

Figure 3.3 Global network connectivities of the 315 cities studied (from Taylor et al. 2002a)

that Figure 3.3 depicts a distinctively non-hierarchical urban structure. This is empirical support for the argument that world cities constitute a complex network rather than a simple hierarchy. Although the first two ranks stand out (London and New York), the rest of the curve shows that this is not a 'binary' (or 'double primate') city pattern. There may or may not be hierarchical patterns within the spatial organization of individual *firms* at the global scale (it depends on their particular strategies), but when aggregated, the result is a world city *network*.

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# Geographies of connectivity

TAYLOR (2004)

Cities are primarily focal points of power based upon communication; their power reflects their accessibility – the range and quality of the contacts and relationships that the city has with the rest of the world.

#### (Knight 1989a: 40)

This is the first largely empirical chapter of the book. In the previous chapter I have specified the world city network and collected data accordingly. This produced a large data matrix from which simple initial results have been presented. Here I begin the task of comprehensively exploring these data. The focus is on interlock connectivities, which I have termed the global network connectivities of cities.

The chapter divides into four parts. The starting point is a cartogram of city connectivities that shows a global-scale archipelago of cities (Figure 4.1) reminiscent of Abu-Lughod's (1989) thirteenth-century transcontinental archipelago described in Chapter 1. But the contemporary version is a 'world city archipelago', a much more intensive single network of cities, as is shown in some detail in what follows. But first, I explore the pattern of world cities across regions and also consider the holes in the archipelago, regions 'beyond world cities'. The next two sections present results from disaggregating the connectivities. In the second section connectivities are divided into sector components that show cities as different types of service centre. The third section looks at the service values of cities and suggests different levels and types of power in the network. In the final section I take advantage of the fact that the network methodology need not be limited to service providers. In this section the global service connectivities are compared to other connectivities of world cities.

Results are shown on a cartogram illustrating the most connected cities (Figure 4.1) because this mode of presentation solves the problem of depicting an uneven distribution of cities across the world. City concentration in some regions (e.g. in Western Europe) coupled with sparseness of cities elsewhere (e.g. in Africa) makes depiction of results on orthodox maps, with extremes of overlaps and empty spaces, sometimes difficult to perceive and interpret. Hence the cartogram, wherein each city is given its own equal space in approximately its correct geographical position. I have had to limit the number of cities to aid comprehension of the cartogram and so as not to lose sight of the leading cities across the world. I define this 'operational roster of world cities' as those with at least one-fifth of London's connectivity. This cut-off point is purely arbitrary: remember, the graph in Figure 3.3 is smooth from rank 3 downwards. It has been chosen, first, because it gives a reasonably large number of cities – 123 is much larger than in other world city studies - and second, because it provides a reasonable coverage of most world regions. Africa is represented by six cities, including two intertropical cities, and the only regions not included are Central America (nothing between Mexico City and Panama City) and Central Asia (nothing between Moscow and Beijing).



Figure 4.1 An archipelago of world cities. The cartogram places cities in their approximate relative geographical positions. The codes for cities are as follows: AB Abu Dubai; AD Adelaide; AK Auckland; AM Amsterdam: AN Antwerp: AS Athens; AT Atlanta; BA Buenos Aires; BB Brisbane; BC Barcelona; BD Budapest; BG Bogotá; BJ Beijing; BK Bangkok; BL Berlin; BM Birmingham; BN Bangalore; BR Brussels; BS Boston; BT Beirut; BU Bucharest; BV Bratislava; CA Cairo; CC Calcutta; CG Calgary; CH Chicago; CL Charlotte; CN Chennai; CO Cologne; CP Copenhagen; CR Caracas; CS Casablanca; CT Cape Town; CV Cleveland; DA Dallas; DB Dublin; DS Düsseldorf; DT Detroit; DU Dubai; DV Denver; FR Frankfurt; GN Geneva; GZ Guangzhou; HB Hamburg; HC Ho Chi Minh City; HK Hong Kong; HL Helsinki; HM Hamilton (Bermuda); HS Houston; IN Indianapolis; IS Istanbul; JB Johannesburg; JD Jeddah; JK Jakarta; KC Kansas City; KL Kuala Lumpur; KR Karachi; KU Kuwait; KV Kiev; LA Los Angeles; LB Lisbon; LG Lagos; LM Lima; LN London; LX Luxembourg City; LY Lyons; MB Mumbai; MC Manchester; MD Madrid; ME Melbourne; MI Miami; ML Milan; MM Manama; MN Manila; MP Minneapolis: MS Moscow; MT Montreal; MU Munich; MV Montevideo; MX Mexico City; NC Nicosia; ND New Delhi; NR Nairobi; NS Nassau; NY New York; OS Oslo; PA Paris; PB Pittsburgh; PD Portland; PE Perth; PH Philadelphia; PL Port Louis; PN Panama City; PR Prague; QU Quito; RJ Rio de Janeiro; RM Rome; RT Rotterdam; RY Riyadh; SA Santiago; SD San Diego; SE Seattle; SF San Francisco; SG Singapore; SH Shanghai; SK Stockholm; SL St Louis; SO Sofia; SP São Paulo; ST Stuttgart; SU Seoul; SY Sydney; TA Tel Aviv; TP Taipei; TR Toronto; TY Tokyo; VI Vienna; VN Vancouver; WC Washington, DC; WL Wellington; WS Warsaw; ZG Zagreb; ZU Zurich.

Figure 4.1 shows a great global archipelago of cities, and therefore the first geographical result of the book is that there is indeed a worldwide pattern of global service centres, albeit an uneven one.

# The geography of global network connectivity

The geography of city connectivities is depicted in Figure 4.2. The unevenness in the distribution of world cities is exacerbated by the pattern of relative levels of global network connectivity. At its simplest, the cartogram reproduces the old 'North–South' divide: higher-connected cities tend to be in the 'North' and lower-connected cities in

the 'South', with the western Pacific Rim firmly bucking this trend. But, of course, it is much more complicated; this simple, not to say simplistic, interpretation is only a trend, with many lower-connectivity cities in the 'North' and some higher connectivity in the 'South' beyond the Pacific. To explicate this geography I will describe the pattern in more detail at different scales.

## **Regional contrasts**

If we move now from 'North-South' terminology to world-systems language, Figure 4.2 illustrates clearly the three contemporary zones of the core of the world-economy: northern America, Western Europe and parts of Pacific Asia. However, this is not a homogeneous core: the three zones have very different histories associated with their trajectories to core status and this is reflected in Figure 4.2.

The oldest, indeed original, core zone is Western Europe, and this is reflected in two features. First, this region has more world cities (32) in Figure 4.2 than the other regions, and second, there is a wide range of levels of connectedness among the region's cities. In other words, in this region there are a variety of cities of varying importance all linking into the world city network. This is the complete opposite of Pacific Asia, in which the connectivity levels of the cities is generally top-heavy. As this region is the most recent of the core zones, nearly all its less important cities have not made the threshold for the world city network as defined in Figure 4.2. Thus this region has far fewer world cities (13) than Western Europe, although the number increases to twenty if we add Australasian cities to create a Western Pacific Rim region. The third core zone, northern America (i.e. the United States and Canada), is in between the other two historically and in numbers of world cities identified (27). However, in this case the



Figure 4.2 Global network connectivity (from Taylor et al. 2002c). (For city codes, see Figure 4.1.)

