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Beyond the Global City Concept and the Myth of 'Command and Control'

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Abstract

The article argues that the lack of convincing empirical evidence for the global economy as being subject to 'command and control' results from that contention being a neo-Marxist myth. First, imagining the global economy as being subject to 'highly concentrated command' through the function of some major cities as 'strategic sites' for the production of 'command and control' is traced back through several neo-Marxist authors to narrate its genesis, and to argue that the lack of evidence for that proposition is a consequence of those antecedents envisioning capitalism as a totalizing structure, thus making the assumption *that it is subject to control and coordination from a distance. Second, Taylor's interlocking world city network model is forensically examined to explain that it is fallacious because it is a structuralism that, bedevilled by a sorites paradox, contains the further problem of containing no credible evidence for the existence of 'command centres'. Finally, the article moves beyond neo-Marxism's key concepts by juxtaposing their assumptions with ethnographic results from social studies of finance, a manoeuvre which forges an understanding of cities as socio-technical assemblages and eventful multiplicities, beyond,* inter alia*, the baseless assumption that the global economy is subject to 'command and control'.*

Introduction

> '[C]ommand and control are concepts that need unpacking and . . . once that process begins then the meaning of these concepts begins to slip away, like sand through the fingers.'
>
> Thrift (1993: 232)

Why the global city concept caught on and met with wide support as a *seemingly* valid way to understand contemporary globalization is an interesting and fundamentally important question for those engaged in the study of cities in globalization. The idea of the world economy being subject to control and coordination through major cities emerged as a core concept for neo-Marxist urban studies in the context of the political economy of the 1970s and 1980s. Then, in Britain and the US, Thatcher and Reagan respectively forced a replacement of the Keynesian postwar democratic settlement with a neoliberal formula(tion) founded on the 'free-market fundamentalism' of Milton Friedman and an obeisance to global capitalism — 'legitimized' through

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such venal ideologies as 'wealth creation', selfish hyper-individualism, privatization, financialization, computerization, liberalization, denationalization, deregulation, free trade and the 'invisible hand' of market forces — that skewed their national economies both sectorally, towards finance and servicing globalization, and geographically, with those sectors becoming ever more concentrated in the urban centres/city-regions of London and New York. In other words, the *Götterdämmerung* of neoliberalism came to town and the idea of world or global cities chimed with the *need* of neo-Marxist critique for the world's financial centres — exemplified at the time by New York, London and Tokyo — to be understood as centres of control for an economic and financial globalization that represents just the latest stage in the development of an uneven and polarizing capitalism.

In this article I argue that this way of thinking about cities in globalization, about the role and function of a certain type of city as the *nec plus ultra* locations for subjecting a world economy to control, coordination and 'command', is a mistake. To make the argument, the article proceeds in three parts. Firstly, the neo-Marxist origins of the global city concept, and that concept itself, are discussed — from Hymer (1972), Cohen (1981) and Friedmann (1986), to Sassen (1991) — in a way that specifies how the widely acknowledged lack of evidential proof for the global city concept's claims for 'command' as a produced functionality is a consequence of its theoretical foundation in a neo-Marxist envisioning of the world economy as a structured totality to assume a *need* for strategic cities of a certain type to be in control. Secondly, the sorites paradox at the root of Taylor's construction of a 'world city network'[1] via an interlocking network model (INM) is discussed to expose how it discloses a further, more fundamental problem. This is because, whilst purporting to be an *extension* (Taylor, 2001: 183) of Sassen's (1991; 1994; 2001; 2002) work, Taylor's model not only fundamentally contradicts the global city concept in its technical minutiae,[2] but also contains no empirical proof for centres of authority (i.e. global 'command' centres) in the network. Indeed, it is demonstrated, for the first time, exactly how Taylor's widely adopted INM represents — as a descendent of Hymer (1972) and Friedmann (1986) — the end-game for neo-Marxist work on cities in globalization because as the apogee of structuralism the city vanishes all together. This is because its emphasis on relations is to the detriment of the terms (the cities or 'nodes'), so that cities are reduced to no more than place-less 'containers' of unrelated autonomous corporate service firms. Finally, the article

1 The 'world city network' is in inverted commas, not because it is an inferred network of a relatively small selection of advanced producer firms (*cf*. Robinson's 2005 critique of Taylor's concept), but rather because, in the 'world city network', the role of cities as more than just place-less 'containers' – as both 'dense *and* transient networks of social interaction and subjectification' (Thrift, 1993: 235) and as socio-technical assemblages and multiplicities – has vanished to the extent that there are no interactions *at all* between the different corporate service firms either in or between 'nodes' (i.e. cities).

2 Smith and Doel (2011) briefly sketched the mutual exclusivity and aporia of Sassen's and Taylor's approaches to 'command' – independent inter-firm (Sassen)/interdependent intra-firm (Taylor) – leaving much of global urban studies in a kind of theoretical limbo. This article's purpose is to detail fully and draw out the implications of that astringent observation to show how, in fact, the exposure of the myth of the compatibility of Sassen's (1991; 2001) and Taylor's (2004) concepts signals the twilight of the global city concept, the interlocking 'world city network' model, and any notion that the global economy is subject to 'command'. Indeed, it is worth signalling to you from the outset that this article's focus on detailing the myth of 'command and control' in the global city concept and the interlocking 'world city network' (rather than addressing the many related issues discussed in Sassen's (1991; 2001) and Taylor's (2004) books such as employment and earnings, casual and informal labour markets, social polarization, transnational democracy, Dutch hegemony in the world-system, and so on, that could have been alighted on) is not happenstance. My contention is that both Sassen's and Taylor's concepts stand-and-fall on their key assumption of 'command and control', the refutation of which fundamentally undermines the significance and importance that both authors work has been afforded as a whole in international urban and regional research.

moves beyond the rubrics of neo-Marxism, structural-functionalism, structuralism and structural networks through a juxtaposition of empirical results from the social studies of finance (SSF) literature with the 'command' assumptions of Sassen (1991) — i.e. global cities as 'highly concentrated' sites where 'command and control' is produced — and Taylor (2004a) — i.e. an interlocking 'world city network' where 'command and control' is a structural effect of the network — to advance the relevance of SSF literatures for understanding financial centres as socio-technical assemblages and eventful multiplicities.

