John Urry

Mobile sociology[1]

ABSTRACT

This article seeks to develop a manifesto for a sociology concerned with the diverse mobilities of peoples, objects, images, information, and wastes; and of the complex interdependencies between, and social consequences of, such diverse mobilities. A number of key concepts relevant for such a sociology are elaborated: 'gamekeeping', networks, fluids, scapes, flows, complexity and iteration. The article concludes by suggesting that a 'global civil society' might constitute the social base of a sociology of mobilities as we move into the twenty-first century.

KEYWORDS: Mobility; network; society; scape; flow

> At the present moment of history the network of social relations spreads over the whole world, without any absolute solution of continuity. This gives rise to the difficulty . . . of defining what is meant by the term 'society' . . . If we say that our subject is the study and comparison of human societies we ought to be able to say what are the unit entities with which we are concerned.
>
> (A. R. Radcliffe-Brown 1952: 193)

> A *self* does not amount to much, but no self is an island; each exists in a fabric of relations that is now more complex and mobile than ever before.
>
> (J-F Lyotard 1984: 15)

INTRODUCTION

In this article I outline some categories relevant for developing sociology as a 'discipline' as we enter the next century. I argue for a sociology concerned with the diverse mobilities of peoples, objects, images, information, and wastes; and of the complex interdependencies between, and social consequences of, these diverse mobilities.

Elsewhere I have shown how mobilities are transforming the historic subject-matter of sociology which within the 'west' has focused upon individual societies and their generic characteristics (Urry 2000). In *Sociology Beyond Societies* I develop a 'post-societal' agenda for sociology elaborating how various global 'networks and flows' undermine endogenous social structures that possess the power to reproduce themselves. New rules of sociological method are necessitated by the apparently declining powers of national societies since it is they that have historically provided the intellectual and organizational context for sociology. Some of the diverse mobilities that are materially transforming the 'social as society' into the 'social as mobility' include imaginative travel, movements of images and information, virtual travel, object travel and corporeal travel (see Urry 2000: ch. 3). The consequence of such diverse mobilities is to produce what Beck terms the growth of 'inner mobility' for which coming and going, being both here and there at the same time, has become much more globally normal (1999: 75–6).

In this article I show how mobilities criss-crossing societal borders in new temporal-spatial patterns constitutes a novel agenda for sociology, of mobility. Much twentieth-century sociology has been based upon the study of occupational, income, educational and social mobility. This literature regarded society as a uniform surface and failed to register the geographical intersections of region, city and place, with the social categories of class, gender and ethnicity. Further, there are crucial flows of people within, but especially beyond, the territory of each society, and these flows relate to many different desires, for work, housing, leisure, religion, family relationships, criminal gain, asylum seeking and so on. Moreover, not only people are mobile, but so too are many 'objects', 'images', 'informations' and 'wastes'. Mobility is thus to be understood in a horizontal rather than a vertical sense, and it applies to a variety of actants and not just to humans.

Bauman's vertical metaphor of 'gardening' to characterize modern societies is pertinent here (1987). He suggests that a gardening state has replaced earlier 'gamekeeper' states that were not involved in giving society an overall shape and were uninterested in detail. By contrast the gardening state presumes exceptional concern with pattern, regularity and ordering, with what is growing and with what should be weeded out. Legislators have been central to careful tendering by the gardening state, with using their reason to determine what is, and is not, productive of order. The social sciences have been part of that application of reason to society through facilitating the husbandry of societal resources, identifying what is and what is not to be cultivated and determining what are the exact conditions of growth of particular plants.

However, the new global order appears to involve a return to the gamekeeper state and away from that of the gardener. The gamekeeper was concerned with regulating mobilities, with ensuring that there was sufficient stock for hunting in a particular site but not with the detailed cultivation of each animal in each particular place. Animals roamed around and beyond the estate, like the roaming hybrids that currently wander in and

especially across national borders. States are increasingly unable or unwilling to garden their society, only to regulate the conditions of their stock so that on the day of the hunt there is appropriate stock available for the hunter. As Beck has recently argued: 'capital, culture, technology and politics merrily come together to roam *beyond* the regulatory power of the national state' (1999: 107).

The former East European societies were 'gardening' societies. Following the Second World War, the individual societies of central and eastern Europe constructed exceptionally strong frontiers both from the 'West' and especially from each other. Cultural communication into and out of such societies was exceptionally difficult. The Cold War chilled culture as well as politics. So although such societies were internationally linked via the hegemony of the USSR, there was a parallel emphasis upon cultural involution and the reinforcement of strongly reinforced national networks. It constituted an interesting social laboratory based upon the concept of 'society'.