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range of levels of connectedness is very similar to that of Western Europe, with numerous less important cities joining the world city network. But there is a difference: in northern America the more connected cities tend to be in the east and west of the region, leaving the centre bereft of well-connected cities apart from the major exception of Chicago.

Beyond the core there are no regions with any concentration of highly connected cities. The most common pattern is for capital cities to take on the world city role. In Eastern Europe (the former Communist states) this is most certainly the case: the only cities (8) that feature are the capital cities of the larger states. Having lost its political and economic distinctiveness, this region has become an appendage to the West European core. The same may be said for Latin America (11 cities) with respect to northern America, where again capital cities dominate, although in this case São Paulo, despite being neither former nor current Brazilian capital city, has become a highly connected world city in its own right. This pattern is similar in South Asia, where Mumbai, another non-capital, has become a highly connected world city. In contrast, the large North African/West Asian region (11 cities) has no such well-connected world city; the only cities that appear as possible candidates for becoming a regional focus are Cairo, Beirut and Dubai. Sub-Saharan Africa has only four cities but it does sport a clear regional leading city in terms of connectivity: Johannesburg.

What does all this locational detail mean? First, uneven globalization has spawned an uneven world city distribution but not a simple one. The number of cities featuring outside the core is perhaps surprising. Whether these represent simple continuations of colonial and post-colonial 'economic sinks' or genuine components to a network is an issue that I address later in the chapter. The most interesting region is Pacific Asia. The latest core zone, it is like a non-core region but with its leading cities upped in terms of connectivity, leaving few low-connectivity cities. The lack of the latter suggests that numerous small parts of Pacific Asia remain poorly connected to the world city network. This may be the mark of a region in transition between core and semiperipheral status. If this is the case, then it will be necessary to look for increased global network connectivity for some of the region's lesser cities as a future sign of consolidation of core status.

### National differences

Although I am working on a model of world-economy constituted by city economies, this does not mean that all markets operate at just these two scales. The idea of a 'national economy' may be a myth but, as shown in Chapter 2, this does not mean that there are no national market effects on cities as service centres. States have been and continue to be powerful shapers of markets if not creators of economies. In terms of the world market of business services, states are anything but irrelevant to world cities and their connectivities.

States affect different services in different ways. For the various financial services there are regulations whose level of control varies by country. For law, states constitute legal jurisdictions that have to be coped with in any transnational commercial project. States also legitimate professional gatekeepers: who can and who cannot practise law, and other professions, in their territory. For advertising and management consultancy, states are less intrusive but here other national effects become important. These are cultural effects on how products will be received. Global advertising has to deal with consumers who not only speak different languages in different countries, but may also have very different reactions to similar translated language or visual signals. Global management consultancy has to cope with many business mores; paternalistic companies

where management merely means 'direction' provide a common challenge. The point of all these examples is to reinforce the idea broached in Chapter 2 that even in the world of advanced producer services the national space of places cannot be ignored: cities as nodes in the global space of flows are also cities within countries.

As described in Chapter 2, Jacobs (1984) posits national urban development processes that favour one city over all others in a country. Such a process provides that city with a particularly strong platform on which to globalize. This will be especially the case as new firms begin a global strategy and plan to serve national markets through just a single office. Hill and Fujita (1995) have referred to 'Osaka's Tokyo problem', but it is clearly much more than a Japanese phenomenon. As well as the Japanese market being largely serviced through Tokyo, the Austrian market can be served through Vienna, the Swedish market through Stockholm, the UK market through London, and so on. Thus the primate city of 'national urban systems' become the 'national world city', a national gateway into and out of the world market for services.

This process can be explored through computing the ratio of global network connectivities between the city with the highest level in a country and the city ranked second. These are shown for a selection of twenty-five large countries in Table 4.1. The countries are presented as two groups using a ratio of 2 as the divider, i.e. whether the leading city in a country is more or less than two times more connected than its closest rival. This value has resonance with national-level urban studies as specifying the rank-size rule (see Chapter 1), with values above 2 indicating different levels of primacy. A slight majority (14) of countries show a connectivity primacy. In all but one case it is the capital city that has the high connectivity, and the exception is an ex-capital (Istanbul/ Turkey). The ratios vary from Vienna/Linz to Amsterdam/Rotterdam but all indicate a dominating world city linking its national market to the world market. In contrast, there are eight countries that appear not to have primate tendencies in terms of world city connectivities. These all have one or more of the following characteristics: large size, decentralized polity, multiple cultures. These characteristics are precisely the opposite of that found in the connectivity primate city states: mainly small countries plus a few larger countries historically notorious for their political centralization: the United Kingdom, France, Japan, Mexico and Russia.

#### Table 4.1 The connectivity ratios between the top two cities for selected countries

Country	Ratio	Country	Ratio
Austria	8.18	Brazil	1.87
Turkey	7.92	South Africa	1.73
South Korea	6.48	New Zealand	1.68
Egypt	5.80	Italy	1.66
Denmark	5.43	China	1.65
Britain	4.44	USA	1.59
Japan	3.72	Switzerland	1.56
Colombia	3.20	Canada	1.49
Sweden	3.16	Germany	1.44
France	2.89	Spain	1.39
Mexico	2.64	India	1.31
Russia	2.45		
Belgium	2.35		
Netherlands	2.20		

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The leading two cities in a country do not tell the whole story of how a national market links to the world market. Obviously, the low ratios could indicate both a 'dual primate' pattern and a smooth hierarchical sequence. To distinguish between these and other possibilities, Figures 4.3 and 4.4 show graphs of the top five cities in terms of connectivity for twelve countries. These are separated into two groups on the basis of size: I term them nation-states and continental states. In the first group (Figure 4.3) the connectivity primacy of the United Kingdom, France and Japan is confirmed and Italy and Spain are shown to have dual primacy patterns (Milan-Rome, Madrid-Barcelona). The interesting case is Germany, whose cities form a quite flat distribution showing an almost total lack of primate tendencies. The graphs for the continental states (Figure 4.4) are generally flatter, with Brazil revealed as a dual primate pattern (São Paulo-Rio de Janeiro) and China showing a 'tri-primate' pattern (Hong Kong-Shanghai-Beijing). In general, these are large states that require more than one world city to service subnational regions that are themselves commonly larger than most other nation-states. In conclusion: the evidence clearly shows that the nature of states influences the nature of a national market's city connections to the world market. The world city network operates with, through and alongside the mosaic of states as well as across them.

## **Beyond world cities**

Despite the worldwide nature of the world city network there are regions where world cities are either sparse or absent. Since the data allow for connectivities to be computed



Figure 4.3 City connectivities in nation-states



Figure 4.4 City connectivities in continental states

for a total of 315 cities, regions beyond or weakly connected to the world city network as portrayed in Figures 4.1 and 4.2 can be investigated. Thus in what follows, some cities below the top 123 are discussed for the first time.