The global city concept *de novo*

> 'We all worry about the circumstances of our death; the circumstances of our birth, however, are less worrisome to us.'
>
> Houellebecq (2005: 12)

How did the global city concept and its advancement of 'a new type of city' (Sassen, 1991: 4)[3] in 'command' of the world economy come to be a celebrated idea within neo-Marxism? In effect, the idea that certain cities act as centres of 'highly concentrated command' (Sassen, 1991: 3) for the globalization of distanciated economic activity has a particular heritage, emerging from Hymer (1972), several years before most commentators currently assume: 'The starting point of this contemporary debate is generally regarded to be the presentation of a research agenda by Friedmann and Wolff (1982)', write Newman and Thornley (2011: 32), in their *post hoc* discussion of the genesis of the 'world city' and 'global city' literature (e.g. also see Friedmann, 1995; Taylor, 2001; Davis, 2005; and Surborg, 2011 for the same belated starting point). An understanding of the protracted neo-Marxist background to the global city concept (Sassen, 1991) is essential for understanding its assumption of 'command', and why it is diametrically opposed to Taylor's (2001; 2004a) INM and its assumptions about 'command centres' in a 'world city network', even though it *appears* to be similar given its common focus on advanced producer services.

The idea of a world economy articulated through certain cities — a shortlist of unofficial capitals of the world including Rome, Constantinople, Venice, Amsterdam, London and New York — is longstanding (Braudel, 1984; Hall, 1998). Hall (1966: 7) followed Geddes (1915), to define 'world cities'[4] as 'certain great cities, in which a quite disproportionate part of the world's most important business is conducted'. Consequently, Hall (1966: 240) predicts that 'The economic life of the world will be concentrated into a few major information centres', namely: London, Paris, Randstad Holland, Rhine-Ruhr, Moscow, New York and Tokyo. However, the specific idea of certain cities having a 'strategic role' in controlling the world's economy is relatively new and can be traced back to a handful of authors writing in the 1970s and 1980s who were the first to theorize why an emerging empirical reality of an increasingly disproportionate concentration of multinational corporations and corporate service firm headquarters in a handful of major cities might be significant for the structural-functionality of the world economy as a totality. Hymer (1972), Cohen (1981) and

3 Sassen (1991: 4) identifies a troika of cities: 'Leading examples now are New York, London, and Tokyo'.

4 'World cities' as a term can be traced back to Goethe (Sassen, 2001: xix). Lefebvre (2003: 169), meanwhile, notes that the term 'global city' is 'generally attributed to Maoism, if not Mao Tse-tung himself'. Lefebvre develops the idea, in his 1970 publication, to describe a global city as a 'center of power' and 'a decision-making center that does not necessarily coincide with the capital [city of a nation]' (*ibid.*: 170; see the error in N. Smith, 2003: xx). Hence, the common misconception that the 'global city' was *first* coined by Sassen (e.g. see the error in Robinson, 2002: 535).

Friedmann (1986; with Wolff, 1982) stand out in this regard. These authors all focused on multinational corporations (MNCs) in cities as the locus of control for the world economy. However, it was Cohen who most directly foreshadowed Sassen's (1991) and Taylor's (2004a) theses, because he not only considered cities as centres of corporate headquarters but also as centres of international banking and strategic corporate services: 'Only a place with a wide range of international business institutions can be truly called a world city' (Cohen, 1981: 302). For his part, Hymer (1972: 123) suggested *a correspondence principle whereby a centralization of control within MNCs relates to a centralization of control within the international economy*. Hymer (1972: 124) argued that the emergence of MNCs produced a tendency for high-level corporate decision making to be centralized in a few key cities, so that '[T]he world's major cities . . . will be the major centers of high-level strategic planning'. Consequently, Hymer (1972: 114) envisioned an emerging urban hierarchy with a centralization of 'high-level decision-making occupations in a few key cities in the advanced countries, surrounded by a number of regional sub-capitals', with the rest of the world confined 'to lower levels of activity and income'. Overall, the basic pattern would be one that rests on a 'dependency relationship' (*ibid.*: 126) and the distinction between 'superior and subordinate, head office and branch plant' (*ibid.*: 114; *cf.* Taylor, 2004a). In short, it was Hymer who first outlined a 'global' hierarchy of cities (*cf.* Taylor, 2001: 181) and he envisioned centralized control of the international economy as lying in some cities rather than others (Hymer, 1972: 124, provides a list of such cities). Consequently his article stands as a kind of Urtext for all subsequent work that has also assumed that the world's economy is, in one way or another, subject to control.

Cohen (1981) subsequently developed Hymer's (1972) thesis. For Cohen (1981: 288), '[G]lobal cities act as centers of corporate control and coordination for the new international system'. Importantly, Cohen extends Hymer's focus on MNCs in cities to consider corporate demand for advanced producer services, and he 'links these new demands to . . . the emergence of a series of global cities' (*ibid.*: 287–88) that 'serve as international centers for business decision making and corporate strategy formulation' (*ibid.*: 300). Thus, Cohen lays the path for Sassen's (1991) subsequent emphasis on advanced producer services,[5] rather than MNCs, in her global city concept, because he identifies the agglomeration of corporate services and other key international functions in a few cities. It was Cohen (1981: 302) who first argued that to measure the importance of a city as an international business centre, '[o]ne has to know if the city is a strong center of international banking and strategic corporate services'. However, just as important to the formation of the global cities research paradigm was the fact that Cohen also broadened his argument. Crucially, Cohen argued that '[Global cities] have emerged as cities for the coordination and control of the NIDL [new international division of labour]' (*ibid.*: 300). In other words, it was Cohen who first assumed a neo-Marxist *strategic-control* principle for the world economy, an *avant la lettre* manoeuvre that influences Friedmann (1986), Sassen (1991) and Taylor (2004a).

Whilst Cohen was inspired by Palloix (1975) to consider a world hierarchy of cities — Cohen reduced Hall's (1966) list of seven world cities to argue for the predominance of New York, Tokyo and London; Cohen primarily concentrated on delimiting the new hierarchical structure of the urban system in the United States. Cohen (1981: 311) argued that, in 'drawing decision-making activities away from national or regional centers', the NIDL had led to an increased centralization of '*international* corporate decision-making and corporate services' (*ibid.*: 300, original emphasis) in some US cities (New York and San Francisco are the only US cities Cohen classifies as global cities). It was subsequently left to Friedmann (Friedmann and Wolff, 1982; Friedmann, 1986) to expand on Cohen's work with the idea that the relative economic *power* (*cf.* Sassen,

5 Sassen (1991) also draws on the emerging research at that time on corporate services by economic geographers (e.g. Peter Daniels) and economists (e.g. Thomas Stanback).

