

## The regulation of design in global architecture firms: putting buildings in their place

### Abstract

The emergence of global architecture firms and their role in the production of city architectures raises a number of questions for social scientists. For example, how ~~;~~ indeed do ~~;~~ global architects ~~embed-ensure~~ the buildings they design ~~are 'in place' and in their local~~appropriate for the context ~~urban cultural,~~ economic, social and political contexts ~~of the places they are to be built in?~~

The aim of the paper is to consider this question. I take 'regulation' in its broadest sense and explore the role of standards and codes as well as other forms of social regulation in the process of emplacing designs. I argue that in order to understand how buildings are put in their place analysis is needed of both the design side adaptations architects make to buildings but also the consumption side regulation of designs and the way the behaviours of those inhabiting buildings produce 'local' meaning.

**Keywords:** architecture; globalization; regulation; professional service firms

## Introduction

The 'global' architect has a long history. Le Corbusier was arguably one of the first global ~~star~~ architects to capture the public imagination through design work — a 'starchitect' — whilst American architects like Jacob Wrey Mould were exporting designs such as the steel framed building in the late 1800s (Cody, 2003). ~~Today, 'global architects' — the likes of Foster and Koolhaas fulfil similar roles to Le Corbusier and Wrey Mould and are household names thanks to their constant media exposure. But~~ the latter half of the twentieth century was ~~also, however,~~ characterised by a new trend in relation to the 'globalization of' architectural practice; ~~the~~ the emergence and maturation of global firms such as Gensler (established 1966), Kohn Pederson Fox (1976) and Skidmore Owens & Merrill (SOM) (1936) that have 'global' network operations throughout North America, Europe and Asia. The tall building

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~~or skyscraper has come to represent the work of these firms as well as the work of global architects such as Foster and Koolhaas~~  
~~In terms of the work of these global architects, it is the tall building or skyscraper that has become a symbol of the work of these global architects, their endeavours~~ (McNeill, 2005a). ~~and W~~ whilst often controversial, cities from Beijing (McNeill, 2006), to London (Charney, 2007) and Sydney (O'Neill and McGuirk, 2003) have called upon ~~starchitects and~~ ~~firms architects and global firms~~ for the development of 'iconic' tall office buildings designed to represent the world city status of these metropolises.

The emergence of global architecture firms ~~like SOM who specialise in what Winch and Schneider (1993) call 'strong service', managing complex projects and meeting the needs of demanding corporate clients,~~ and their role alongside ~~the contemporary 'starglobal architects such as architects' such as~~ Foster and Koolhaas, ~~whos specialise in the design of iconic buildings (Jencks, 2006)~~ has had a significant impact ~~on~~ the production of city architectures ~~and~~ raises a number of questions for social scientists. For example, as McNeill (2005, 2007, 2008) asks, how do global ~~firms and~~ architects ~~and their firms~~

coordinate work across space? Relatedly, and perhaps most fundamentally, how, indeed do, global architects fulfil what is assumed to be a basic principal of all architectural work, the embedding of a building in its local context? The aim of the paper is to ~~consider~~ examine this ~~question~~ issue by considering the forces that regulate the work of global architecture firms and architects ~~(both the starchitects studios of the stars such as Koolhaas and firms like SOM)~~ and 'put ~~it in its~~ designs in their place', i.e. the forces that contextualise the design of a building so that its appearance, spatial architecture, facilities and identity are meaningful to those inhabiting and consuming it and appropriate for the 'local' cultural, economic, political and social context. In doing this I examine 'regulation' in the broadest sense and explore the role of standards and codes as well as other forms of social regulation.

To frame analysis of such diverse forms of regulation and its affects on the work of global architects I explore the relevance of theoretical work from economic geography that examines the governance of ~~transnational~~ transnational corporations and the global production networks they develop (Dicken et al., 2001; Hess, 2004) alongside work from urban and cultural geography that examines the social production