Sub-Saharan Africa dominates the 'weakly connected' category: there are only four cities that appear in the top 123 cities but there are many more with lower connectivities, as Table 4.2 shows. Generally, apart from smaller South African cities, these lower-connected cities are capital cities, with their ordering approximating the size of their respective national markets: Abidjan (Ivory Coast), Accra (Ghana) in West Africa and Harare (Zimbabwe) and Lusaka (Zambia) in South-Central Africa are the leading cities beyond the world city network of 123 cities. Central Asia is an example of a region where world cities are conspicuous by their absence: Table 4.3 shows the global network connectivities of cities. As with sub-Saharan Africa, in this region featured cities are capital cities ordered with respect to the size of their national markets: Almaty, the

Table 4.2 The global network connectivities	(GNCs) of sub-Saharan A	African cities
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City	GNC	
Johannesburg	0.414	
Cape Town	0.239	
Nairobi	0.226	
Lagos	0.197	
Abidjan	0.181	
Harare	0.179	
Accra	0.167	
Lusaka	0.162	
Durban	0.151	
Windhoek	0.146	
Kampala	0.142	
Doha	0.140	
Dar es Salaam	0.128	
Maputo	0.122	
Dakar	0.116	
Doula	0.105	
Gaborone	0.103	
Luanda	0.091	
Pretoria	0.089	
Addis Ababa	0.068	
Bulawayo	0.066	
Kinshasa	0.049	
Mombasa	0.049	
Freetown	0.041	
Lomé	0.033	
Yaoundé	0.024	
Monrovia	0.022	
Conakry	0.019	Liskany Car
Djibouti	0.012	Zakladni
Brazzaville	0.005	decgrafická

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Table 4.3 Global network connectivities (GNCs) of cities in Central Asia			
City	GNC		
Almaty	0.173		
Baku	0.112		
Tashkent	0.099		
Yerevan	0.036		
Tbilisi	0.033		
Ulan Bator	0.021		
Kabul	0.005		

capital of the largest Central Asian republic, Kazakhstan, is the most connected of the region. What these two examples show is that even where world cities are sparse or absent there are still global service connections into the world city network. I explore this theme in some detail through another region beyond world cities: Central America.

Global service firms vary greatly in their particular global strategies of office location. Smaller firms have obviously to concentrate their resources on a lower number of cities, but the critical determinant of location policy seems to be the service sector. The greatest contrast is between global accountancy firms, which tend to locate in many hundreds of cities, and global law firms, which are usually found only in a select number of world cities. There are five Central American cities in the data (all capital cities again) and each has some direct connections into the world city network through those firms that have an extensive office location policy. In all, there are seventy-nine presences of firms in the GaWC 100 within this region. These are distributed across services and cities in Table 4.4, where it can be seen that San José has most (20) and Managua least (11) presences of the 100 global service firms that constitute the data. Most of the firms with Central American offices are in accountancy and advertising. In aggregate, these firms produce the global network connectivities also shown in Table 4.4. In this column the ordering changes slightly, with Guatemala City having more connectivity despite having fewer firms present than San José. The key point, however, is that, in some sectors at least, Central American cities are part of the office networks that create the world city network. In other words, Table 4.4 confirms that the world city network is not constituted as an exclusionary club of the major cities but has numerous linkages into regions beyond world cities.

By using new data, the argument can be taken further by identifying the cities in the world city network that provide the key linkages for Central America (Brown *et al.* 2002). The obverse of global firms in local cities is the linkages of local firms into world cities. Small non-global firms can operate beyond their normal geographical range by

Table 4.4 Presence of firms and global network connectivities (G	GNCs)	for Central	American cities
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City	AC	AD	BF	IN	LW	MC	Total	GNC
Guatemala City	9	8	1	1	0	0	19	0.181
San José	10	5	3	1	0	1	20	0.175
San Salvador	8	5	3	0	0	1	17	0.165
Tegucigalpa	6	4	1	0	0	1	12	0.130
Managua	4	5	σ	1	0	1	11	0.100

Note: AC = accountancy firms; AD = advertising firms; BF = banking/finance firms; IN = insurance firms; LW = law firms; MC = management consultancy firms

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forming alliances or having other, similar relationships with firms in other regions. This has been a common practice in the banking sector, where 'correspondence banks' are designated. Where a local bank has a client doing business in another area where it does not have an office, it will advise and facilitate that financial service being undertaken by its correspondence bank in that area. This is not a formal alliance but indicates a 'partner of choice' for the mutual benefit of both: the correspondent bank gets the extra business, the local bank does not lose its client through failure to provide adequate geographical scope of service. This does not constitute the ideal of a seamless service under one brand but it does provide the opportunity for local firms to service extra-regional business.

Using information on the correspondent links of twenty-two local Central American banks, a total of 319 links were found of which 168 were with one city: Miami. That over half (53 per cent) of the correspondent links go to banks in just one world city is quite a remarkable finding, a stark indication of the domination of Miami in the external financial connections of Central America. This is a contemporary manifestation of Foucher's (1987: 121) designation of Miami as the 'capital' of the 'American Mediterranean' in the Reagan era. Far behind in second place, and reinforcing the United States' linkage dominance, is the Americas' prime international financial centre, New York, with thirty-five (11 per cent) correspondent links. Although there is this concentration of linkages, Central American correspondence banks are to be found across the world in thirty-four different cities. These are shown in Figure 4.5, which, as well as emphasizing Miami's primacy, has other interesting features, notably the relative importance of Hamburg and Frankfurt, the top two-ranking European cities, with more links than both Madrid, with its colonial/language connections, and London, Europe's prime international financial centre. The relatively low level of connections with Latin America, excepting the two 'neighbour' cities of Mexico City and Panama City, and the lack of importance of Pacific Asian cities are also noteworthy. On the basis of this specific financial link, the conclusion is that Central America has widespread indirect links into the world city network but that these are hugely dominated by its connections to Miami.

## Global services across the network

The global network connectivity of a city can be disaggregated into constituent parts in two ways. The most straightforward partition is by service sector: how much of a city's connectivity is due to firms in each of the six sectors. A more subtle partition uses the service values of cities to ascertain power relations. The latter is the subject of the following section; here I focus upon the contributions of different sectors to the global network connectivities of cities.

It is known from Table 3.3 that the business services I am dealing with are by no means equal in their contributions to global network connectivity. As previously noted, accountancy, in particular, has firms that cover many hundreds, indeed sometimes thousands, of cities and therefore it is ubiquitous throughout the top 123 cities. In Table 4.5 the number of cities that are connected through each of the six services are shown. As well as the maximum number of 123 recorded for accountancy, banking/finance also connects every one of our world cities. There are just a small number of cities not connected through advertising, insurance and management consultancy, but quite a few that have no global law firms. Law is the service with by far the lowest presence in cities, indicating its concentration in the more important world cities. Table 4.5 also shows the average percentage of connectivity accounted for by a service across all 123





Figure 4.5 Correspondence banks for Central America (from Brown et al. 2002)

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#### Table 4.5 Service sectors, cities and connectivities

Sector	Number of cities connected through sector	Average connectivity accounted for by sector (%)
Accountancy	123	44.0
Advertising	119	15.7
Banking/finance	123	22.7
Insurance	120	7.8
Law	76	1.7
Management consultancy	119	8.2

cities. Here the importance of accountancy to the global network connectivities is clearly illustrated. This reflects the many offices beyond the top 123 cities. Banking/finance and advertising are both also important contributors. Relatively less important are management consultancy, insurance and, especially, law. With a less than 2 per cent contribution it might be thought that law is almost irrelevant to the global connectivity measures. This inference is not wholly correct: because of the distribution of law offices concentrated in just the leading cities, it contributes in important ways in differentiating cities. This is especially important in the analyses in Part III, but it also shows up in comparing city connectivities later in this chapter.

The sectors can therefore be divided into higher and lower contributors to global network connectivity. They are discussed in order of contribution within these two groups below. To facilitate comparison, each sector is mapped on to the archipelago in the same way using just two categories: cities ranking in the top twenty for a contribution by a sector, and the remaining cities with above-average contribution by a sector.