1991) of some cities could be understood as operating in a hierarchical fashion by outlining a worldwide urban hierarchy of global control.

'[B]y looking at the system as a whole', Friedmann and Wolff (1982: 319) explicitly set out to establish an agenda for research and action on the premise that the world's dominant cities (i.e. those few cities 'in which most of the world's active capital is concentrated' — *ibid.*: 309) are increasingly integral to the formation of a worldwide economic system which must be 'viewed as a totality' (*ibid.*: 314). Friedmann and Wolff contended that capital assigns spatial dominance to the city — 'World cities are the control centres of the global economy' (*ibid.*: 319); that transnational capital allocates control to just a select few of those cities at any one time; and that without these 'world' cities 'the world-spanning system of economic relations would be unthinkable' (*ibid.*: 312). These axioms of the world city 'approach' allowed Friedmann and Wolff to speculate as to the possibility of a hierarchy of world cities, and of global influence and control, in the capitalist world. Indeed, 4 years later, Friedmann (1986) went on to outline his famous 'world city hierarchy' that — following the invention of a 'semi-periphery' by Immanuel Wallerstein — classified 30 world cities as either primary or secondary, and as lying in either the core or the semi-periphery of a world economy with an internal structure of dominance and sub-dominance.

It was by working from this established neo-Marxist tradition and epistemological framework, where '[t]he most inherent feature of the world city is its global-control function' (King, 1991: 25), that Sassen (1991: 3) could propose her global city concept and a 'new strategic role for major cities'. In her neo-Marxian *magnum opus*, the culmination of several years of empirical research, she envisioned a poly-nodal world economic system with New York, London and Tokyo as the leading global cities in 'command' of a process of globalization (not urbanization) predominantly spread across the triumvirate of North America, Western Europe and Asia.[6] For Sassen, global cities are those that now function 'as *centers* of finance and as *centers* for global servicing and management' (*ibid.*: 324, original emphasis), having both specialized attributes — 'as key locations for finance and for specialized service firms . . . as sites of production, including the production of innovations, in these leading industries; and . . . as markets for the products and innovations produced' (*ibid.*: 3–4) — *and* specific internal inter-firm geographies, i.e. a 'new dynamic of agglomeration' (Sassen, 2001: xx), whereby

6 Whilst — following Cohen (1981), whom she cites (1991: 359 and 1988: 205) — Sassen first chose to use the term global city in 1984 (Sassen, 2001: xix; also see Sassen, 1988), it was in fact Heenan who used the term 'global city' before her and Cohen (1981), explicitly stating that his 'article focuses on the emerging phenomenon of the global city' (Heenan, 1977: 81). He linked the emergence of global cities to the world economy several years before Cohen: 'For the most part, global cities are evolving in response to fundamental changes in the world's industrial system' (*ibid.*: 82). What is even more prescient about Heenan's article is his argument that the globalization and regional organization of MNCs was 'creating a *need* for global cities' (*ibid.*, my emphasis). Heenan regards the emergence of global cities as being necessitated by those MNCs that are organizing themselves on a regional basis: *global cities are a system requirement*. It is this structural change in the organization of MNC-led economic globalization that is the thrust of Heenan's overall argument: some cities are now required to be 'knowledge-oriented command posts' (*ibid.*), and to demonstrate global and regional leadership. Indeed, Heenan (1977) is the author who refers to cities as 'command' centres *before* Sassen — 'command' through cities does not figure in the writings of Hymer (1972), Cohen (1981) or Friedmann (1986; Friedmann and Wolff, 1982). However, the dominance of the neo-Marxist tradition in shaping the debate in urban studies meant that Heenan's article, written from a business-studies perspective, was dismissed as 'superficial' for 'failing to take into account the dialectical relationship between the world system and the "global city" ' (Friedmann and Wolff, 1982: 332). Consequently, Heenan's article is almost never cited again in the global and world city literature (*cf*. Beaverstock *et al*., 1999; Hall's (2001) review of Beaverstock, Smith and Taylor's work). Failing the neo-Marxist dialectical litmus test, Heenan is absent from overviews of the research field (such as those by Alger, 1990; Yeoh, 1999; Knox and Taylor, 1995; Smith, 2000; Brenner and Keil, 2006), only now beginning to (re)appear in the canon (see Taylor *et al*., 2013).

complementary services from proximate competing firms are 'jointly produced' for transnational clients:

> Advanced services are mostly producer services; unlike other types of services, they are not dependent on proximity to the consumers served. Rather, such specialized firms benefit from and *need* to locate close to other firms who produce key inputs or whose proximity makes possible *joint production* of certain service offerings. The accounting firm can service its clients at a distance but the nature of its service depends on *proximity to other specialists*, from lawyers to programmers. Major corporate transactions today typically require simultaneous participation of several specialized firms providing legal, accounting, financial, public relations, management consulting, and other such services' (Sassen, 1991: 11–12, my emphasis).

In short, global cities are afforded a centrality as 'highly concentrated command points' (*ibid.*: 3) in the world economy's organization because they are crucial sites for finance and for specialized producer services, not only because they are innovative production sites in these leading sectors, and markets for what they produce, but crucially *also* because those finance and specialized producer services need to be both *proximate* and *complementary* to one other in order to 'jointly produce' their service offerings for their MNC clients.[7]

Now, whilst Sassen tries to distinguish her global city concept from a previous cohort of neo-Marxist writing on 'world cities' (Friedmann, 1986) and 'global cities' (Cohen, 1981) by 'emphasizing the role of global cities as production sites and market places in which command and control is generalized' (Thrift, 1993: 232) she is not, as Thrift astutely observes, wholly convincing in this post-Weberian manoeuvre for three reasons. First, her theoretical vocabulary is still 'concerned with concepts like "producer services", "agglomeration" and "command and control" ' (*ibid.*). Second, her major cities with a 'new strategic role' are 'the same cities, which were simply the apexes of the formal corporate hierarchies of national corporations and transnational banks' (*ibid.*: 233). And thirdly, she 'offers insufficient reason why such spatially concentrated sites and market places are necessary in a decentred world' (*ibid.*). Thus, as Smith (2001: 55) subsequently notes, Sassen's concern with 'global cities as concentrated production sites for postindustrial services and financial goods' is 'precisely the point at which Sassen rejects a discursive space suitable for assessing power and agency in favour of one restricted to the language of the structural-functional logic of capitalist urbanization'. And, Smith further explains:

> There can be no question that this is an intentional move on her part. In her words (Sassen, 1991: 6): 'I am seeking to displace the focus of attention from the familiar issues of the power of large corporations over governments and economies, or supracorporate concentration of power through interlocking directorates or organizations, such as the IMF . . . My focus is not on power, but on production: the production of those inputs that constitute the capability for global control and the infrastructure of jobs involved in this production' (Smith, 2001: 55–6).

