies improved electronic communications, including public real-time access to computerised databases, as potentially critical developments (Webber, 1968). The technological optimism of this period, exemplified by Toffler (1970), was subse-

quently given a somewhat dystopian fictional form by science-fiction writer John Brunner (1975). However, the north-eastern urban corridor of the US, cited by Webber as an example of the new urbanism, became William Gibson's unequivocally dystopian *Sprawl* (Gibson, 1984).

The cyberpunk culture which has grown around themes first articulated by Gibson has both utopian and dystopian strands. Cyberpunk literature emphasises the intellectual and cultural possibilities of the emerging global 'non-space realm'. The non-space aspects of 'netland' have been exploited by the enthusiasts, but have also attracted more respectable attention from a number of researchers. Harasim (1993) assembles a broad overview of the 'official' dimensions of its use and development. In line with Webber's observations, specialised scientific communities provide the most impressive evidence of global social networks.

The 'cyberpunk' sub-culture represents the first example of an increasingly global non-space community inhabiting the 'virtual space' of communication networks. This has become global as the technological base diffused from the nations that developed it in the first place. The phenomenon of 'hacking' is indicative in part of resistance to emerging patterns of ownership and control. It can be seen to parallel earlier resistance to privatisation and regulation of public space within the physical environment, from mass trespass in Britain in the 1930s to 'green bans' against urban redevelopment in Australia in the 1960s and 1970s. A great deal of traffic across the Internet in the summer of 1991 originated in Russia and described the events of the abortive coup to the outside world. In China, following the suppression of the democracy movement in 1989, there was a massive increase in the incidence of computer viruses. As a result, the government's security services are the market leader in anti-virus software (*Asia I.T. Report*, 1998). In Britain, at the height of the anti-Poll Tax campaign, an elaborate hoax was staged to persuade local authorities that a computer virus had been released, in order to under-

mine confidence in the databases essential to the collection of this unpopular charge. The employment of faxes and laptop computers by the Mexican Zapatista rebels (*Newsweek*, 1995; Castells, 1997) is a deliberately provocative manifestation of an effective incremental and interstitial use of relatively low-tech aspects of the emerging global infrastructure first seen in the Russian Interfax news agency.

Transnational Networks and Transnational Corporations

Significantly, the predicted world of *Shock-wave Rider* (Brunner, 1975), in which it was possible to exist in the interstices of massive computerised domestic credit and surveillance systems, had been exceeded in little more than a decade by Clifford Stoll's (1989) factual account of his global pursuit of miscreants across several international computer networks. Brunner's fictional 21st century network had been strictly confined within the national boundaries of the US.

The emergence of transnational corporations (TNCs) and the internationalisation of both financial and labour markets have created a rapidly evolving world system currently characterised by rapid integration at a world scale. Camilleri and Falk (1992) argue that the power and authority of nation-states have become diffused, through participation in a variety of multilateral arrangements covering not just trade, production and finance but also increasingly interrelated environmental and security issues. At the same time, deregulation policies have reduced national and local governmental controls over TNCs. The result is direct competition between cities and local states and, for example, 50 separate industry policies across the US for inward investors to select from, with the World Trade Organisation censuring any policies addressing human rights, labour conditions or environmental sustainability (George, 1999).

Webber's definition of non-place realm challenged established notions of community primarily through the analysis of voluntary

forms of association. It offers an explanation of the new forms of internationalised business organisation which are now emerging as a result of downsizing, separation of core and peripheral activities through concentration on critical success factors, and the medium-to-long-term effect of technical changes which have been visible for some time. Computer-based information systems are now capable of facilitating or even substituting for organisational structures and standards. Diverse human and material resources can be managed without propinquity. The outcome of these processes has been a marked shift in employment patterns, with new opportunities and access reflecting new locational opportunities.

Telecommuting by members of an organisation has become another alternative to simply outsourcing activities to separate undertakings. More flexible forms of work contract are leading to the incorporation of households into formal business organisations in a way which recalls the pre-industrial household, as much as any post-industrial scenario. Home-based work offers an alternative to the enforced leisure of unemployment; however, the association between casualisation and home-based work raises concern for the quality of that employment. Gains such as improved employment access for women with dependent children or for workers with disabilities must be set against corresponding costs of isolation and fragmentation within this 'virtual' workforce, and the potential loss of the social dimension of working life. The disintermediation described in the introduction of this paper has opened the networked household to global flows and the nature of that household must be examined next.