Before the different sectors are described in detail, one important point needs to be made. Consider the fact that the city that records the highest proportion of its connectivity due to banking/finance is Manama. This city is certainly an important financial centre in the Middle East but it pales in comparison to the level of financial services provided in London and New York. Why do the latter pair rank 57th and 56th respectively on the proportion of their connectivities contributed to by banking/finance? Why not first and second? London and New York are most definitely the top two international financial centres, as analysis in the next section will show, but this is not what is being measured here. Both London and New York are 'well-rounded' global service centres offering much more than banking and financial services. This cannot be said for Manama, which is a regional international financial centre but with few other global services. Thus Manama, and other relatively specialist service centres, will beat London and New York in specific service contribution percentages even though in all sectors London and New York are the most important sites for service providers.

# **High-contribution sectors**

While accountancy, banking/finance and advertising all contribute highly to global network connectivity, the patterns of their contributions are remarkably different.

### Accountancy

Although accountancy has been introduced as the most ubiquitous of business services, its geography is much more interesting than this would suggest.



Figure 4.6a Specialist service cities: accountancy. (For city codes, see Figure 4.1.)

The accountancy cartogram (Figure 4.6a) is distinctive in a regional absence: Pacific Asian cities (and South Asian cities) all have below-average accountancy contributions to their global network connectivities. This is the only sector distribution in which one of the three core zones of the world-economy is not represented at least once above average level. Quite clearly, global accountancy has a pronounced 'Western' bias. But within this regional bias there is another clear feature: it is lower-connectivity cities that stand out. Thus the top twenty is a roll-call of lesser world cities through all other regions of the world. The Australian pattern is a good analogue for the rest of the West, with Perth, Brisbane and Adelaide appearing in the top twenty, while Sydney and Melbourne are below average.

In conclusion: it is the less important cities in Western regions (including Western Asia) that are the most dependent on accountancy, the most ubiquitous service, for their global network connectivity.

## Banking/finance

Banking/finance is clearly the strategic business service and therefore its geography is particularly interesting.

The banking/finance cartogram (Figure 4.6b) is in important ways the obverse of the accountancy pattern: here Pacific Asia dominates the distribution, with every city above average and, even more impressive, contributing fully half of the top twenty. Otherwise, German cities dominate in Europe with, in addition, the more specialist financial centres of Luxembourg and Geneva, and Manama beyond Europe. Although not absent, the United States is not greatly featured on this cartogram; many of its cities beyond the Pacific coast are not very dependent on banking/finance for their global network connectivities.



Figure 4.6b Specialist service cities: banking/finance. (For city codes, see Figure 4.1.)

In conclusion: the three core zones define a gradient in city dependences on banking/ finance for global network connectivities: cities of the Pacific Asian region are preeminently dependent; many European cities are highly dependent; US and Canadian cities have only moderate to low dependence.

## Advertising

Global advertising is, in many ways, the epitome of globalization as top brands in many production sectors – cars, oil/petroleum, clothes, food and drink, leisure/vacation products, etc. – are marketed worldwide under single brand names. But this should not be interpreted as necessarily indicating the rise of a homogeneous world market. Rather, there remains a highly fragmented market.

The advertising cartogram (Figure 4.6c) has an unusual pattern that is, at first, surprising. To begin with, the font of consumerism, the United States, is poorly represented, as is Western Europe, consumerism's 'second home'. In fact, nearly all the cities that feature in the top twenty are less-connected world cities outside the core zones. The clue is that they are capital cities or the leading city of a country. In short, these cities are the national media centres, the focus of national advertising markets, notably the homes of national television stations. The exceptions are in the larger countries, where there are regional markets and therefore room for more than one centre for advertising (e.g. in India and China). As well as being poorly represented, the United States is unusual on this cartogram for having only two cities featured within the top twenty: Miami, the 'capital' of much of Latin America, and Detroit, 'Motown', which features a concentration of critical advertising clients.

In conclusion: the geography of connectivity dependence on global advertising is highly nationalized in most of the world; it is the classic case of the international mosaic of territories intersecting with a global space of flows.



Figure 4.6c Specialist service cities: advertising. (For city codes, see Figure 4.1.)

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Figure 4.6d Specialist service cities: management consultancy. (For city codes, see Figure 4.1.)

## Lower-contribution sectors

The three sectors contributing less to global network connectivities – management consultancy, insurance and law – are similar in one respect. With fewer connections, those connections are more concentrated in the core zones of the world-economy than for the three higher-contributing sectors.

## Management consultancy

Management consultancy is *the* American business service, and therefore it would be expected that US cities would feature particularly strongly in this sector. But the pattern turns out to be more complicated than this.

The management consultancy cartogram (Figure 4.6d) has large concentrations of cities in northern America and Western Europe that are relatively dependent on management consultancy for their global network connectivities. In addition, there are other, small concentrations of western Pacific cities similarly dependent. In the peripheral zones only Latin America has any significant showings. Within the cores zones there does not seem to be any pattern relating to levels of city connectivities, especially in the United States. However, more generally, in northern America there does appear to be a geographical sectional effect, with all but one of the top twenty cities located in the east of the region.

In conclusion: the geography of cities particularly dependent on management consultancy is a patchy one across core zones but with a discernible 'nucleus' in the eastern section of northern America.

#### Insurance

Insurance is a specialist financial service that might be expected to be found especially in international financial centres.

The insurance cartogram (Figure 4.6e) has a regional focus similar to that of the management consultancy pattern but with different details within the regions. Thus, there is the same core-zone ordering of where cities are most dependent on insurance: first northern America, followed by Western Europe and then Pacific Asia. The two main regional differences with Figures 4.6c and 4.6d are that Pacific Asian cities are more prominent and Eastern Europe has no showings. There are international financial centres featuring prominently, notably Hong Kong, Luxembourg, Geneva and Hamilton (Bermuda), but the main characteristic is the tendency for lower-connected cities to have their global network connectivity heavily dependent on insurance. This is particularly a feature in the United States.

In conclusion: this is a sector that is primarily important for the global network connectivities of less connected world cities in the two western zones of the worldeconomy with specific focus on finance centres.

## Law

By far the smallest of our six sectors, law is known to be the most concentrated service among world cities.

The law cartogram (Figure 4.6f) has the simplest geography. There are two elements. First, there is concentration but it is not primarily regional; it shows a strong focus on the most connected world cities. The top twenty cities in this case includes a roll-call of leading world cities: London, New York, Hong Kong, Paris, Tokyo, Singapore,



Figure 4.6e Specialist service cities: insurance. (For city codes, see Figure 4.1.)



Figure 4.6f Specialist service cities: law. (For city codes, see Figure 4.1.)

Amsterdam, Frankfurt and Washington, DC. Apart from New York and Washington, US cities are less prominent, indicating the dominance of these two cities in global law in the United States. This leaves Europe as the leading zone for the importance of law connectivities. Note the reference to Europe and not just its western section. This is the second feature of the geography: the surprising importance of East European cities. Law was the last of the six services to globalize, and much of this expansion occurred in the 1990s just as Eastern Europe was forming new markets through privatization of state assets. Many of those taking advantage of this new 'frontier' economic bonanza needed transnational legal advice in a legal vacuum: hence the new global strategies of several law firms included this opportune opening.

In conclusion: law is the sector most concentrated in the leading world cities and therefore it is here that it makes its most important contributions to global network connectivities. Exceptions to this rule occur in Eastern Europe for contingent opportunistic reasons.