Thus, it is in this post-Weberian sense (i.e. focusing on production, not power) that Sassen differs from Friedmann (1978; 1986; see Sassen, 2001: xxii), and consequently this is why Taylor's (2001; 2004a) work directly contradicts Sassen's (1991),[8] because Taylor draws *explicitly* (see Taylor, 2004a: 87–8) on Friedmann's (1978, 1986) work on the spatial organization of power in urban systems *as a given*, to frame his

7 This is why, to emphasize how Sassen's assumption is more than just 'joint production', Smith and Doel (2011: 3) refer to this key assumption as 'packaged complementarity'.

8 Note Taylor's (2004a: 87) explicit misunderstanding of Sassen (1991).

conceptualization of the power of 'global command centres' in the interlocking 'world city network'.[9]

In toto, the validity of the global city concept (Sassen, 1991) is dependent on two assumptions that are a consequence of a particular post-Weberian move to emphasize global control as produced rather than given, and therefore may well be premised on a double fiction: on the one hand, the fiction of proximate inter-service firm interaction within individual cities 'packaging' (i.e. jointly producing) their services for TNC clients; and on the other hand, the fiction that such activity would amount to a 'highly concentrated command' of the global economy rather than just one aspect of its geographical management.[10] Whereas it is commonplace nowadays for economists to look beyond capital, labour, and land to argue that clustering, concentration and density in cities and their wider metro-regions are the *élan vital* of economic growth, the specificity of Sassen's global city concept as being fundamentally about 'concentrated command' and a 'strategic role' for cities, rather than economic growth *per se* (Storper, 1997: 224), means that her argument is quite different.[11] Do firms really cooperate to make 'possible joint production of certain service offerings' (Sassen, 1991: 11)? Or do they just sell services to one another? And would that really amount to being in 'command' of the global economy anyway? It all seems highly unlikely, even to a lay person, particularly after the subprime financial crisis (2008–present) has led to widespread portrayals of both London and New York as out-of-control 'gambling dens' or 'casinos' (see Zaloom, 2010a). Indeed, given that the carapace of the global city concept has not been broken open to significant experimental test, there is no proof-of-concept:[12] not questioning its assumption that the global economy is subject to 'highly concentrated command' seems somewhat akin to believing in phlogiston or vitiated airs.

However, before dismissing the notion that the global economy is subject to 'command and control', the article now turns to examine the work undertaken by Taylor, and his numerous co-authors, who continue the misguided neo-Marxist habit of *assuming*, in one way or another, that firms exercise 'command and control' of the global economy through their headquarters in structural networks. Taylor has proposed the existence and importance of what he calls a 'world city network'. However, Taylor's (2001: 183) aim of building on Sassen's assertion as to the importance of advanced

9 Researchers continue to make the error of seeing Sassen's and Taylor's concepts as compatible (e.g. see Pereira and Derudder, 2010; Neal, 2011) despite the glaring chasm between them. They make this mistake because they only understand advanced producer services as a theme spanning and linking both authors' work. In other words, they overlook how the attempted post-Weberian twist Sassen (1991) gives to her global city concept (i.e. inter-firm networks for 'joint production') is in stark contrast to how Taylor's interlocking 'world city network' is, whilst concerned with corporate services rather than multinational corporations, in essence, a common conceptual strategy going all the way back via Friedmann (1986) to Hymer's (1972) neo-Marxist work on dominant and subordinate office networks (i.e. intra-firm networks).

10 Parnreiter's (2010) attempt to divide global city functions into those concerned with the management of the world economy and those concerned with 'command and control' finds scant evidence for the latter in Mexico City.

11 For example, the urban economist Kennedy (2011: 4; for his agglomeration argument, 115–16) explicitly contrasts his approach to both Friedmann's and Sassen's different approaches.

12 Just a selection of illustrative quotations (also see Storper, 1997: Chapter 9; Smith, 2001: Chapter 3) that acknowledge an evidence gap are: (1) 'The dominance of London, New York and Tokyo, for example, is more often asserted than demonstrated' (Short *et al*., 1996: 698); (2) 'a configuration of global cities is still conceptually and empirically suspect' (Gottdiener and Budd, 2005: 41); (3) 'the idea that global cities are still centres of command and control is a highly problematic one, even in the post-Weberian sense in which Sassen considers the thesis' (Thrift, 1993: 232); and (4) 'empirical evidence that documents the management *and* the command functions of global cities is rare . . . little is known about the actual practice of exercising management and command functions, which, needless to say, undermines the strength of the global city argument' (Parnreiter, 2010: 35).

producer service firms for 'commanding' the world economy through major cities was, in fact, misguided, because his aim was not to collect *inter*-firm data that might detail the joint production of services by advanced producer service firms in individual global cities, thus addressing the lack of empirical evidence for Sassen's global city concept, but rather to adopt a completely different strategy: collecting *intra*-firm data on the office networks of individual corporate service firms in order to attempt to demonstrate that global 'command and control' is both distributed across a 'world city network' as a functional whole, and centralized in four types of global 'command' centre. It is to Taylor's work that the article now turns, painstakingly debunking the INM by exposing how its bedevilment by a sorites paradox serves to disclose a further more fundamental flaw which means that a 'world city network' of global 'command' is a *non sequitur*, not, in *fact*, logically following on from its underpinning INM, because through that methodology the 'place-ness' of all the cities in the network vanishes.