Work, Rest and Consumption

As discussed above, although a process of the separation of the domestic and productive spheres began in Western economies with the onset of the factory system during the Industrial Revolution, it was never completed. The change in the domestic division

of labour continued into the 20th century, with many pre-industrial features surviving in the agrarian sector to within living memory (Kleinegger, 1987). The modern household is a recent, and possibly ephemeral, stage in a broad process of separation of paid employment and home life. Recent technological and economic developments are reversing this trend, rendering fluid the present division between public and private spheres.

The pre-industrial household was a locus of production, and the redefinition of the household as locus of consumption and reproduction, distinct from public sphere of 'work', emerged with the onset of the Industrial Revolution. However, variations in labour market conditions led to variations in outcomes. Ravetz (1987) points out differences between the pre-industrial situation prevailing in North America as described by Cowan (1983) and that in Britain. In the latter society, paid domestic employment was a significant feature of economic life, absorbing labour released by the Agricultural Revolution. Consequently 'housework' retained both domestic and public associations. In Australia and the US, where labour was in relatively short supply, technology appeared as a substitute for human labour in the household as well as in the factory at a much earlier stage. However, Australia's membership of the British Empire meant that many of these products were not recognised as responses to specifically Australian conditions, but were subsumed into the Imperial repertoire as 'British' inventions, masking this difference. There is a considerable body of work which covers the development of domestic technology up to World War II (see, for example, Cowan, 1983; Hayden, 1981).

Western understanding of the nature of the household is a product of the relatively recent past. After World War II, an intense effort was put into 'adjustment', the orderly displacement of women from paid industrial labour. This process characterised post-war reconstruction in the Anglophone cultures, where the same forces of propaganda and persuasion which had been used a few years earlier to mobilise women were deployed.

The 'baby boom' which resulted from reproduction deferred from the wartime period established the 1950s perception of the 'normal' household as a nuclear family comprising a married couple with dependent children. Despite this effort, small numbers of women remained in non-traditional employment and larger numbers of women remained in formal employment in those industries that had previously relied on female labour. Outside direct formal employment, outwork and home-based production remained and still remain a significant factor in several sectors of these post-war economies. However, the nuclear family became established as the focus of an emerging consumer ethos and the role of female household members was associated with domestic consumption rather than with public production.

Gender, Technology and Households

The post-war 'homes for heroes' agenda of Britain and other countries led to the conscious incorporation of a heavily gendered division of domestic labour into the design of domestic architecture. In Britain, for example, this took the highly articulated form of design manuals portraying, hour by hour, the 'typical' day in a household (Roberts, 1991). The home was presented as a support structure for paid male employment conducted elsewhere.

The gendering of activity within the household, enshrined in the UK housing design guides, has been reinforced by a gendering of the technical artefacts themselves. White goods may be seen as gendered around 'housework' and the female sphere, 'brown goods' may be seen as associated with male recreational pursuits within the home. Livingstone (1992) demonstrates that the same domestic technical artefact can hold different meaning, reflected in its pattern of use, according to the gender of the user. There were markedly different perceptions of the telephone from male and female respondents, with women valuing its role as a medium of social exchange more highly than did men. Men in turn attached greater recreational

value to television than did women. Livingstone attributes the high value attached to white goods by women to their perception of the home as a site of work rather than of leisure. However, women's work within the domestic sphere has too often been discounted in discussions of technology and the labour process.

Where domestic and productive activities co-existed in farming, the commercialisation of women's household production was 'masculinised' and removed from their control through the introduction of increased levels of technology. In this context, Kleinegger defines masculinisation as

consisting of increased mechanisation, specialisation, capital outlay and scientific expertise (Kleinegger, 1987, p. 163).

In the context of contemporary domestic consumption, these characteristics may be identified with the 'featurism' which leads to increasing and unnecessary sophistication and complexity in consumer products. This proliferation of features is attributed by manufacturers to the need to match facilities offered by competing products rather than to any demand from customers. However, rather than being associated entirely with masculine activities, the process can be seen equally in technology such as computerised sewing machines which are primarily directed at female users. Such technical sophistication is equally invisible in the workplace, where male-dominated manufacturing technologies are assumed to represent greater sophistication than those at the disposal of predominantly female workforces (Greig and Little, 1996).

Luxton (1980) compares the impacts of domestic technologies across three generations up to 1977, providing support for the arguments of Cowan (1983) in respect of earlier generations of technology. New technologies made little impact on the time spent on housework, producing instead increasing expectations and higher standards of performance. During the first flush of enthusiasm for end-user information technologies, Buchanan and Boddy (1983) report similar observations of workplace innovations such as word-

processing, where efficiency gains were used to increase the number of drafts of documents and the sophistication of their presentation rather than to release resources for other purposes.