## Power in the network

In the studies of national urban systems reviewed in Chapter 1, the depiction of city hierarchies implied the existence of power relations, but this was hardly ever fully acknowledged. For instance, in key texts such as Bourne's (1975) *Urban Systems* and Johnston's (1982) *The American Urban System*, power is conspicuous by its absence from their respective indexes. However, there is a major exception within this research tradition: the work of John Friedmann (1978). In his 'Spatial organization of power in the development of urban systems' he investigates the effect of both governmental and economic power on the growth of hierarchical urban systems. This is, of course, particularly pertinent to my concerns here because of this author's subsequent pioneering writings on world cities (Friedmann 1986) reviewed in Chapter 1. In the latter, his earlier concern for the spatial organization of power is transferred from the national scale to a global scale where economic power predominates. Thus he identifies the 'global control functions of cities' that constitute a world city hierarchy. It is the purpose of this section to return to Friedmann's original focus on power and to measure contemporary power relativities across world cities.

In devising his world city hierarchy, Friedmann (1986) treated power in the same way as he had done in his earlier national-scale research: as a 'stock of resources' (Friedmann 1978: 329) to be used instrumentally as 'power over' others. This is what Allen (1997: 60) calls 'power as a capacity - a "centred" conception' that he sees as dominating the world cities literature in which cities are centres of control and command (Friedmann 1986: 71). However, power as a capacity is just one of the conceptions of power that Allen (1997) identifies. Instead of this 'nodal' emphasis, more networked conceptions of power can be identified. He notes that Sassen's (1991) conception of the 'global city' recognizes the limitations of the simple capacity conception (Allen 1997: 70) but he finds little evidence for an alternative conception of power in her work. It is there: Sassen (1994) treats her global cities as 'strategic places', a concept that implies much more than simply 'power over'. It seems to me that this is very close to what Allen calls 'power as a medium - a "networked" conception'. Sassen (2000: 148-9) describes a new 'geography of politics' involving 'strategic places ... bound to each other by the dynamics of economic globalization'. There is emerging 'a transnational urban system' with inter-city relations that transcend simple competition (ibid.: 151). The essence of this is 'power to' rather than 'power over', specifically the power to attract service firms for servicing global capital. This global centring of power in cities is less hierarchical

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in nature and more networked. In a network, power is much more diffuse as every node has a particular niche that is part of the reproduction of the whole. In other words, complementary relations are more important than competitive ones (Powell 1990). This means that every city, as a node in an urban network, embodies an incipient power of position.

Because Sassen (1994) focuses on 'centrality', Allen (1999) identifies Castells (1996), with his concept of a 'space of flows', as better describing network power among world cities. As I have shown previously, for Castells (1996), world cities are not simply places, they are processes, hubs through which flows are articulated, with power residing in the flows themselves. Thus Allen (1999: 202–3) sets up an opposition of 'city networks' versus 'networks of cities'; that is to say, whether the cities 'run' the networks (Sassen) or the networks 'generate' the cities (Castells). This stark contrast is good for highlighting key issues in the literature but, as Allen (1999: 203) admits, 'probably overstates the differences'.

I will not choose between these alternative loci of power by level. In fact, I suspect that this is a theoretical nicety that cannot be resolved empirically. Thus I will not be attempting to distinguish the nodes from the flows in this power analysis, but I will be focusing on relations between world cities as the basis of their power, however conceived. An eclectic theoretical position with respect to conceptions of power is taken: both capacity/command and medium/network conceptions of power are incorporated in the analyses. A reading of power is attempted within the world city network as both a capacity expressing hierarchical tendencies and a collective medium with differences in power expressed through position in the network.

### **Control and command centres**

Starting with Friedmann's (1986) original conception of world cities as 'control and command centres'. I explore this idea empirically in two ways that are termed domination and control. Both concepts are based upon asymmetric relations: *domination* is taken to mean a more general expression of power through dissecting connectivity, and *command* involves organization through actual direction from above.

### **Dominant centres**

In computing the global network connectivity of a city, its service values are multiplied by the service value of each other city for a given firm (equation 3.6). For each city these products can be classified into three types. Where the city in question has the higher service value it can be referred to as a *dominant* connection; where it has the lower value it is a subordinate connection; otherwise, where both values are the same, there is neither dominance nor subordination. From this I can dissect the network connectivity of a city into three parts: connectivity-through-dominance, connectivitythrough-subordination and neutral connectivity. In such an analysis only thirty-four cities have more connectivity-through-dominance than connectivity-through-subordination. These are shown in Figure 4.7, where they are differentiated by the ratio between the two types of connectivity. London and New York stand out with 17.5 and 14.9 times more domination than subordination in their network connectivities respectively. These are designated 'mega' dominant centres, given that the next highest ratio is only 3.5. There are six cities with ratios from 2.5 to 3.5 and they are designated 'major' dominant centres in Figure 4.7. Given their overall importance in connectivity, it is not surprising that Hong Kong, Paris, Tokyo and Chicago appear in this category, but Frankfurt and Miami are less expected. Frankfurt actually ranks fourth, a position that



Figure 4.7 Dominant cities (from Taylor et al. 2002c). (For city codes, see Figure 4.1.)

is far above its usual world city ranking. This suggests that its role as EU financial centre is reflected as major dominance. Miami's major dominance status is obviously related to its regional functions, to be detailed further in what follows. The cut-off point between 'medium' and 'minor' dominant centres is 1.5. The most notable feature of the distribution of cities in Figure 4.7 compared to the global network connectivities in Figure 4.2 is the relative unimportance of Pacific Asia, which has only five dominant centres compared to fourteen for Western Europe and eleven for northern America.

## Global command centres

The failure of Pacific Asia as a region of powerful world cities (in the original sense of 'command and control centres') is further accentuated when the focus turns to headquarters cities, those with service values of 5. There are only twenty-one cities that house the headquarters of the 100 global service firms: they can be properly termed 'command centres'. These are shown in Figure 4.8 and are differentiated in terms of the total product of service values that includes a city's scores of 5. Once again London and New York stand out, with values of 21,920 and 17,649 respectively, and the third place is far behind (Chicago with 5,145). These two cities are the 'mega' command centres of the world city network. There are two other cities that have command products above 4,000 and, with Chicago, are designated 'major' command centres. The boundary point between 'medium' and 'minor' is 1,000. The key feature of this pattern is the total concentration in Western Europe and northern America with the sole exception of Tokyo as a major command centre. On this occasion there are as many cities represented in northern America as in Western Europe (10 each). This is a stark picture of where the direct instrumental power lies within the world city network. Globalization may be a worldwide phenomenon but its command centres are most certainly not so distributed.



Figure 4.8 Global command centers (from Taylor et al. 2002c). (For city codes, see Figure 4.1.)

### Regional command centres

The degree of power exercised by headquarters offices will obviously vary by firm depending upon how each firm organizes its decision-making processes (Dicken 1998). Some firms are'vertical' in their structures (a hierarchy of offices), whereas others are more 'horizontal' (relatively autonomous offices). For instance, the law firm White & Case concentrates its decision making in its New York headquarters, whereas its rival Baker & McKenzie is very decentralized and refuses to call its central 'administrative office' in Chicago the headquarters (Beaverstock *et al.* 2000b). Both hierarchy and decentralization can take a geographical form, with particular offices chosen to be 'regional headquarters'. The operative word here is 'chosen'. Generally, the main head-quarters reflects a firm's origins and it is usual for the city where a firm began to continue to house its main decision-making functions. In contrast, regional headquarters are designated as part of a firm's spatial strategy and are therefore particularly relevant for searching out global patterns (Godfrey and Zhou 1999).