The city vanishes into structure (a.k.a. the interlocking 'world city network' impasse)

> 'Question your tea spoons. What is there under your wallpaper?'
>
> Perec (2008: 210–11)

A number of critiques of Taylor's interlocking 'world city network' have been made, but they are not particularly telling because they often just repeat what Taylor himself says about his own conception of the INM and 'world city network'. First, critics (e.g. Nordlund, 2004; Robinson, 2005) point out that the agents in Taylor's interlocking 'world city network' are firms. But as Taylor himself points out (2004a; 2004b) he does this to avoid reifying cities as agents, and that is why Taylor is clear that in his network the firms (the 'sub-nodal' level) are the 'prime agents': 'The key point in this assumption is that it is the firms that are creating the flows and therefore it is they who define the world city network' (Taylor, 2003: 33) and 'global service firms are the key agency in world city network formation' (Taylor, 2004b: 297). Second, critics (e.g. Robinson, 2005) level accusations of economism at Taylor's interlocking 'world city network', decrying its narrow focus on advanced producer service firms. But again, this is its *raison d'être*: 'the research is very big geographically — global — but very narrow in topic' (Taylor, 2004a: 3) because Taylor's *claim*[13] is that he is building (see Taylor, 2001: 183) on Sassen's argument that advanced producer service firms play the central role in 'commanding' the global economy.[14] Third, critics are again only telling Taylor what he already knows when they point out that his raw data are attributional (e.g. see Nordlund, 2004; Robinson, 2005: 758–9). Taylor knows this, he is not an alchemic costermonger selling apples (attributes) as oranges (relations) as Nordlund (2004: 292) supposes. Taylor at no point claims to have actual flow data. Rather — working in the tradition of calibrated spatial interaction

13 *Cf*. Robinson (2005: 758) who takes Taylor's claim at face value.

14 Incidentally, this is why postcolonial critics are misguided when they chastise Taylor for 'dismissing' important cities around the world just because they are not service centres. For example, when Robinson (2005: 759) criticizes Taylor for having 'passed over' evidence on other forms of globalization, such as 'manufacturing, trade and NGOs, and . . . informal networks', she is *ignoratio elenchi* because Taylor has not overlooked the other evidence as such, it is rather that it fails to figure in Taylor's work as *important* (in fact, Taylor, 2004a: 95–100 does discuss NGOs) because evidence of other forms of globalization — in contrast to evidence about international financial and corporate services — have no *assumed* role, are not the dominant networkers, in global 'command and control'.

modelling — he describes intercity relations derived from the measurement of his set of attribute data. Fourth, although Neal (2011) identifies a structural determinism in Taylor's INM, it is not so much the structural, but rather the determinism, that concerns Neal. (Hence the defence of Taylor's INM against the charge of determinism, not structuralism, by Liu and Derudder, 2012.) This is unfortunate because it means Neal fails to see that it is the structuralism — where the terms (the cities) are reduced to mere 'nodes' — of Taylor's approach that is where the fundamental problem lies. Indeed, I will propose that the INM underpinning Taylor's specification of the 'world city network' is fallacious[15] and therefore represents an impasse for global urban studies. However, if all the extant critiques of Taylor's INM listed above miss their target, what is so wrong with it? What forensic critique might, to echo the apt phrase of Short *et al*. (1996), find the 'dirty little secret' in the fine detail that invalidates the interlocking 'world city network'? Well, as this article is about the myth of 'command and control', the central tenet of the literature on both 'world' and 'global cities', let us now examine that specific aspect in Taylor's (2004a) book to find its secret flaw.

To attempt to address the paucity of data on inter-*city* relations across the world — rather than the dearth of intra-*city* data about relations between advanced producer firms within the global cities that Sassen identifies — Taylor (2004a) has worked with numerous co-researchers to identify 315 cities in which just 100 independent rival firms, predominantly specializing in one of just six business services (accountancy, advertising, banking/finance, insurance, law, management consultancy), have located what are *assumed* (*cf*. Jones, 2002; Smith, 2010)[16] to be their headquarter and branch offices. He has done this because he believes that by computing that data he can meaningfully determine the 'global network connectivity' — 'where the direct instrumental power lies within the world city network' (Taylor, 2004a: 89) — of those cities with headquarter offices so as to locate 'command and control' in the global economy. 'There are only twenty-one cities that house the headquarters of the 100 global service firms: they can be properly termed "command centres" ' (Taylor, 2004a: 89). But this approach is fatally compromised.

In Taylor's INM, individual offices from the 100 corporate service firms are within 315 (in fact they are within 313 as Lucknow and Pyong-Pyang contain no firms) individual cities, each 'global' corporate service firm (the 'GaWC 100') has offices in at least 15 cities and have at least one office in each of Pacific Asia, Western Europe and North America. The logic of Taylor's INM methodology for discerning a 'global command centre' is one of amalgamating the presences of individual 'global' service firm headquarter offices in a city ('node') until he assumes, at a certain weighting, a global 'command' centre of a particular rank. Now, the empirical basis of Taylor's numerous writings is that the 'sub-nodal' data he has collected concern headquarter and branch 'nodal' locations of the *intra-firm* office networks of globalized business-service firms (*not* the 'sub-nodal' *inter-firm* networks). Thus, independent, unrelated service-firm headquarter offices are amalgamated to score and define the importance of any assumed global 'command' centres in a network of intercity relations, when logically that manoeuvre is meaningless. Taylor's methodology ensures that any 'nodal' global 'command' centre is never more than merely a 'container' of a quantity of unconnected, that is to say discrete, headquarter offices of just 100 'global' service firms: 'There may

15 Taylor (2004b: 298) agrees with Nordlund (2004) that his original INM article (Taylor, 2001) lacks a theory, and that he only makes some 'initial stumblings in a theoretical direction' in Taylor (2004a). In other words, it is the INM that is the crux of all Taylor's subsequent results, presentations, analyses, conclusions, and theoretical speculations about the 'world city network'.

16 Akin to Jones' (2002) exposure of the myth of 'global management' in transnational service firms, Smith's (2010) interviews with senior lawyers from law firms operating in, or rather through, Singapore, reveals that the world's largest transnational law firms do not, as Taylor's critical realism assumes, organize their intra-firm transnational office networks and business practices according to a scalar logic of having a headquarter office, regional headquarter offices and branch offices (*cf*. Taylor, 2004a: 66–7, 90).

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*' (Taylor, 2004a: 70, original emphasis). Taylor expresses no interest in, and has no data on, the relations, connections and networks *between* the 100 service firms — ironically, it would be evidence of those *inter*-firm relations within 'nodes' (i.e. cities) that might constitute some partial empirical grounding for Sassen's assumption of 'concentrated command' according to which corporate service firms do work together ('joint production') — to make his 'command centres' more than just place-less 'containers' of unconnected rival advanced producer service firms, with the assumed function of '*connectivity-through-dominance*' and '*connectivity-through-subordination*' within a 'world city network' (Taylor, 2004a: 88, original emphasis).