Networked Household, Networked Nation?

The impact of baby-boom demographics was reflected in the increase in the rate of household formation and the reduction in average household size. This has followed the reduction of residential densities in post-war reconstruction and development. The physical changes of lowered residential densities, coupled with increased affluence, have led to a massive growth in private transport. The increasing physical separation of household and workplace has been a trend throughout the process of industrialisation; however, the gendered nature of access to transport was often overlooked in the assumptions of post-war urban planners and only examined explicitly in the 1980s (Focas, 1989). Car ownership rates did not reflect the relative availability of the single vehicle for male journeys to work versus female journeys for shopping and other domestic activities. Where female access is available, the substitution of private for public transport has created an extension of housework responsibilities, as witnessed by the popular 'Mum's taxi' bumper sticker.

Grieco *et al.* (1989) further link these activities to the broader issues of the management of access to employment and other resources within the family, and emphasise the economic significance of such 'domestic' activity. They point out that, historically, workplace proximity was essential to female participation in the paid workforce. They cite World Bank advice on the requirement of geographical adjacency of employment for disadvantaged groups (World Bank, 1986). Increased transport facilities serve to widen the labour market for female participants but, as with private transport, women's responsibilities often broaden to include the complex co-ordination of household activities in this domain.

The incorporation, or reincorporation of the household into the formal economic sphere must reflect a two-way connection between production and consumption. This might be achieved in the manner of early industrial practices, by connection through successive levels of devolution from the urban centres of production. The front-office/back-office dichotomy identified in North America by Nelson (1988) is visible in both developed and developing economies. The relocation of lower-paid part-time employment to cheaper suburban locations does at least offer the prospect of flexible paid employment for women unable to travel to central areas for a full working day, but there is a clear hierarchy associated with this spatial division of labour which increasingly involves transborder data flows.

As electronic communication becomes an increasingly effective substitute for physical movement, the relationship of the household to an increasingly integrated public realm of production and consumption is changing. In particular, current commuting patterns were established in times of lower congestion and travel costs. In the absence of adequate investment in public transport, diminishing benefit to users and a growing reaction against the negative impacts of independent individualised transport provision have enhanced the attractiveness of some forms of white-collar home-working which have been repackaged as 'telecommuting'. However, this adds the burden of office management to existing household 'chores', along with the provision of any necessary equipment and other infrastructure costs. In many ways, this recalls working conditions prior to the onset of the factory system, but the 'post-industrial' household differs from its pre-industrial precursor in its direct incorporation into an increasingly globalised information system. The implications of this must be considered.

Bringing It All Back Home: Conflict in the Domestic Arena

The convergence of communications and information technologies in the public sphere

has led to the globalisation and networking of economic activities described above. It is echoed in the household sphere by the advent of interactive television and broad-band telecommunications.

The increasing electronic mobility of the suburban and domestic labourforce available through telecommuting also implies a two-way street, with electronic access to the home forcing its reconstruction as a sphere of both production and consumption. Tele-shopping channels, initially broadcast via satellite or cable, are being progressively reworked into a fully interactive technology. The prospect of direct sales into the individual household raises the prospect of further reinforcement of the household as a locus of consumption and reproduction at the same time as its productive function is being re-emphasised.

Kleinegger (1987) recounts the conflicts of interest between consumption and production which arose within farming households. As producers, the family sought to maximise prices; as consumers, they sought to minimise them. Paradoxically, their success as producers sometimes resulted in a lowering of prices and households were then exhorted to consume more of their own produce in order to decrease supply so that prices could recover. Comparable conflicts might reappear as the domestic sphere is reconstructed around a dual function. A striking example of this is given by Aungles (1994) in an analysis of the impact of electronically monitored home detention on the relationship between the Australian state and the families of prisoners. The majority of offenders are male and the result of an apparently humane technically enabled innovation is to displace the task of monitoring confinement from the state to the household. It becomes an additional demanding household task for the female partner, who becomes both home-maker and domestic representative of state power and authority.

These new forms of incorporation of the household into the public realm reflect the diffusion of information technologies and their impact on the organisation of production at global and local levels.