Most of the global service firms in the data do not have designated regional offices, but there are enough that do to show a clear pattern of spatial organization. As part of the data collection, all offices that had 'extra-locational functions' were identified; these could be national, transnational or regional in nature. Here I concentrate upon the 118 transnational and regional offices. Ignoring cities with just one such office (which just reflects particularities of a single firm), cities with transnational and regional offices are shown in Figure 4.9. London has by far the most of such offices (25), often with responsibilities covering Europe, the Middle East and Africa (EMEA). If 'major' regional world cities are defined as those with at least ten such offices, there are three other cities that qualify: Hong Kong (15½, the '½' indicating shared responsibility), New York (13) and Miami (11). There are also three cities designated 'medium' regional world cities, with from seven to nine such offices: Singapore (9), Tokyo (7½) and São Paulo (7½).



Figure 4.9 Regional command centers (from Taylor et al. 2002c). (For city codes, see Figure 4.1.)

These results are very similar to those given in Taylor (2000a) but are based upon much more evidence. The remaining cities in Figure 4.9 have from two to four transnational or regional offices. Notice that with this form of organization there is a diffusion of some instrumental power out from northern America/Western Europe. Pacific Asian cities reappear beyond Tokyo, and there are three cities servicing 'southern regions' (São Paulo, Johannesburg and Manama). However, there are still *extra-regional* head-quarters, notably London for the Middle East/Africa and Miami for the Caribbean/Latin America, where 'Northern' power impinges directly into the 'Southern' continents even at this regional scale.

Conclusion on domination and command: from this power perspective, Sassen's notion of global cities transcending the North–South divide seems a trifle sanguine; globalization begins to look very 'Western' as soon as direct expressions of power are investigated.

## Network power: gateway cities

The existence of an infrastructural power through the network is clearly suggested by the major discrepancy between the network connectivity rankings and the command functions. Whereas Hong Kong ranks third in global connectivity, it has no global command functions. This means that despite that lack, Hong Kong has attracted large numbers of service firms because of its position in the network. It is the prime location for firms to service clients in the growing Chinese market. Thus for many a global strategy, Hong Kong is a place where you *have to be*. Hong Kong is the node in the network where specialist knowledge on abilities and possibilities in the Chinese market intersects with global flows of information and ideas. Places such as this, where firms need to be to service their clients, embody a network power through their network and geographical position. Traditionally, such 'necessary regional cities' have been called gateway cities (Johnston, 1982), and this terminology has entered the world city literature (Drennan 1992; Mayerhofer and Wolfmayr-Schnitzer 1997; Drbohlev and Sykora 1999; Andersson and Andersson 2000; Short *et al.* 2000). Quite simply, the world economy does not consist of an undifferentiated market; there are congeries of regional and national markets each with their own particularities that have to be translated through gateway cities. Gateway cities are defined in two different ways drawing upon previous analyses.

## **High-connectivity gateways**

The simplest way to define the places where many firms decide they 'have to be' is to look beyond the twenty-one command centres (Figure 4.8). In Figure 4.10 the top thirtyfive cities *without* command functions have been selected in terms of their high global network connectivity. As already noted, Hong Kong ranks number one here since it is the third most connected world city even though it has no global command functions. These highly connected non-command centres are divided into three levels in terms of their network connectivity in Figure 4.10. At the highest level the cities each relate to a major national economy outside the top five economies (the United States, Japan, Germany, France, the United Kingdom): as well as Hong Kong/China there are Milan/ Italy, Toronto/Canada, Madrid/Spain, Sydney/Australia and São Paulo/Brazil plus the regional Singapore/ASEAN. Cities at the next level have a similar relation: Mexico City/Mexico, Buenos Aires/Argentina, Mumbai/India, Taipei/Taiwan plus the regional Miami/Caribbean–Latin America. These are all cities attending to gateway functions for national and regional markets: they are the classic gateway cities of contemporary globalization.



Figure 4.10 High-connectivity gateways (from Taylor et al. 2002c). (For city codes, see Figure 4.1.)

## Gateways to emerging markets

An alternative approach is to look at connectivity-through-subordination. This is the obverse of searching for dominant cities (Figure 4.7). Based as they are upon the subordinate relations, there is a temptation to see these cities only as 'dependent' within a hierarchy. But in network relations, where all cities are dependent on all others by definition, this subordination does not equal powerlessness. Rather I interpret these cities as 'emerging centres', new strategic places where firms from elsewhere choose to expand their geographical reach. In Figure 4.11 thirty-one cities with connectivity-throughsubordination levels above 5,000 are shown; those with levels above 6,000 are selected as 'major' emerging centres. By definition, all these cities have few important offices global or regional - but they house large numbers of ordinary offices. This suggests that the cities each have a particular attraction to many global service firms that have to have a presence in the city. Beijing has the highest connectivity-through-subordination, followed closely by Moscow. These are obviously capital cities of countries with large 'emerging' markets. Other major emerging centres - Seoul, Caracas and São Paulo are also leading cities in important emerging markets. Zurich, Europe's only major emerging centre, is a special case relating to Switzerland's success as a 'neutral' venue (especially in banking, where it is more a 'lax gatekeeper' than a gateway) within the world-economy. Beyond these major emerging centres the other cities in Figure 4.11 are quite similar in nature, being leading cities in emerging markets outside or on the fringe of the core of the world-economy.

Conclusion for network power: there are cities that are important strategic nodes within the world city network but which have no command power. In this configuration of power, the world city network does appear to transcend the North–South divide power differentials to a measurable degree.



Figure 4.11 Gateways to emerging markets (from Taylor et al. 2002c). (For city codes, see Figure 4.1.)

## Comparative connectivities

The world city network as defined by advanced producer services is not the only way in which contemporary cities are linked across the world. In this book it is argued that financial and business services are currently leading economic sectors that are dominating world city network formation, but firms in these sectors are by no means the only 'world city networkers'. The enabling technologies in computers and communications may have been stimulated in many of their advances through the demand created by financial and business services, but the technologies remain available to others. Worldwide communities relating to environmental issues and other global campaigns have created networks through non-governmental organizations (NGOs). All such institutions are instrumental in linking up their activities across the world, largely through cities. In fact, some of the larger NGOs have office networks as large and widespread as those of many global service firms; they are creating their own interlocking network of cities.

The interlocking network model can be used as a general conceptualization of city network formation involving a range of city networkers. Thus the methodology described in the previous chapter can be applied to all groups of organizations that have established networks of presence across cities. In this way it can be said that, say, environmentalist campaigners with their myriad global organizations are city network builders, just like business service firms. Thus as with the latter as described previously, data can be collected and manipulated to define new connectivities of cities reflecting a different set of inter-city relations. Here I look at three alternative ways in which cities are connected globally and compare the resulting city connectivities with global network connectivities (i.e. business service connections).