But what happened was that regional frontiers of each society were transgressed, they were got around through various fluid-like movements. The attempt to freeze the peoples and cultures of 'Eastern Europe' could not be sustained. The Berlin Wall was of course the most dramatic example of this attempted gardening the people of a society. But through the 1960s, forms of communication and later of leisure travel noticeably increased. Both peoples and objects especially began to flow across the carefully constructed borders, often involving what has been termed the 'invisible hand of the smuggler' (Braun et al. 1996: 1). Objects of the 'West' became used and talked about in multiple informal ways, helping the citizens of such societies to form new bases of personal identity, new ways of collectively remembering and new images of self and society. Many citizens went to inordinate lengths to learn about and to acquire objects that were immutable in their western-ness. Thus these societies became surrounded by hordes of 'animals' (consumer goods, images, western ideas and so on) which increasingly crossed into and over the land that had been so carefully husbanded. Their populations chased after the animals and trampled underfoot the carefully tended plants (another kind of 'animal farm'! See Urry 2000: ch. 2).

In the next section I consider 'sociology' and 'society' in more detail, before turning briefly to global networks and fluids. I consider how notions of complexity can analyse intensely mobile hybrids that roam across the globe and help to create a self-reproducing global order. I conclude with some observations about the implications of this mobile order for 'sociology', the science of 'society'.

'THERE IS NO SUCH THING AS SOCIETY'

When former British Prime Minister Margaret Thatcher famously declared that 'there is no such thing as society', sociologists led the charge to critique her claim. They declared that there are obviously societies and that

Thatcher's claim indicated the wrongness of her policies based upon trying to reduce the societal to the interests of 'individual men and women and their families'. However, the riposte to Thatcher from the sociological community was not fully justified since it is actually unclear just what is meant by 'society'. Although there is something 'more' in social life than 'individual men and women and their families', exactly what this surplus amounts to is not so obvious (see Albertsen and Diken 1999: ch. 2, for extensive discussion).

Sociological discourse has indeed been premised upon 'society' as its object of study (Billig 1995: 52–3; Hewitt 1997: Urry 2000: ch. 1). This was especially so from the 1920s onwards as sociology was institutionalized, especially within the American academy. MacIver and Page's standard *Society: An Introductory Analysis* argues that sociology is ' "about" social relationships, the network of relationships we call society' (1950: v). The radical Gouldner in *The Coming Crisis of Western Sociology* talks of 'Academic Sociology's emphasis on the potency of society and the subordination of men [sic] to it' (1972: 52). Wallerstein summarizes the overall situation: 'no concept is more pervasive in modern social science than society' (1987: 315; note that the major exception to this is Luhmann's analysis of autopeitic systems, see 1990: ch. 1; 1995). This construction of the discourse of sociology around the concept of society in part stemmed from the apparent autonomy of American society throughout the twentieth century and is thus to universalize the American societal experience.

However, what most of these formulations neglect to specify is how 'society' connects to the system of nations and nation-states. Billig argues that: 'the "society" which lies at the heart of sociology's self-definition is created in the image of the nation-state' (1995: 53). Interestingly American-based theories of society have frequently ignored the 'nationalist' basis of American and indeed of all western societies. They have typically viewed nationalism as surplus to society that only needs deployment in situations of 'hot' extremism, situations which supposedly do not describe societies of the 'west' (Billig 1995: 52–4).

In theorizing society, sovereignty, national citizenship and social governmentality lie at its core. Each 'society' is a sovereign social entity with a nation-state that organizes the rights and duties of each societal member or citizen. Most major sets of social relationships flow within the territorial boundaries of the society. The state possesses a monopoly of jurisdiction or governmentality over members living within the territory or region of the society. Economy, politics, culture, classes, gender and so on, are societally structured. In combination they constitute a clustering or a 'social structure'. Such a structure organizes and regulates the life-chances of each member of the society in question.

This societal structure is not only material but also cultural, so that its members believe they share some common identity that is bound up in part with the territory that the society occupies or lays claim to. And *contra* the argument of much sociology, central to most such societies is a vernacular

nationalism that articulates the identities of each society through its mundane differences from the other. These include the waving of celebratory flags, singing national anthems, flying flags on public buildings, identifying with one's own sports-heroes, being addressed in the media as a member of a given society, celebrating independence day and so on (Billig 1995).

However, societies are never entirely self-reproducing entities. Sociology has a tendency to treat what is 'outside' the society as an unexamined environment. But no society, even in the heyday of the nation-state earlier this century, has been separate from the very system of such states and from the notion of national identity that mobilizes sovereign societies. As Calhoun points out: 'No nation-state ever existed entirely unto itself' (1997: 118; Wallerstein 1991: 77). It is through this interdependence that societies are constituted as partially self-regulating entities, significantly defined by their banal or vernacular differences from each other.

Over the past two centuries this conception of society has been central to North American and West-European notions of what it is to possess the rights and duties of social citizenship. To be human meant that one is a member or citizen of a particular society. Historically and conceptually there has been a strong connection between the idea of humanness and of membership of a society. Society here means that ordered through a nation-state, with clear territorial and citizenship boundaries and a system of governance over its particular citizens. Conceptually and historically there has been an indivisible duality, of citizens and societies. Rose characterizes this model as government from 'the social point of view' (1996: 328; see Marshall and Bottomore 1992). There is a 'nationalisation of social responsibility' with societal governmentality effected through new forms of expertise, particularly that of sociology as the science of such societies and of the appropriate forms of social citizenship (Knorr Cetina 1997).