Miles (1993) has argued that the same core

technologies are at the centre of increasingly sophisticated domestic technology. Micro-computer-based control for household technology utilising domestic-power-supply frequency modulation has been available off the shelf for over a decade. The domestic manifestation of the intelligent systems already deployed in many commercial buildings offers not only a number of functional gains in support of new household activity patterns, but also the potential for developing new ranges of domestic products. As a consequence of Japan's demography, the next paradigm for domestic technology may already be present in Japanese robotics research. Much of this is driven by the imperative of an ageing household base (Schodt, 1988). The post-war development pattern in Japan has created problems for that country's emergent social service system. Ageing cohorts are concentrated in newer settlements. These lack the traditional community infrastructures which formed the voluntary basis of existing social service delivery (Ben-Ari, 1991). The substitution of technical goods for human services serves a desire to establish a potentially global industry and market. It also substitutes capital for labour in one of the few remaining areas of labour-intensive work in advanced economies. In the future, state-of-the-art technology may monitor and minister to one family member while another co-present member utilises similarly advanced technology to project their intellectual labour to a remote location.

Infrastructure as Marketplace

The coalescence of communication and computing technologies has transformed government attitudes to communication infrastructure. The relatively narrow national missions of common carriers have been challenged by the rapidly expanding range of commercial possibilities, and an equally rapidly expanding demand for capitalisation to deliver new forms of service. The response has been to embark upon privatisation and deregulation. The informal replacement of national broadcasters by extraterritorial or-

ganisations using direct satellite broadcasting has taken place in parallel with telecommunications deregulation. This further demonstrates the eclipse of the ability of national governments to form and control key areas of policy for technologies which impact on urban infrastructure (Camilleri and Falk, 1992). The diffusion of state power through agreement to and participation in multilateral regulation in areas such as trade, security and environment has been matched by the emergence of transnational corporations operating in internationalised financial and labour markets.

The policies which result in specific technological strategies are increasingly determined at supranational levels. They impact not only at national and sub-national levels, but increasingly flow through to the individual household: the household becomes the end-point of transborder data flows.

The privatisation and/or corporatisation of national tele-communications carriers and broadcasters and the introduction of market competition also mean a loss of or reduction in the redistributive, social role implied by such public monopolies. In urbanised societies with large areas of low population density, emerging competition is focusing on the established densely populated and serviced centres. In Australia, one national Internet service provider with a remit to serve socially and physically marginal groups was forced to relocate to a capital city before succumbing to international competition. This move reflected the cost structures of a national carrier concentrating on lucrative urban markets at the expense of its former redistributive role. In Britain, cable television companies attracted a significant proportion of first-time local telephone subscribers for whom the economic barriers to entry to the former state system have been set too high. The situation is far more problematic in countries such as Russia, where unfettered privatisation was unleashed in a situation of much greater existing inequity between centre and periphery (Giglavyi, 1993).

Local governments must now compete for the early availability of new communication

resources, just as they once competed for access to railway routes. In many senses, a railroad analogy is more appropriate to this private provision of closely monitored services than Al Gore's federally funded public superhighways. Corresponding to telecommunications deregulation is the informal replacement of national broadcasters by CNN and direct satellite broadcasting.

The rapid development of information and communication technology since Webber's formulation of 'community without propinquity' has confirmed many of his assertions. Globalisation and deregulation of economies have produced a number of nomadic communities. Attali (1991) predicts the emergence of a nomadic international élite—in line with the examples provided by Webber (1964) but in addition to the élite employees of transnational corporations, a range of skilled, semi-skilled and unskilled workers, legal and illegal is evident, moving into and between the more developed economies. The establishment of a Los Angeles office by the British Labour Party prior to the 1997 general election is an indication of the number of British contributors to the centre of the global entertainment industry, many of whom do not enjoy fully legal employment status.

Post-war migration patterns and improved physical and electronic communications have produced transcontinental extended families at all levels of societies and information networks are emerging as the social milieu of non-place communities. Webber hardly considered the emerging problem of 'information asymmetries' that Lamberton (1995) raises. The concept of 'information justice' has value, and issues of access will be taken up in the concluding section. However, the ubiquity of the base technology means that access to non-place community does not depend on large investment, or on esoteric technical skills—a point sometimes missed in otherwise justifiable criticism of technological optimism. The growing maturity of the contributing technologies means that relatively stable standards are emerging, allowing both commodification (and consequent cost reduction) of components and the

diffusion of appropriate technical literacy and skills among the general population.