Mindful of the neo-Marxist tradition in which he is working, and which he did much to encourage (e.g. Knox and Taylor, 1995), Taylor is undone by his need to identify and classify some world cities as global 'command' centres. Taylor is caught out by his ambition to want to tell a big neo-Marxist story about the global economy as a 'world network', to visualize some of the world's cities as ranked types ('Mega', 'Major', 'Medium', and 'Minor') in order to see a hierarchy of 'command and control' in a so-called 'world city network', because, if cities (the 'nodes') are mere 'containers' of independent *in vacuo* commercial service firms (i.e. they are unrelated/unconnected to one another), any attempt to classify cities as 'global command centres' is inevitably bedevilled by a sorites paradox[17] that serves to disclose a much more fundamental flaw in the INM and consequent 'world city network'.

The inconvenient truth Taylor's approach needs to confront is the fact that no hierarchy of global 'command' centres within the 'world city network' can be claimed because any such classification is only ever predicated on the 'nodal' headquarter location of *one* firm's overall office network. One headquarters can never logically have the effect of defining a 'global command centre' because it is completely autonomous in its operations and relations to all the other different firms' headquarter offices. Taylor's data are *only* intra-firm. Thus, my point in deploying the sorites paradox here is not simply to criticize Taylor for the folly of trying to establish a difference of *kind* from a difference of *degree* (i.e. that the cumulative effect of working from the margin (+1) is to negate the very possibility of drawing a distinction, so that the margin hollows out an ever expanding abyss — Derrida, 1995; Deleuze and Guattari, 1987), because, as Taylor (2004a: 67) himself notes, he is not so much concerned with counting as with sectioning his dataset through a simple scoring system:

> [T]here is very detailed information for some firms and much less for others. This tension is resolved here by . . . [a] six-point service value scale . . . where two levels are automatically given: obviously 0 is scored where there is no presence of a firm in a city, and 5 is scored for the city that houses a firm's headquarters. Hence decision making on scoring focuses upon allocating the middle four scores (1, 2, 3 and 4) to describe the service value of a firm in a city. This means that for each firm three boundary lines have to be specified: between 1 and 2, 2 and 3, and 3 and 4. The basic strategy of allocation is to begin with the assumption that all cities with a non-HQ presence of a firm score 2.

Neither am I mobilizing the sorites paradox to critique Taylor's sectioning of his dataset through 'boundaries' to point to how his methodology is inherently 'arbitrary' and 'subjective', because Taylor has already attempted to counter that obvious critique:

17 The classic telling of the sorites paradox concerns the difficulty of answering the seemingly simple question: how many pebbles make a heap? Two or three are not a heap; 1,000 clearly are. There is no agreed threshold for 'heapness', a 'heap' is intrinsically vague, but we think we know one when we see one. The sorites paradox (from the Greek *soros*, meaning a 'heap') highlights how little-by-little arguments are a flawed form of reasoning.

> [T]he key issue is the subjectivity inherent in the process of this data creation: the resulting data do not have the key property of inter-subjectivity. That is to say, two people using the same information will not always decide on the same boundaries. Given the nature of the information this is inevitable. One fundamental question arises. Does this issue lead to so much uncertainty in the data that the exercise is irredeemably flawed? There are two answers to counter this concern. First, the means of scoring has been designed to be as simple as possible, pivoting on '2 as normal' and with decision-making limited to just three boundaries. Second, the exercise is carried out over a large number of firms so that particular differences will most likely be ironed out in the aggregate analyses that the data are designed for. (*ibid*.)

On the contrary, I refer to the sorites paradox because it enables the disclosure of a further underlying problem: that the fatal flaw in the INM and so 'world city network' is that the data need to be inter-firm, not intra-firm, if the city is not to be reduced to a place-less 'container' and vanish into structure.

In Taylor the sorites paradox (2004a) looks like this:

10,000 headquarter offices is a global command centre.
If 10,000 headquarter offices are a global command centre, then so are 9,999 headquarter offices.
So, 9,999 headquarter offices is a global command centre.
If 9,999 headquarter offices are a global command centre, then so are 9,998 headquarter offices.
So, 9,998 headquarter offices is a global command centre.
:
:
If 3 headquarter offices are a global command centre, then so are 2 headquarter offices.
So, 2 headquarter offices is a global 'command' centre.
If 2 headquarter offices are a global command centre, then so is 1 headquarter office.
So, *one* headquarter office is a global 'command' centre!

In other words, each individual and independent service firm headquarter office cannot logically be fully constitutive of an overall *process* of defining a 'global command centre'. Consequently, Taylor's ranking of 21 cities as 'Mega', 'Major', 'Medium', or 'Minor' centres of 'command' is a fallacy because it is always just the headquarter office of the 'network' of offices of *one* independent commercial service firm that is determining all the rankings in his typology of global 'command' centres. Not to be misunderstood, my point *is* that it is because Taylor's INM is only based on *intra*-firm data (i.e. data on the assumed headquarter and branch offices in the network of offices of autonomous *individual* corporate service firms) that his typology of global 'command' is sorcery. And this is crucial because all of Taylor's work on the 'world city network' from 2001 onwards (Taylor, 2001; *cf*. Beaverstock *et al*., 1999; 2000) is conjured through his notion of the INM, which serves as the pinion on which the very existence of his meta-geographical 'world city network' subject to 'command and control' depends.[18] *In nuce*, unlike in Sassen's global city concept whereby the city takes 'place' as a 'factory' for the production of 'highly concentrated command', or in other — though quite different (*cf*. Sassen, 2001: 350) — urban-centric neo-Marxisms such as Harvey's (2012) where capitalism is 'fixed' by the city because of its need for capital accumulation through land, rent and speculation, the city in Taylor's research has no 'place': 'world ~~city~~ network'.

18 Smith (2003a) suggested advancing those original pre-INM studies of the 'world city network' through actor-network theory precisely to avoid the city vanishing into structure.