In this account 'society' and its characteristic social divisions of especially social class are strongly interconnected with the 'nation-state'. Mann shows that societies, nations and states have been historically intertwined (1993: 737). They developed together and should not be conceptualized as billiard balls existing only in external relations with one another. Mann evocatively talks of the sheer patterned messiness of the social world and of the mutually reinforcing intersections of class and nation, as societies developed their 'collective powers' especially over nature.

Sociology as a specific academic practice was the product of this particular historical moment, of an emergent industrial capitalism in Western Europe and North America. It took for granted the success of modern societies in their spectacular overcoming of nature. Sociology specialized on describing and explaining the character of these modern societies based upon industries that enabled and utilized dramatic new forms of energy and resulting patterns of social life. As such sociology adopted one or other versions of a tradition–modernity divide that implied that a revolutionary change had occurred in North Atlantic rim societies between 1700–1900.

These modern societies were presumed to be qualitatively different from the past. Sociology was thus based upon the acceptance and enhancement of the presumed division of academic labour stemming from the Durkheimian identification of the region of the social to be investigated and explained autonomously (Durkheim 1952[1897]). Until recently this academic division between a world of natural facts and one of social facts made good sense as a strategy of professionalization for sociology. This sphere was parallel to, but did not challenge or confront, those physical sciences that dealt with an apparently distinct and analysable nature (see Macnaghten and Urry 1998).

Each society was sovereign, based upon a social governmentality. The concerns of each society were to be dealt with through national policies, especially from the 1930s onwards through a Keynesian welfare state that could identify and respond to the risks of organized capitalism (Lash and Urry 1987; 1994). These risks were seen as principally located *within* the geographical borders and temporal frames of each society. And solutions were devised and implemented within such societal frontiers. National societies were based upon a concept of the citizen who owed duties to, and received rights from, their society through the core institutions of the nation-state. This 'societal' model applied to the dozen or so societies of the North Atlantic rim. Most of the rest of the world was subject to domination by these societies of the North Atlantic rim.

In the next section I consider further this system which contemporary changes have put into question and which suggest that Thatcher was right when she said there is no such thing as society. But that there may not be such a thing as society is not because of the power of individual human subjects, but because of their weakness in the face of 'inhuman' fluid and mobile processes of globalization. Wallerstein points out that: 'What is fundamentally wrong with the concept of society is that it reifies and therefore crystallizes social phenomena whose real significance lies not in their solidity but precisely in their fluidity and malleability' (1991: 71).

GLOBAL NETWORKS AND FLUIDS

A useful starting point here is Mann's description of the contemporary world

> Today, we live in a global society. It is not a unitary society, nor is it an ideological community or a state, but it is a single power network. Shock waves reverberate around it, casting down empires, transporting massive quantities of people, materials and messages, and finally, threatening the ecosystem and atmosphere of the planet. (1993: 11)

He makes a number of points here: there is no unified global society but there are exceptional levels of global interdependence; unpredictable shock waves spill out 'chaotically' from one part to the system as a whole;

there are not just 'societies' but massively powerful 'empires' roaming the globe; and there is mass mobility of peoples, objects and dangerous human wastes.

What then are appropriate metaphors to make sense of these transformations? Mol and Law argue that there are three distinct metaphors of space or social topologies, regions, networks and fluids (1994; Urry 2000: ch. 2). First, there are *regions* in which objects are clustered together and boundaries are drawn around each particular regional cluster. Second, there are *networks* in which relative distance is a function of the relations between the components comprising the network – the invariant outcome is delivered across the entire network that often crosses regional boundaries. And third, there is the metaphor of the *fluid* that flows: 'neither boundaries nor relations mark the difference between one place and another. Instead, sometimes boundaries come and go, allow leakage or disappear altogether, while relations transform themselves without fracture. Sometimes, then, social space behaves like a fluid' (Mol and Law 1994: 643).

The sociological concept of society is based upon the metaphor of a region, namely that 'objects are clustered together and boundaries are drawn around each particular cluster' (Mol and Law 1994: 643). And one way to study globalization is through seeing it involved in inter-regional competition with 'society'. Globalization could be viewed as the replacing of one region, the bounded nation-state-society of the 'west', with another, that of global economy and culture. And as both economy and culture are increasingly globalized, so the old dominant region of society appears to become relatively less powerful. In the fight between these two regions it looks as though the global region will win out and defeat the societal region (see Robertson 1992).