of architecture (Bunnell, 1999; Goss, 1988; Jacobs, 2006; Lees, 2001; Knox, 1987). In doing this I argue that a subtle understanding of how buildings produced by global architecture firms and global architects are 'put in their place' requires analysis of both the design side adaptations regulation of the architect's work (adaptations made as architects ~~make as they~~ design the building) but also the regulation of the consumption side regulation of the building (and the way the behaviours of those consuming and inhabiting buildings imbue a design with 'local' meaning). Together, I argue, the complex interweaving of ~~the~~ design and consumption sides regulation means that whilst from the exterior a building might, for example, look like just another SOM tower, and whilst the global firm or architect might actually consider her/himself/themselves to be designing a 'global' rather than a local building, ~~their~~ work of global architects and global firms of global architects actually leads to distinctly 'local' buildings that have a more distinctive 'local' identity than might be first realised. My findings, therefore, support the claims of those who argue against globalization being a process of cultural homogenisation (Cody, 2003; King, 2004). ~~They and~~ also reveals the multiple ways in which seemingly disembedded ~~d~~ firms are regulated and embedded in the cultural,

economics, political and social contexts of the places they build in, thus suggesting that existing professional/knowledge intensive business service theories and their focus on the role of embedded local offices in the adaptation of services to local contexts used to understand the globalization of cultural industries such as architecture and advertising need adapting/developing to take into account the multiple and often unexpected ways that cultural-economic products such as buildings or adverts become 'local' and gain situated identities.

### **Geographies of global architects and architecture firms**

Global architecture firms with a network of offices in multiple countries, what Rimmer (1991) called s the global intelligence corp (GIC) (table 1), specialise in meeting the needs of their (often transnational) clients worldwide, and claim to have the capacity to build innovative yet relatively financially efficient buildings wherever needed. At first glance, then, these firms appear to resemble other global professional/knowledge intensive business service firms such as accountancy (Beaverstock, 1996), advertising (Faulconbridge, 2006),

law (Faulconbridge, 2008) and executive search (Faulconbridge et al., 2008). Accordingly, it might be expected that the globalization strategy of the GIC firms has involved following their clients (primarily property developers) worldwide as they invest in developed and developing markets. GIC firms might ~~whilst~~ also be expected to make ~~making~~ strategic investments in markets where future demand ~~domestic~~ for architectural services is ~~likely to be~~ high (e.g. China). ~~Indeed, as Gensler likes to suggest, They claim to have the capacity to build innovative yet relatively financially efficient buildings wherever needed. As Gensler likes to suggest, “Our global reach—to cities large and small—allows us to integrate an international perspective with an intimate knowledge of local practices and context” (http://www.gensler.com/about/index.html).~~ Yet the story of the globalization of GIC firms is not as simple as it might first appear.

[Insert table 1 here]

GIC firms build everything from hospitals to hotels but tend to specialise in the ‘tall building’ (McNeill, 2005a) as well as major urban redevelopments schemes consisting of multiple skyscrapers and large

chunks of public space (Olds, 2001). In any one city or country there are a limited number of such large scale projects and, as a result, the location of the GIC firms' work is geographically diverse with firms rarely having more than one project in a city or country. The clients of the firms are also diverse with repeat business occurring ~~everat~~ intervals of many years not weeks or months. Consequently, operating as a global firm poses significant challenges in terms of the delivery of design services. Unlike advertising, law and other professional/knowledge intensive business services, global architecture firms: (a) cannot just follow their clients overseas and open offices ~~in vicinity~~ ~~close to~~ ~~to~~ key sources of repeat work because of their ~~diversity of clients~~ base and the long time scales involved in repeat work; (b) cannot locate permanent offices close to much of their work because of the project-based nature of architecture and the fact that it is unlikely the firm will have another project in the same city in the immediate future. Globalization for architecture firms, therefore, involves approaches to service deliver that are subtly different to other global service firms.

As both McNeill (2008) and Olds (2001) report, this means the globalization of GIC firms and the opening of overseas offices can only



be explained by considering three interrelated issues. First, GIC firms engage in globalization partly to ensure their brand and reputation is associated with mega-projects and the ever growing group of global firms. Both in the architecture profession, but also in the eyes of clients, the status of an architect as a 'global' is part of the allure of firms such as Aedas and SOM. Opening offices worldwide helps build a firm's identity and differentiate the firm from domestic organizations. Second, for GIC firms, globalization is about accessing talented architects and employing them in the firm's studio. Offices are usually located in major world cities, and in particular in cities with leading architecture schools, to allow talented individuals to be headhunted. These individuals can then be employed on projects throughout the world. Third, and as a result of the first and second points, designing in GICs firms is 'at a distance'. Whilst it might be feasible to setup a site office, most of the architects working on a project will be based in an office that is far from the site itself. As a result globalization has led to the phenomena of the mobile architect who is constantly travelling to visit projects sites and clients. As McNeill (2008) reports, SOM has only three design studios (in New York, San Francisco and Chicago) with architects travelling to projects worldwide. Other firms follow similar models. Consequently,

McNeill (2008) reports that one further factor determining the location of the GIC firms' offices is flying time, with offices strategically placed to ensure architects can hop from office to office and office to various sites in one reasonable length flight.