Beyond the global city concept

> '[I]t is at least debatable whether the world financial system in particular is now "commanded" or "controlled" in any strong sense at all!'
>
> Thrift (1993: 232)

So, how might one further critique, and definitively move beyond, the neo-Marxist tradition, the global city concept, the interlocking 'world city network', and consequently a whole field of endeavour that is now moribund through its assumption that the global economy is subject to 'command and control'? I would propose taking heed of Thrift's (1993) signposting of a way out of studying cities through such a false assumption by engaging with those literatures that are, in a certain sense, descended from the 'new economic sociology' (i.e. the work of Mark Granovetter, Paul DiMaggio, and so on) that Thrift (1993: 232) first indicated to be a 'rather convincing' challenge to the taken for granted rhetoric of 'command and control'. Indeed, to develop Thrift's purpose of refuting the notion of 'concentrated command' by arguing for the social and cultural performance of cities 'as sites of social contact and narrative innovation, as places where this new world presents and represents itself, as places for story telling rather than strategy' (*ibid.*: 233), I will now draw out some of the implications of the findings of SSF research for challenging both the global city concept's (Sassen, 1991: 3) core assumption of 'highly concentrated command', and the 'world city network's' (Taylor 2004a; and his post-2001 co-authors) contention that the global economy is now under distributed, yet still centralized, 'command and control' across a worldwide network of cities as a functional whole.[19]

A number of sociologists (e.g. Knorr Cetina *et al.*, 2000; 2004; Knorr Cetina and Bruegger, 2001; 2002a; 2002b; 2004), anthropologists (e.g. Zaloom, 2003; 2004; 2005; 2010a; 2010b) and organizational researchers (e.g. Buenza and Stark, 2003; 2004; 2005) have, inspired by actor-network theory and its insistence that purportedly 'economic' practices are always already socio-technical, produced ethnographic SSF studies that are attentive to the everyday practices, performances, and geographies of financial firms. So, what are the ramifications of this SSF research if it is explicitly juxtaposed to both Sassen's (1991) global city concept and Taylor's (2004a) interlocking 'world city network' model?

Buenza and Stark (2003; 2004; 2005) conducted ethnographic research in an international investment bank based in New York's World Financial Center before and after the terror attacks of 9/11 to detail how '[a] trader is not an isolated and contemplative thinker, but is engaged in cognition that is socially distributed across persons and things' (Buenza and Stark, 2003: 141). However, what is interesting for the purposes of this article, is what can be drawn out from their study of how the trading strategy of arbitrage is achieved through the formation of 'socio-technical networks'

19 To develop further an observation from Smith and Doel (2011: 4) it should be noted that, with the revised edition (2001) of her original book (1991), and in subsequent writings, Sassen's research is a palindrome to the impasse identified in Taylor (2004a). Sassen no longer simply argues that the global economy is 'commanded' at a distance on an individual city-by-city basis (the intra-city/inter-firm contention of the global city thesis of her 1991 book), but rather shifts to a self-contradictory global city model whereby the work of 'command' is no longer 'highly concentrated' but is 'placed on' distributed global circuits. This is a convenient manoeuvre, given the popular shift to understanding globalization as networked that emerged in the mid-1990s (Castells, 1996), but unfortunately, it contradicts her key assumption as to why 'command' is able to occur at all, i.e. proximate complementary joint production between different specialist service firms.

(Latour, 1991) and 'communities of interpretation'[20] — how investment banks actually perform their business practices — in order to question the purchase of extant explanations for how such advanced producer services are organized and function as an explanation for where they are located.

Wall Street has, over several decades, become more and more of a metonym for the financial sector as a whole, because through a 'veritable quantitative revolution, based on three legs: high-speed network connectivity, high-powered computation and the development of mathematical finance' (Buenza and Stark, 2003: 154), finance firms have dispersed their operations across Manhattan, and beyond it, so as not to be 'highly concentrated' (Sassen, 1991: 3) either in Lower Manhattan or elsewhere. However, that dispersal cannot be explained solely through recourse to a technological determinism, the contention that urban geographies of finance can be 'read off' from the changes in the technologies of trading. Indeed, a location is chosen by an investment bank for more than the, nevertheless undoubtedly highly important, technological reason of winning a 'speed contest' against its rivals for competitive advantage. It is by investigating the role of locality through an understanding of technology as always a *socio*-technology — 'Technology is society made durable' (Latour, 1991: 103) — that Buenza and Stark (2003) have made numerous important observations that run contrary to extant assumptions about the global economy being subject to 'command and control' from major cities.

First, they note how in investment banking '[p]roximity has become crucial for some companies and obsolete for others, a source of profits for some departments and a threat to the existence of others' (*ibid.*: 157). A complexity that cannot simply be explained away by an extraneous addition, such as the assumption that 'joint production' occurs between proximate and complementary corporate service firms (Sassen, 1991), because that is merely to engage in a superinduction that displaces the actual multi-directional — centripetal and centrifugal — forces in play that are, in fact, influencing the locational choices of firms. Second, Buenza and Stark (2003: 158, my emphasis) note how '[T]he real locus of modern finance is not the Exchange *but the trading rooms*' of individual investment banks. The practice of trading is *within* individual firms, whose socio-spatial-technical organization is designed to enable innovation through producing new configurations (not by adding new resources). Indeed, ensuring a 'community of interpretation' between the different 'desks' with different strategies for interpreting securities (merger, index, or customer trading arbitrage) within any one firm is fundamentally important: 'the more that timely information is available simultaneously to all market actors, the more advantage shifts from economies of information to processes of interpretation. The trading room, so abundant in information, is a place of interpretation. Innovation is the product of interaction across heterogeneous principles of evaluation, and it occurs within the physical proximity offered by the trading room' (*ibid.*: 136). Third, because any individual firm's trading rooms are 'knowledge intensive' they need to be designed so as to foster a 'community of interpretation' and so are necessarily organized in a heterarchical fashion as independent centres of creative association, internally organized so as to distribute intelligence, organize diversity, forge trust and foster lateral ties. So, even the trading rooms are not organized by centralizing control in a hierarchical way with a 'chain of command', an attention to detail in SSF that does not bode well for Taylor's assumptions, via Friedmann, about adding up presumed hierarchical transnational office networks to pretend that power is a given of structural

20 Sassen (2006: 363) has written about '[t]he need for technical cultures of interpretation' in financial centres as a form of production – 'A financial centre is, therefore, more akin to a "production" center than a shopping mall' – which is akin to Friedmann (1986: 322) who identified world cities as 'centres for the production and dissemination of information, news, entertainment and other cultural artefacts', but in stark contrast to the socio-technical sense of a 'community of interpretation' in the SSF literature where its purpose is to indicate that the business practice is associational and configurative, not productive and constructive.

networks. Indeed, Taylor's assumptions about the modern organization having a command chain — with strategy and decisions flowing down from atop a hierarchical ladder of authority — is an understanding of organizations from the mid-twentieth century according to the notion of *dependence*, not an understanding of the contemporary firm where it is *interdependence* that is the essential *in situ* ingredient for the success of an investment bank's actual business practice. Finally, as 'communities of interpretation' and 'distributed intelligence' there is a 'place-ness' to the trading rooms of financial centres that is highly complex and simply cannot be captured by assuming either in-place 'joint production', or out-of-place 'command and control' through the transnational headquarter offices of advanced producer firms.