But this is only one way of understanding globalization. Globalization can also be viewed not as one larger region replacing the smaller region of each society, but as involving alternative metaphors of *network* and *fluid* (Mol and Law 1994; Waters 1995; Albrow 1996; Castells 1996, 1997; Eade 1997; Held et al. 1999; Beck 1999). The globalization literature has described the wide variety of new *machines and technologies* that dramatically compress or shrink time–space. These technologies carry people, information, money, images and risks, and flow within and across national societies in increasingly brief moments of time. Such technologies do not derive directly and uniquely from human intentions and actions. They are intricately interconnected with machines, texts, objects and other technologies. The appropriate metaphor to capture these intersections of peoples and objects is not that of a vertical structure that typically involves a centre, a concentration of power, vertical hierarchy and a formal or informal constitution. Castells argues, by contrast, that we should employ the metaphor of network, 'the unit is the network' (1996: 198).

> Networks constitute the new social morphology of our societies, and the
> diffusion of networking logic substantially modifies the operation and

outcomes in processes of production, experience, power and culture . . .
the network society, characterized by the pre-eminence of social mor-
phology over social action. (Castells 1996: 469)

Castells defines a network as a set of interconnected nodes, the distance
between social positions are shorter where such positions constitute nodes
within a network as opposed to those which lie outside the particular
network. Networks are to be viewed as dynamic open structures, so long as
they are able to effect communication with new nodes and to innovate
(Castells 1996: 470–1). Much economic geography has detailed the appar-
ently increased significance of such networks within the contemporary
economy, at the intra-firm level, at the inter-firm and inter-organizational
level and at the firm-community levels (see Amin and Thrift 1992; Cooke
and Morgan 1993; Messner 1997).

Network here does not mean purely *social* networks since the 'conver-
gence of social evolution and information technologies has created a new
material basis for the performance of activities throughout the social struc-
ture. This material basis, built in networks, earmarks dominant social pro-
cesses, thus shaping social structure itself' (Castells 1996: 471). Networks
thus produce complex and enduring connections across space and through
time between peoples and things (see Murdoch 1995: 745). They spread
across time and space which is hugely important, since according to Law,
if 'left to their own devices *human actions and words do not spread very far at
all*' (1994: 24). Different networks possess different reaches or abilities to
bring home distant events, places or people, to overcome the friction of
regional space within appropriate periods of time (Emirbayer and Sheller
1999: 748). This requires mobilizing, stabilizing and combining peoples,
actions or events elsewhere into a stable network, an immutable mobile
(Latour 1987). Accountancy, for example, is particularly effective at reduc-
ing the variety of activities in distant regions to a common set of figures, the
flows of information, that can be instantaneously translated back to other
parts of the network and especially to its control and command headquar-
ters (Murdoch 1995: 749).

By contrast with the immutable mobiles of accountancy, Mol and Law
show how the networks and flows involved in the measurement of haemo-
globin levels are less secure (1994: 647–50). They ask how it is possible to
produce regional maps of such comparative haemoglobin levels – anal-
ogous to accountants producing regional maps of the relative profitability
of different plants of a global company. They argue that this requires a
network constituted across many different regions, comprising appropriate
technologies, measuring machines and people with suitable medical and
technical skills. However, such a network is problematic to establish because
in parts of the world there are inadequate numbers of machines to under-
take appropriate measurement and, even where they do exist, they may not
be appropriately maintained (see Messner 1997, more generally on network
failure). Where a successful network does get established across a number

of regions, this transforms the configurations of space and time that are no longer 'regional'. In a network established for measuring haemoglobin levels, two hospitals can be proximate although they are geographically hundreds of kilometres apart from each other. They constitute nodes within that particular set of networked flows.

There are two further aspects of networks to distinguish here, namely, scapes and flows. *Scapes* are the networks of machines, technologies, organizations, texts and actors that constitute various interconnected nodes along which *flows* can be relayed. Such scapes reconfigure the dimensions of time and space. Once particular scapes have been established, then individuals and especially corporations within each society will normally try to become connected to them through being constituted as nodes within that particular network. They will seek to develop their own hub airport or at least have regular flights to such airports; they will wish their local schools to be plugged into the internet; they will try to attract satellite broadcasting; they may even seek to reprocess nuclear waste products, and so on. Between certain nodes along some scapes extraordinary amounts of information may flow, of financial, economic, scientific and news data and images, into which some groups are extremely well plugged-in while others are effectively excluded. What becomes significant is what Brunn and Leinbach term 'relative' as opposed to 'absolute' location (1991: xvii). This creates novel inequalities of flow as opposed to the inequalities of stasis. Graham and Marvin maintain that what is involved here is a rewarping of time and space by advanced telecommunication and transportation structures, as scapes pass by some areas and connect other areas along information and transport rich 'tunnels' (1996: 60). Social and spatial distances are no longer homologous (Beck 1999: 104).

So far I have talked rather generally of global networks criss-crossing the regional borders of society, thus bringing out some aspects of contemporary 'de-territorialization' (Lefebvre 1991: 346–8). These notions will now be made more precise by distinguishing between two different kinds of such networks, *global networks* and what I will call *global fluids*.