Households, Networks and Citizenship

The preceding sections indicate why the problems of the 'globalised' household are as likely to revolve around the technologies of production as around those of consumption. In the West, the household had already become the site of the management of one key aspect of economic change through the privatisation of the experience of post-war mass unemployment. This is in marked contrast to the public visibility of the pre-war unemployed population. The impact of unemployment and underemployment, and the casualisation of work, means that part-time and home-based work are becoming more significant components of many household incomes. Emerging technology opens up new prospects and possibilities, but the question remains to what extent the reconstruction of gender relationships and assumptions is possible as households are redefined around shifting relationships between work and leisure.

Aungles (1994) describes one extreme form of penetration of the household by the technology of commerce in the form of electronically monitored home detention. At the same time, the mediating technology recreates the electronic panopticon observed by Sewell and Wilkinson (1992) in the formal workplace within domestic space. In an electronics factory transferred from British to Japanese ownership, both unobtrusive electronic monitoring of work and error rates and visible physical labelling of underperforming workstations were used to engender an atmosphere of close self-monitoring by the workforce. This raises a particular irony: as humanistic paradigms, such as human-centred systems, gain ground in the formal workplace, the prospect emerges of unrestrained electronic Taylorism transferring to the household.

Some control over the underlying technologies can be achieved through points at which entry cost is low enough for individuals and small groups, in some cases because

they piggy-back from existing infrastructures. The fax and mobile phone are sufficiently close to existing technical experience for users such as self-employed tradespeople successfully to appropriate them. While these relatively simple technologies can alter the size versus performance equation for businesses, even the smallest companies may employ state-of-the-art technologies. Such diffusion may be sponsored by the larger players, as with the deeply layered sub-contracting systems in Japanese manufacturing. These link top-level suppliers, themselves TNCs, down to small family companies which may be assisted with the acquisition of key technology (Miyashita and Russell, 1994). However, big technologies still underpin the complex wide-area networks which support global business exchanges and global broadcasting—for example, geo-synchronous satellites, fibre-optic networks and massively distributed computing facilities, typified by the Internet. Here, an institutional perspective is needed to understand the driving concerns which are shaping the emerging 'new world order'. One area of opportunity for access from the periphery lies in the imminent deployment of extensive low-earth-orbit satellite communication systems. These offer the chance to overcome infrastructural inequities, since, by the logic of geophysics, marginalised communities will be provided with the same intensity of coverage by the proposed hundreds of low- and medium-orbit satellites as will the target populations. However, the removal of the barrier of physical and technical infrastructure leaves the problem of social and institutional infrastructures to the restricted ability of national governments to form and control key areas of policy for such technologies.

If technology is capable of supporting the integration of production and consumption within the post-industrial household, will it simply allow the logic of late capitalism to overwhelm the private sphere? Is an alternative paradigm of bottom-up, reflective development capable of providing an effective challenge? Poster (1990) argues that the

'mode of information' is still an emergent phenomenon and claims that Marx theorised the 'mode of production' at a similarly early stage of its manifestation. The implications of the technologies entering the household for the processes of urban development and the nature of community are likely to be far-reaching, even if they presently only impact on a minority. Sproull and Kiesler (1991) have demonstrated that the most significant effects of computer-mediated communication in formal organisations are the social effects which are only observable over considerable time.

Castells (1989) argues that, despite the impressive capabilities of information and communication technologies, physical location still matters and that a range of contingencies is required to establish the 'creative milieu' which will allow a region to participate fully in the informational economy. He sees a continuing and central role for physical proximity in terms of necessarily specialised labour markets and other forms of communication. He also posits a form of network organisation which is composed of components of larger corporations, collaborating in specific spatial and temporal circumstances, while the main companies are still pursuing global strategies of direct competition (Castells, 1996). The framework of the network organisation appears to offer an opportunity for smaller players to access resources from and to compete within global networks. Inoue (1998) describes a 'virtual village' in Tokyo in which small enterprises are able to form and reform alliances in order to provide high-technology services to larger companies. However, the additional accessibility and flexibility of advantage offered to smaller players are accompanied by the capability of larger firms to restructure in such a way that they can enter niche markets yet still draw on their wider resource base. Potential advantages are offset by the ability of some larger firms to decouple key business units, the better to target customers and markets traditionally served by much smaller firms.

At the level of the household, we must ask

what leverage can be achieved in influencing outcomes. The 1970s 'intermediate technology' movement developed in the decade following Webber's paper. Such a perspective, in conjunction with concepts of participative design and community action, can be found in Lepietz's (1992) reinterpretation in the context of the economic expectations of the 1990s. Webber's formulation of community offers a means of reconciling spatial and non-spatial routes to inclusion.

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