First, I consider global media cities as defined by the huge media conglomerates that have formed in the past decade. The results of feverish take-over activities, these firms now combine television and film with newspapers and books, and with web services and advertising. In the latter category there is a small overlap with the global services data. The data have been collected by Stefan Kratke (2002) and cover the leading thirty-three global media companies and their presence in 196 cities across the world. He has produced measures of the size of each firm's presence in each city, from which global media network connectivities are computed (using equation 3.10). Focusing on the top 104 cities (those with at least five firms present), a new cartogram has been produced to portray the new geography of connectivities (Figure 4.12). Compared with the original 'archipelago' of global service centres (Figure 4.1), media cities have a particularly European bias to their distribution, with both minor US cities and African/Middle Eastern cities missing from the new cartogram.

This European orientation to global media organization is confirmed by the new global urban geography in Figure 4.13. To show the pattern of media city connectivities I have divided the cities into three groups: the top twenty-five, the next twenty-five and the rest (i.e. those outside the top fifty cities measured for media connectivity). Well over half of the top group (16) are European cities. There are only three US cities in this group plus one each from Canada and Latin America, and three from Pacific Asia plus one from Australia. The explanation for this pattern is simply that although media firms might be organized globally, media markets tend to be very national in scope. Hence the global urban geography reflects a strategy for locating in the main cities of this mosaic of markets. The sixteen European cities are the leading cities of the largest national markets plus Barcelona as the media centre for Spanish Catalonia, the largest European media market not defined by state boundaries. In comparison to Europe, the US media market is more unified and therefore global media companies do



Figure 4.12 An archipelago of media cities. The cartogram places cities in their approximate relative geographical positions. The codes for cities are as follows: AD Adelaide; AK Auckland; AM Amsterdam; AN Antwerp; AS Athens; AT Atlanta; BA Buenos Aires; BB Brisbane; BC Barcelona; BD Budapest; BJ Beijing; BK Bangkok; BL Berlin; BM Baltimore; BN Bangalore; BO Bogotá; BR Brussels; BS Boston; BT Beirut; BU Bucharest; BV Bratislava; CA Cairo; CC Calcutta; CH Chicago; CL Charlotte; CO Cologne; CP Copenhagen; CR Caracas; DA Dallas; DB Dublin; DS Düsseldorf; DT Detroit; DU Dubai; DV Denver; ED Edinburgh; FR Frankfurt; GC Guatemala City; GU Gütersloh; GZ Guangzhou; HB Hamburg; HC Ho Chi Minh City; HK Hong Kong; HL Helsinki; HO Hobart; HS Houston; IS Istanbul; JB Johannesburg; JD Jeddah; JK Jakarta; KL Kuala Lumpur; KV Kiev; LA Los Angeles; LB Lisbon; LM Lima; LN London; LX Luxembourg City; LY Lyons; MB Mumbai; MC Manchester; MD Madrid; ME Melbourne; MI Miami; ML Milan; MN Manila; MP Minneapolis; MS Moscow; MT Montreal; MU Munich; MV Montevideo; MX Mexico City; ND New Delhi; NY New York; OS Oslo; PA Paris; PD Portland; PH Philadelphia; PN Panama City; PR Prague; RJ Rio de Janeiro; RM Rome; SA Santiago; SD Santo Domingo; SE Seattle; SF San Francisco; SG Singapore; SH Shanghai; SJ San José; SK Stockholm; SL St Louis; SO Sofia; SP São Paulo; ST Stuttgart; SU Seoul: SY Sydney; TA Tel Aviv; TP Taipei; TR Toronto; TU Turin; VI Vienna; WC Washington, DC; WS Warsaw; ZG Zagreb; ZU Zurich.

not have to locate in the smaller US cities. However, this dearth of major media cities in the United States may mask a general Western bias in this global industry. Although Pacific Asia presents a mosaic of national media markets similar to Europe, the region looks more like the United States than Europe in Figure 4.13. This pattern is explored further in Chapter 6. In terms of global media, it appears that Pacific Asian cities join with cities in other non-Western regions in a perpetuation of the old core-periphery pattern.

The second set of world city 'networkers' I consider are the new social movements as reflected in the organization of their NGOs. In particular, I focus on environmental, development, humanitarian and human rights NGOs as defined by *The UN Yearbook of International Organizations*. Using this source for 2001–02, seventy-four NGOs were selected for having offices in cities across at least three continents and for which good information could be obtained comparable to that for the global service firms. In this case the importance of cities for individual NGOs was scored from 0 to 4. The data

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Figure 4.13 Media network connectivity (from Kratke and Taylor forthcoming). (For city codes, see Figure 4.12.)

cover more than 600 cities and towns with NGO presences. For the cartogram in Figure 4.14 I have used just the 100 cities with the highest NGO inter-city connectivity. Here is a very different distribution of cities across the world. Regions previously identified as having few or no world cities are now represented: the most obvious case is sub-Saharan Africa, which now has over a quarter of the cities on the cartogram, but notice also the appearance of Central Asia and Central America, which were both wholly missing from Figure 4.1. In contrast, the reduction of the United States to just two cities on this cartogram is quite startling; clearly, US cities are relatively very unimportant to the NGO global space of flows. The explanation for this is partly to do with the political nature of NGO business. Figure 4.14 is dominated by capital cities, locales where NGOs work with and through national politicians and governments. Thus for the United States, Washington as capital and New York as UN headquarters appear to be sufficient. Of the remaining ninety-eight cities in Figure 4.14, ninety-two are capital cities.

This second alternative global urban geography is shown in Figure 4.15 and has been constructed in the same way as Figure 4.13 to facilitate easy comparison. In this case, sub-Saharan Africa has six of the major cities, which makes it the leading region; both Western Europe and Pacific Asia have five each. However, one of the most notable features of this geography is the widespread pattern of major cities. Beyond the three leading regions, major cities are scattered across Eastern Europe (Moscow), the Middle East (Cairo), South Asia (New Delhi, Dhaka), Latin America (Mexico City, Santiago, Buenos Aires) as well as the United States (Washington and New York). If globalization is about organization that is worldwide in scope and operation, NGO connectivities show these institutions to be the globalizers *par excellence*.

For a third new geography of world city networkers, I go back to the original services data and abstract the part of the service values matrix relating to banking/finance. Using just the twenty-three banking/finance firms, inter-city connectivities are computed to



Figure 4.14 An archipelago of NGO cities. The cartogram places cities in their approximate relative geographical positions. The codes for cities are as follows: AA Addis Ababa; AB Abidjan; AC Accra; AK Ankara; AL Algiers; AM Amsterdam; AN Amman; AO Antananarivo; AS Asunción; AY Almaty; BA Buenos Aires; BD Budapest; BG Bogotá; BJ Beijing; BK Baku; BL Banjul; BM Bamako; BN Bangkok; BR Brussels; BS Brasilia; BT Bridgetown; BU Bucharest; BZ Brazzaville; CA Cairo; CH Chennai; CO Colombo; CP Copenhagen; CR Caracas; CT Cotonou; DA Dakar; DH Dhaka; DS Dar es Salaam; DU Dushanbe: GC Guatemala City: GN Geneva: GT Georgetown (Guyana); HK Hong Kong; HL Helsinki; HR Harare: HV Havana: IS Islamabad: JB Johannesburg: JK Jakarta: KG Kigali; KM Kathmandu; KN Kinshasa: KP Kampala: KS Kingston: KV Kiev: LG Lagos: LL Lilongwe: LM Lima; LN London: LO Lomé; LP La Paz; LU Lusaka: MD Madrid; MG Managua; MN Manila; MO Moscow; MP Maputo; MR Monrovia; MU Mumbai; MV Montevideo; MX Mexico City; NA Nairobi; ND New Delhi; NJ N'Djamena; NY New York; OS Oslo; OU Ouagadougou; PA Paris; PH Phnom Penh; PP Port au Prince; PR Pretoria; QU Quito; RB Rabat; RO Rome; SA Santiago; SD Santo Domingo; SG Singapore; SJ San José; SK Skopje; SP São Paulo; SS San Salvador; SV Suva; SY Sydney; TB Tbilisi; TE Tegucigalpa; TI Tirana; TK Tokyo; TR Toronto: TU Tunis: UL Ulan Bator: VI Vienna: VT Vientiane: WA Washington, DC: YA Yaoundé: YE Yerevan; ZG Zagreb.