Numerous 'global' enterprises, such as American Express, McDonalds, Coca Cola, Disney, Sony, BA and so on, are organized on the basis of a *global network* (see Ritzer 1992; 1995; 1997). Such a network of technologies, skills, texts and brands ensures that more or less the same product is delivered in more or less the same way in every country in which the enterprise operates. Such products are produced in predictable, calculable, routinized and standardized environments. These companies have produced enormously effective networks based upon immutable mobiles with few 'failings'. Such networks depend upon allocating a very large proportion of resources to branding, advertising, quality control, staff training and the internalization of the corporate image, all of which cross societal boundaries in standardized patterns so maintaining constancy. Distance is measured in terms of the time taken to get to the next McDonalds, the next Disney park, the next BA hub airport and so on, that is, from one node in this global network to

the next. Such global networks can also be found within oppositional organizations such as Greenpeace. Like other global players it devotes much attention to developing and sustaining its brand identity throughout the world. Greenpeace's brand identity has 'such an iconic status that it is a world-wide symbol of ecological virtue quite above and beyond the actual practical successes of the organization' within particular societies (Szerszynski 1997: 46).

Second, there are *global fluids*, the heterogeneous, uneven and unpredictable mobilities of people, information, objects, money, images and risks, that move chaotically across regions in strikingly faster and unpredictable shapes. Such global fluids (as opposed to networks) demonstrate (see Deleuze and Guattari 1986, 1988; Lefebvre 1991; Mol and Law 1994; Augé 1995; Kaplan 1996; Shields 1997) no clear point of departure or arrival, just de-territorialized movement or mobility (rhizomatic rather than arboreal). They are relational in that they productively effect relations between the spatially varying features of a scape that would otherwise remain functionless. Fluids move in particular directions at certain speeds but with no necessary end-state or purpose. They possess different properties of viscosity and, as with blood, can be thicker or thinner and hence move in different shapes at different speeds. They move according to certain temporalities, over each minute, day, week, year and so on. Most importantly, fluids do not always keep within the scape – they may move outside or escape like white blood corpuscles through the 'wall' of the blood vessel into tinier and tinier capillaries; hence their power is diffused through these various fluids into very many often minute capillary-like relations of domination/ subordination. Different fluids spatially intersect in the 'empty meeting grounds' of the non-places of modernity, such as motels, airports, service stations, the internet, international hotels, cable television, expense account restaurants and so on.

I have thus set out some characteristics of global networks and fluids. Because these are inhuman hybrids, conceptions of agency that specifically focus upon the capacities of humans to attribute meaning or sense or to follow a social rule are inappropriate. This is not to suggest that humans do not do such things, not to suggest that human do not exert agency. But they only do so in circumstances which are not of their own making; and it is those circumstances – the enduring and increasingly intimate relations of subjects *and* objects – that are of paramount significance. This means that the human and physical worlds are elaborately intertwined and cannot be analysed separately from each other, as society and as nature, or humans and objects. Also agency is not a question of humans acting independently of objects in terms of their unique capacities to attribute meaning or to follow rules. If then there is not autonomous realm of human agency, so there should not be thought of as a distinct level of *social* reality that is the unique outcome of humans acting in and through their specific powers. Various writers have tried to develop the thesis of the dialectic of individuals making society and society making individuals (Berger and Luckmann

1967). But such a dialectic would only be only plausible if we mean by society something trivial, that is pure social interactions abstracted from the networks of intricate relationships with the inhuman. Since almost all social entities do involve networks of connections between humans and these other components, so there are no uniquely *human* societies as such. Societies are necessarily hybrids.

More generally, Laclau and Mouffe show the impossibility of society as a valid object of discourse (1985). What we can ask stitches a 'society' together when inhuman networks criss-cross it in strikingly new ways at ever-faster speeds? The classic philosophical–sociological debates as to the respective virtues of methodological individualism versus holism, or in their later manifestations, structurationism versus the dualism of structure, are unhelpful here. They do not deal with the complex consequences of diverse mobilities; the intersecting sensuous relations of humans with diverse objects; the timed and spaced quality of relations stretching across societal borders; and the complex and unpredictable intersections of many 'regions, networks and flows'. To describe these as either 'structure' or as 'agency' does injustice to the complexity of such relations. Luhmann summarizes: 'There can be no "intersubjectivity" on the basis of the subject' (1995: xli). The ordering of social life is contingent, unpredictable, irreducible to human subjects and is only made possible by extra-somatic assets (as opposed to the pure sociality of baboon society: Law 1994). Knorr Cetina outlines the necessity of analysing 'sociality with objects' (1997).

In the next section I consider whether notions of 'complexity' can illuminate such inhuman, mobile intersecting hybrids – is complexity the basis of 'post-social' knowledge?