Zaloom (2003; 2004; 2005; 2010a; 2010b) similarly emphasizes the socio-technical in her ethnographic research on the trading floors and dealing rooms of Chicago and London. What is interesting for the purposes of this article is the implications this has for throwing into doubt any idea of the global economy as being subject to 'command and control'. Zaloom's ethnography focuses on the *discipline* of speculators on trading floors and in dealing rooms. With reference to Foucault, Zaloom (2005: 257) observes how speculators are trained, and train themselves, to strip money of its nonmarket connotations (i.e. its basis in social reality for paying the mortgage, buying a car, and so on) in order to block out all but the pulse of 'the market': '[c]reating a boundary around the space of the market allows speculators to hone and execute purified economic logics when they are dealing'. Speculators discipline themselves to shed ego, affect and individuality, so as to be no more than embodied instruments, responsive to the whims and twitches of the market: thus, paradoxically it is the market that controls and disciplines them. The traders are constantly disciplined and reminded not to delude themselves into believing that, through their own powers of reason, they can outwit the eventfulness of the market: 'discipline demands that the trader acknowledge that the market itself is the only authority' (*ibid*.: 265). Zaloom's ethnography shows that the market is an *event* rather than a structure that can be subject to 'command and control'. However, we need to advance the socio-technical focus of Zaloom's studies even further, to draw out the full implications of that eventfulness.

Investment banking now resides primarily with the machines, programmes, algorithms, software and trading methods — 'black-box trading', 'algo trading', 'robo trading', 'high-frequency trading' — that make financial centres 'fly by wire', and markets much more volatile.[21] But it is important to understand that the volatility is, to a significant extent, the consequence of the computerization of trading through algorithms by 'Quants' not being founded on value (worth): 'Quants use past market patterns to fashion signature deals based on mathematically obscure relationships among securities. They develop strategies without reference to underlying debts or to companies that generate value' (Zaloom, 2010a: 23). Indeed, it is profit that legitimates the practice of algorithmic arbitrage trading, not its relationship to value *per se*. All the programs, models and software are *baseless* because they are only concerned with the estimation of value, with pricing, and with the price for which a stock buys and sells. In other words, it is not simply the 'endemic contradictions of capitalism', and the hundreds of 'crises of modern finance' since the 1973 global property market crash and oil crisis,[22] that escape the algorithms, but crucially *what companies themselves actually do and own*. Only the way a company's stocks move is of interest (of profit) to the 'Quants', their managers, and ultimately so much of modern banking, now that it is beholden for its profits to the multifarious trading strategies of arbitrage. Thus, it is what does not belong in the algorithmic models, what is not included in moving money around to 'make nothing

21 On 6 May 2010 some 19.4 billion shares were high-frequency 'traded' in one day, more than in the whole of the 1960s, producing what came to be known as a 'Flash Crash' because the NYSE temporarily froze causing indexes to drop sharply.

22 The 1987 global stock market crash, the Japanese asset price bubble of the 1980s, the emerging market debt crises of the early 1980s and then again in 1997–8, the dot-com bubble, and so on.

but money' (to invoke Bear Stearn's infamous self-description), that can force the destabilization and unbinding of the networks of financial capitalism, and that is precisely why the global economy is beyond 'command and control'.

In sum, the emphasis on communities of interpretation, and socio-technical networks in SSF, is an important advance because it forces an understanding that, just because major cities host the headquarters of many of the world's major MNCs (Hymer and Friedmann), contain identifiable 'clusters' of corporate and financial services (Cohen) who might work together (Sassen), or are the chosen 'nodes' for the headquarter offices of transnational advanced producer service firms office networks (Taylor), that does not mean that, *ipso facto*, those major cities are 'organizing nodes' for a world economy that is subject to 'command and control'. In short, by focusing on the practices of financial firms in major cities, and by considering these practices as *per*formed (as events) rather than *pre*formed (as functions), SSF scholars have challenged the *modus operandi*, and consequently the *locus operandi*, of both Sassen's and Taylor's research. Furthermore, my specific advancement of Zaloom's studies with regard to the eventfulness of arbitrage further confirms the import of Smith and Doel's (2011) argument that financial centres are also eventful in a way that SSF scholars have not considered. Financial centres are multiplicities that are assembled, fixed and lent consistency through their performance, practice and enactment, to be sure, but the financial centre as a socio-technical assemblage is only able to be a performance because it is based on a 'founding element' (Badiou, 2006) that does not belong to that performance, i.e. that which is inconsistent and incalculable. In 'algo trading', the 'founding element' was revealed to be the baselessness of value, a fact that means that a financial centre cannot be simply reduced to its causes or conditions (Žižek, 2009: 386) to assume it is in 'command and control' of the global economy.

Conclusion

'On the word of no one.'
Motto of *The Royal Society*

As it stands, two strands of neo-Marxist urban studies where the research effort has been wedded by the assumption that the global economy is subject to 'command' have been thrown into doubt. It has been argued that Sassen's global city concept developed from a neo-Marxist heritage, going back to Hymer (1972), which envisioned the world economy as a structured totality controlled from a distance. This recognition underpins the point that the influence of this heritage gives rise to the presence of two *unproven assumptions* in Sassen's (1991) post-Weberian global city concept; first, globalization has a *systemic need* for 'highly concentrated command' through a certain type of city; second, complementary *inter-firm* co-operation and production between proximate rival service firms within individual cities both *occurs* and, moreover, can be *squared* with a capacity for 'command'. Next, the structuralist 'interlocking world city network' of Taylor and his co-authors was discussed to stress that it contradicts Sassen's (1991) global city concept because, with no post-Weberian twist to emphasize proximate and complementary 'joint production', it is theoretically akin to Friedmann's (1978; 1986) work in assuming that power is simply a *given effect* of structural networks. Furthermore, the fact that the interlocking 'world city network' is bedevilled by a sorites paradox exposes the more fundamental problem that it is based only on *intra-firm* data, a fact that condemns Taylor's attempt to mount a convincing evidential case that the global economy is now a network subject to 'command and control' through 'centres', to sophistry. Finally, by juxtaposing ethnographic findings from SSF literatures with the assumptions of 'command and control' in Sassen (1991) and Taylor (2004a), an understanding of cities and economies as socio-technical assemblages (Smith, 2003a;

2003b; Farías and Bender, 2010), practices and performances (Amin and Thrift, 2004; Ong and Collier, 2005), and eventful multiplicities (Smith and Doel, 2011) was advanced that has no investment in the notion that the global economy is, in one way (Sassen) or another (Taylor), subject to 'command and control'.

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