provide measures of global financial connectivity. Based upon the initial cartogram of 123 cities (Figure 4.1), a further geography of connectivities is produced (Figure 4.16) using the same way of dividing cities as in Figures 4.13 and 4.15. The highly connected cities on this figure are the international financial centres (IFCs) of the world. This is to extract the IFC element from within the broader concept of world city dealt with previously. This singular abstraction is particularly interesting because of the large literature on IFCs that no other global service can begin to match. The establishment of most IFCs of importance preceded the rise of contemporary world cities (Reed 1981). But not all of them: the recent development of Pacific Asia as a core zone for business services has been built primarily on banking/finance. The growth and regional spread of Japanese banks plus the attraction of US and European banks to the region have

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Figure 4.15 NGO network connectivity. (For city codes, see Figure 4.14.)



Figure 4.16 Finance network connectivity. (For city codes, see Figure 4.1.)

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produced the leading world region in terms of financial global network connectivity. Of the thirteen Pacific Asian cities in Figure 4.16, no fewer than nine feature as major IFCs. No other region can match this ratio or number: Western Europe has seven and northern America just four. Thus the rise of Pacific Asian cities has been disproportionately dependent on banking/finance, as shown earlier (Figure 4.6b).

Within these general geographies there are detailed patterns that can be compared by looking at the rankings. I concentrate on the top echelons of the connectivities. In Table 4.6 the top twenty-five cities in each of the four city-interlock connectivities are listed. All lists have London and New York ranked at the top except for the NGO connectivity, where Nairobi ranks first! Surely Nairobi has never ranked this high before in a world cities study. Its pre-eminence reflects, of course, the very different nature of the global space of flows in this case. Overall, the table includes fifty-three cities, of which only four appear in all four lists: London, New York, Tokyo and Brussels. No real shock here, with leading world cities that are either important capital cities or international 'capital cities' (of the UN and EU). There are twenty-three cities that feature in two or three lists, but perhaps the interesting ones are those that appear just once. Perhaps not surprisingly, there are only two cities that are to be found only in each of the services and the financial rankings: Melbourne and Miami, which rank twenty-fourth

#### Table 4.6 Rankings of cities on four network connectivities

Rank	Global network connectivity	Bank network connectivity	Media network connectivity	NGO network connectivity
1	London	London	London	Nairobi
2	New York	New York	New York	Brussels
з	Hong Kong	Tokyo	Paris	Bangkok
4	Paris	Hong Kong	Los Angeles	London
5	Tokyo	Singapore	Milan	New Delhi
6	Singapore	Paris	Madrid	Manila
7	Chicago	Frankfurt	Amsterdam	Washington, DC
8	Milan	Madrid	Toronto	Harare
9	Los Angeles	Jakarta	Stockholm	Geneva
10	Toronto	Chicago	Copenhagen	Moscow
11	Madrid	Milan	Sydney	New York
12	Amsterdam	Sydney	Singapore	Mexico City
13	Sydney	Los Angeles	Barcelona	Jakarta
14	Frankfurt	Mumbai	Zurich	Tokyo
15	Brussels	San Francisco	Vienna	Accra
16	São Paulo	São Paulo	Oslo	Cairo
17	San Francisco	Taipei	Prague	Dhaka
18	Mexico City	Shanghai	Tokyo	Rome
19	Zurich	Brussels	Brussels	Dakar
20	Taipei	Seoul	Hong Kong	Santiago
21	Mumbai	Istanbul	Budapest	Abidjan
22	Jakarta	Beijing	Warsaw	Buenos Aires
23	Buenos Aires	Bangkok	Lisbon	Dar es Salaam
24	Melbourne	Amsterdam	Chicago	Copenhagen
25	Miami	Warsaw	São Paulo	Beijing

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and twenty-fifth for global network connectivity, and Seoul and Istanbul, which rank twentieth and twenty-first for bank network connectivity. From the previous discussion of Figure 4.13 it will be no surprise that six of the seven cities that are ranked only under media network connectivity are European capital cities (the exception is again Barcelona, capital of Catalonia with its own language and media market). Not just for its number one ranking city, the most distinctive list is that for NGO network connectivity, where most (15) cities are not found in other lists. This confirms the evidence of Figure 4.15 that these inter-city relations define a quite different world city network. And it is not just the periphery bias especially featuring Africa (which has seven of the fifteen cities unique to this list) that is noteworthy. Within the United States (with Washington, DC) and Western Europe (with Geneva and Rome) there are different nodes within the core to which this network connects.

What these results show is that while the important cities in terms of global network connectivity and financial network connectivities are sometimes also important in media and NGO spheres, there are important differences with the latter networks. Clearly, cities in globalization involves more than financial and business services, but the latter are the dominant networkers and I continue to focus on them in the chapters that follow.

# 5

# City network analyses

To understand the evolution of the contemporary ways of the world, networks of cities are fundamental.

#### (Gottmann 1984: 1)

Measures of connectivity are the first clear benefit to be obtained through precise specification and customized data collection. Such measures provide a basic understanding of the cities within a network; they go a long way to satisfying the evidential lacuna in inter-city relations identified in Chapter 2. This is where I began Part II as discussions of 'connections'. But connectivities do not exhaust this discussion. As aggregate measures they are good for general assessment of cities, and disaggregations can inform us about roles and positions of cities within the network, as the previous chapter demonstrates. What is missing is any notion of how the network fits together. Thus the previous chapter can be viewed as 'node orientated'; in this chapter I move on to become much more 'network orientated': inter-city relations are analysed as a network structure.

The network analyses presented in this chapter are organized at three levels of focus. First, a particular egocentric analysis is developed that focuses upon one node at a time and describes its specific position in relation to all other nodes. Thus by going beyond aggregate measures of connectivity, the pattern of a city's linkages with other cities is constructed. This provides answers to the following types of question. Does London have more intensive connections with other European cities or with US cities? Where are Sydney's strongest connections: to Pacific Asian cities, to US cities or to West European cities? Hence I return again to Jane Jacobs' (1984) conception of cities having direct influences beyond their city regions. Second, I use standard clique analysis to identify intense 'sub-networks' within the overall network. The sorts of questions that are answered here are at the regional scale. For instance, do the globalization arenas northern America, Western Europe and Pacific Asia - constitute cliques of densely connected cities? Third, I look at the network as a whole and construct a new global space of inter-city relations. This produces what I call a new 'landscape' of cities that can be used to explore the relative positions of cities within the overall network. The chapter is divided into three sections based on these levels and concludes with a brief discussion of the problem of visualizing the world city network and the need for an alternative medium to the book format that I am restricted to here.

# Egocentric analyses: city hinterworlds

There is no readily available term for describing the pattern of a city's connections across the world and therefore I have had to invent one: hinterworld. Defining hinterworlds in relation to other concepts describing 'urban influences' is the task of the first