COMPLEX MOBILITIES

The 'complex' nature of both physical and social systems means that they are characterized by a very large number of elements that interact physically and informationally over time and result in positive and negative feedback loops (see Byrne 1998; Cilliers 1998; Wallerstein 1998; Thrift 1999, on recent social science applications of chaos/complexity theory). Such systems interact dissipatively with their environment and have a history that evolves irreversibly through time. Emergent, unintended and non-linear consequences are generated within such systems, consequences that are patterned but unpredictable, distant in time and/or space from where they originate and involving potential system bifurcation.

In the physical sciences complexity theory uses mathematical formulae and computer algorithms to characterize the enormously large number of iterative events. In certain experiments, the analysis of increases in the reproduction patterns of gypsy moths showed, through resulting changes in population size, dramatic non-linear changes in the quality of the system. Changes in the parameter resulted in transformations in the system; in

certain contexts, order generates chaos. The more complex the system the more likely it is that small fluctuations will be critical (see Prigogine and Stengers 1984).

This iterative character of systems has been insufficiently interrogated within sociology (although see Mingers 1995; Eve, Horsfall, Lee 1997). Partly this is because of the presumed a-temporal character of the social world, rather than the seeing of all social hybrids as necessarily historical (as are physical hybrids; see Adam 1990). But it has also stemmed from the baleful consequences of the divide between structure and agency. In socio-logical thought the millions of individual iterative actions are largely sub-sumed under the notion of 'structure' (such as the class structure, or the structure of gender relations or social structure) which is seen as 'ordered' and reproduced through continuous iteration. The concept of structure solves the problem of iteration for sociology. However, social systems do change and sociology then draws upon the concept of agency to argue that some sets of agents can on occasions manage to escape such a structure and effect change in it. If social systems change then this is seen to result from agency.

Certain authors have however seen the limitations of this formulation, including those that emphasize the performativity of gender through the stylized repetition of actions over time (Butler 1990). Giddens develops the 'duality of structure' to account for the recursive character of social life (1984). Now recursive is like iteration; and Giddens undoubtedly advances the ways in which we understand how 'structures' are both drawn on, and are the outcome of, countless iterative actions by knowledgeable agents. However, Giddens insufficiently examines the 'complex' character of these iterative processes, of how order can generate chaos, unpredictability and non-linearity. So although there is recurrence, such recurrent actions may produce non-equilibium, non-linearity and, if the parameters change dra-matically, a sudden branching of the social world. And this is the crucial point; such complex change may have nothing necessarily to do with agents actually seeking to change that world. The agents may simply keep carry-ing out the same recurrent actions or what they conceive to be the same actions. But it is through iteration over time that they may generate unex-pected, unpredictable and chaotic outcomes, often the very opposite of what the human agents involved may seek to realize. Moreover, of course, agents are not just humans but will be a variety of human and non-human actants that constitute the typical mobile, roaming hybrids (where states at best 'regulate the game' rather than 'tend the garden'; see Urry 2000: ch. 8).

One social science example of complexity thinking is Marx's analysis of the unfolding 'contradictions' of capitalism (see Elster 1978). Marx argues that individual capitalists seek to maximize their profits and hence pay their particular workers as little as possible or make them work increasingly long hours. This 'exploitation' of the workforce will continue unless states, or collective actions by trade unions, prevent it, or workers die prematurely.

The consequences of such endlessly repeated actions reproduces the capitalist system since substantial profits are generated, so offsetting what Marx hypothesized as the law of the declining rate of profit. The realization of such profits has the effect of reproducing the class relations of capital and wage–labour integral to the ordering of the capitalist system.

However, the very process of sustaining order through each capitalist exploiting their particular workers, results in three system contradictions, of over-production, of an increasingly revolutionary workforce and the smashing down of Chinese walls and the internationalization of the proletariat. Thus the outcomes of capitalist order are, over time and millions of iterations, the opposite of what capitalists appeared to be reproducing through exploiting their local workforce. Millions of iterations produce chaos out of order, non-linear changes and a potentially catastrophic branching of the capitalist system (see Reed and Harvey 1992). Much sociology has sought to explain why these predictions have not materialized. However, Marx's inability to predict social revolution can be regarded by contemporary theory as comprehensible since relatively small perturbations in the system can produce a very different branching of the social world from what he envisaged a century or so ago.

Moreover, Marx's analysis brings out the key significance of *local* forms of information, and more generally of what Kwa terms a baroque rather than a romantic conception of complex wholes (1998). Cilliers describes how any emergent complex system is the result of a rich interaction of simple elements each of which 'only respond[s] to the limited information each is presented with' (1998: 5). Thus, according to Marx, each capitalist operates under conditions that are far from equilibrium; they can only respond to 'local' sources of information since relevant information carries across only a limited temporal and spatial range. Moreover, local struggles by groups of workers against the conditions of their exploitation had the longer-term effect, through complex iteration, of reproducing the capitalist system, albeit in a quite different form. In the end such struggles prevented such an exploitation of the workforce that social revolution of the sort Marx predicted would have resulted. The struggles of workers, based upon local knowledge, had the effect of re-establishing social order, but at a higher 'social welfare' level.

Capitalism, we now know, has indeed broken down many Chinese walls and has gone global. Can complexity provide some illumination into such a global capitalism? Is an emergent level of the 'global' developing that is recursively self-producing, where its outputs constitute inputs into an autopoietic circular system of 'global' objects, identities, institutions and social practices. And if there is, what are its complex properties, how are chaos and order combined in the global? First, we can note that billions of individual actions occur, each of which is based upon exceptionally localized forms of information. Most people most of the time act iteratively in terms of local information, knowing almost nothing about the global connections or implications of what they are doing. However, these local

actions do not remain simply local since they are captured, represented, marketed, circulated and generalized elsewhere. They are carried along the scapes and flows of the emerging global world, transporting ideas, people, images, monies and technologies to potentially everywhere. Indeed such actions may jump the scapes, since they are fluid-like and difficult to keep within particular channels (such as the internet jumping from military to road protestor communications).

The consequences for the global level are non-linear, large-scale, unpredictable and partially ungovernable (baroque rather than romantic: see Kwa 1998). Small causes at certain places produce massive consequences elsewhere. Consider a pile of sand; if an extra grain of sand is placed on top it may stay there or it may cause a small avalanche. The system is self-organized but the effects of local changes can vary enormously (Cilliers 1998: 97). The heap will maintain itself at the critical height and we cannot know in advance what will happen to any individual action or what its consequence will be for the pile of sand.

The emergent global order is one of constant disorder and disequilibrium. The following are some recent examples of where millions of actions based upon local knowledge have, through iteration, resulted in unpredictable and non-linear consequences at the emergent global level (see Urry 2000: ch. 2 on each of these). For US military communications in the event of a nuclear war there developed the arpanet/ internet, but which has then provided a scape which has generated extraordinary flows of image, information and non-military communications throughout the world (internet use has grown faster than any previous new technology). In 1989 there was the almost instantaneous collapse of all of 'communist' Eastern Europe, once it was seen that the particular local centre of the Kremlin was unable and unwilling to prevent such an occurrence. The apparently 'rational' decision of millions of individual people to exercise their right to drive has resulted in carbon gas discharges that threaten the long-term survival of the planet (even where most motorists are aware of such consequences). And omnipotent consumerism has almost everywhere generated religious fundamentalism. Barber apocalyptically describes the emergent global order as being locked in a major conflict between the consumerist 'McWorld' on the one hand, and the identity politics of the 'Jihad', on the other (1996). There is a 'new world disorder' in which McWorld and Jihad depend upon, and globally reinforce, each other.

There is a kind of spiralling global disequilibrium that threatens existing public spheres, civil society and democratic forms. There are of course forms of global governance designed to dampen down some of these forms of disequilibrium, but mostly they are based upon national governments acting within particular *local* contexts. Baker has elaborated on how the relationship between the centre and the periphery, or what he calls the 'centriphery', functions to create both order and turbulence in social life (1993). He suggests that the centriphery functions as an attractor, which is defined as the space to which the trajectory of any particular system is over

time attracted (Byrne 1998: 26–9; Cilliers 1998: 96–7). In this case the cen-triphery is a dynamic pattern that is repeated at many different levels, involving flows of energy, information and ideas that simultaneously create both centres and peripheries. The trajectory of social systems is irreversibly attracted to the centriphery.

Baker further argues that

> Today, particular multinational industries center vast amounts of human activity, locating specific aspects of their enterprise in different conti-nents. In each of these cases, the exchange of goods and services binds and lubricates a dynamic relationship between the center and the periph-ery. As centering progresses, it deepens the periphery . . . Because cen-tering and peripheralizing involve the transformation of energy and information and, thus, the creation of entropy, the process is irreversible. (1993: 140)

A specific form taken by the strange attractor of the centriphery is that of 'glocalization', whereby there is a parallel irreversible process of global-ization-deepening-localization-deepening-globalization and so on. Both are bound together through a dynamic relationship, as huge flows of resources move backwards and forwards between the global and the local. Neither the global nor the local can exist without the other. They develop in a sym-biotic, irreversible and unstable set of relationships, in which each gets transformed through billions of world-wide iterations. Small perturbations in the system can result in unpredictable and chaotic branching of such a system, as has happened with what Imken terms the 'non-linear, asym-metrical, chaotically-assembled . . . new artificial life-form of the global tele-communications *Matrix*' (Imken 1999: 92).

CONCLUSION

I have thus illustrated how 'complexity' systems can assist in the analysis of mobile hybrids. How though does this leave 'sociology' which would seem to be cast adrift once we leave the relatively safe boundaries of bounded societies. Most of the tentative certainties that sociology has cautiously erected would appear to dissolve with the structure of feeling entailed by complexity. These developments seem to imply a post-disciplinary social/ cultural/political science with no particular space or role for individual disciplines (see Sayer 1999). Why should 'sociology' analyse these inter-secting complex mobilities that have travelled onto the intellectual stage in such a powerful fashion (see Thrift 1999, on the new *complex* 'structure of feeling' within the academy, management science and 'new age')?

First, most other disciplines are subject to extensive forms of discursive normalization, monitoring and policing that make them poor candidates for post-disciplinary reconfiguration. Indeed theories, methods and data may be literally expelled from such disciplines since they are viewed as too

'social' and outside the concerns of that particular policed discipline (see Urry 1995: ch. 2). There are many examples of how sociology provides a place of temporary intellectual dwelling for those marginalized by discursive normalization in adjacent disciplines. Moroeover, sociology's discursive formation has often demonstrated a relative lack of hierarchy, a somewhat unpoliced character, an inability to resist intellectual invasions, an awareness that all human practice is socially organized, a potential to identify the social powers of objects and nature, and an increasing awareness of spatial and temporal processes. While all these render wreak havoc with any remaining notion of society *tout court*, sociology could develop a new agenda for a discipline that is losing its central concept of human 'society'. It is a discipline organized around networks, mobility and horizontal fluidities. More generally, Diken advocates the 'more "mobile" theorizing' that will be necessary to deal with emerging hybrid entities, as well as with so-called societies (1998: 248).

Dogan and Pahre show the importance of 'intellectual mobility' for innovation in the social sciences (1990). Their extensive research demonstrates that innovation does not principally result from those scholars who are firmly entrenched within disciplines, nor from those practising a rather general 'interdisciplinary' or 'post-disciplinary' studies. Rather innovation results from academic mobility across clear disciplinary borders, a mobility that generates 'creative marginality'. It is this marginality, resulting from scholars moving from the centre to the periphery of their discipline and then crossing its frontiers that produces new productive hybridities in the social sciences. These can constitute institutionalized sub-fields (such as medical sociology) or more informal networks (such as historical sociology; see Dogan and Pahre 1990: ch. 21). This creative marginality results from complex, overlapping and disjunctive processes of migration, processes which can occur across disciplinary and/or geographical and/or social borders (in the case of the 'Frankfurt School' it was all three; Dogan and Pahre 1990: 73–4). Intellectual mobilities are good for the social sciences, so it would seem (see Diken 1998, as well). Sociology has often been the beneficiary of the 'creative marginality' of such creative 'in-migrants'.

Further, most important developments in sociology have at least indirectly stemmed from social movements with 'emancipatory interests' fuelling a new or reconfigured social analysis. Examples of such mobilized groupings which at different historical moments have included the working class, farmers, the professions, urban protest movements, student's movement, women's movement, immigrant groups, environmental NGOs, gay and lesbian movement, 'disabled' groups and so on. The emancipatory interests of these groupings are not always directly reflected within sociology; more they have had a complex and refracted impact. But in that sense, sociology has been 'parasitic' upon these movements, thus demonstrating how the 'cognitive practices' of such movements have helped to constitute 'public spaces for thinking new thoughts, activating new actors,

generating new ideas' within societies (Eyerman and Jamison 1991: 161; Urry 1995: ch. 2). Societies were organized through debate occurring within a relatively delimited national, public sphere. The information and knowledge produced by its universities centrally formed those debates and delimited possible outcomes. Disciplines were particularly implicated in contributing knowledge to such a public sphere, and indeed in constituting that sphere as part of a national civil society (Cohen and Arato 1992; Emirbayer and Sheller 1999).

However, the increasingly mediatized nature of contemporary civil societies transforms all of this. It is not so much that the mass media reflects what goes on elsewhere, so much as what happens in and through the media *is* what happens elsewhere. The sphere of public life that provided the context for knowledge produced within the academy is now increasingly mediatized (see Dahlgren 1995). Thrift describes the cosmoplitan mediatization of complexity science, especially as organized in and through the Sante Fe Institute (Thrift 1999). Debate is concerned as much with image, meaning, and emotion, as it is with written texts, cognition and science. The global economy of signs, of globally circulating information and images, is transforming the public sphere into an increasingly de-nationalized, visual and emotional public stage (Urry 2000: ch. 7; Knorr Cetina 1997).

And on that mediated public stage, many social groupings are appearing, developing partially, imperfectly and contingently, a kind of globalizing civil society. This is summarized within the World Order Models Project. Falk documents the widespread growth of trans-national citizens associations, world-wide shifts towards democratization and non-violence, huge difficulties for national states in maintaining popularity and legitimacy, and the more general growth of diverse global trends (1995; and see Archibugi, Held, Köhler 1998). Falk concludes that: 'Such cumulative developments are facilitating the birth and growth of global civil society' (Falk 1995: 35). And it is this set of social transformations that could constitute the social base for the sociology of mobilities I have elaborated in this article. The social basis of a 'global civil society' and its emancipatory interests may result in a 'sociology of mobilities' of the sort I have outlined here, as we move chaotically into the next century.

John Urry
Department of Sociology
University of Lancaster

NOTES

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