In contrast, individual global architects and their studios (table 2), what some call the star architects or 'starchitects' for short because of their fetish for iconic buildings that grab the headlines in the architectural but also popular presses thus, thus allowing them develop a position in the profession but also in popular culture that affords them notoriety and elite status, are different beasts entirely when compared with to their the GIC cousins with and their multi-office networks but also share some similarities common traits (see McNeill, 2005b, 2008). They global architects like Foster and Koolhaas offer 'concepts' or what Jencks (2006) refers to as 'iconic architecture': designs that privilege cutting edge built form above the garnering of repeat business or the satisfying of clients' financial concerns.<sup>1</sup> As Foster and Partners put it, "architecture is driven by the pursuit of quality - a belief that our surroundings directly influence the quality of our lives, whether in the work place, at home or

the public spaces in between”

[http://www.fosterandpartners.com/Practice/1/Architecture\\_and\\_Planning.aspx](http://www.fosterandpartners.com/Practice/1/Architecture_and_Planning.aspx)). ~~Global architects such as Foster and Koolhaas generally have only one or two design studios/offices and usually effectively completedesign all of their projects/buildings from one location. Hence their global status is not helped by the existence of a worldwide office network but is instead solely reliant on the geographical expansiveness of their project portfolio. In this sense, they are even more extreme examples of the designing at a distance discussed in relation to GIC firms. Indeed, the need to design at a distance and the apparent ability to work everywhere whilst, in reality, being present in only a few select locations is one of the most striking things that both the GIC firms and the global architects have in common.~~

[Insert table 2 here]

*Designing at a distance: the challenge of situating design*

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~~One of the most striking things that both the starchitects and the GIC firms all global architects do have in common, however, is their apparent ability to work everywhere whilst, in reality, being present in only a few select locations. Many 'starchitects' only have one office. The largest GIC firm in terms of number of offices is Gensler with 28 offices, but 25 of these offices are in the USA. The most global firm, Aedas, has offices in only ten countries. Consequently all global architects are frequently designing for and constructing buildings in countries where the firm has no presence.~~

~~We can begin to unpick the way the studios of the starchitects GIC firms and global architects deal with working 'at a distance' from the site through the work of McNeill (2005b, 2007) who analyses the way stars like Foster remain constantly mobile so as to enable visits to project sites and temporary 'project offices'. These visits enable insights to be gained into contextual influences on a design. In his study of the involvement of Renzo Piano and Foster in the central business district regeneration project in Sydney, McNeill (2007) highlights how Foster's plans had to be 'put in their place' and features excluded in response to the local economics of buildings in Sydney. At the same time though,~~

Piano's building was promoted because of its 'Sydney DNA' ~~but also~~ ~~because of its distinctiveness when compared to other tall buildings in~~ ~~Australia.~~ This ~~begins to reveal some of the dilemmas global architects~~ ~~face in terms of~~ suggests that putting global designs in their place is an issue all global architects have to deal with. Yet it provides little detail about the range of ~~regulatory~~ 'embedding' or 'situating' forces that ~~starchitects and GIC firms~~ global architects, and GIC firms in particular, respond to when designing a building and how these produce a building's 'local' DNA and lead to a design tailored to the cultural, economic, social and political context of the site.

Case studies of, amongst others, advertising (Faulconbridge, 2006; Grabher, 2002) and law professional/knowledge intensive business services (Jones, 2005) have shown suggest that following the client overseas and opening offices in new markets where new clients exist is essential is the only way to provide the the bespoke, 'locally'

contextualised knowledge-rich advice products and products associated with both business services and cultural industries more broadly. Advice Services and products have to be produced and consumed in the same place because adverts, legal advice or designs need to be informed by 'local', 'contextual' knowledge relating to consumer norms and expectations as well as local regulatory standards (Bagchi-Sen and Sen, 1997; Daniels, 1993). As a result, many of the global advertising agencies such as Ogilvy & Mather have in excess of 100 offices in tens of countries (Faulconbridge, 2006) whilst global accountants like Price Waterhouse Coopers have an even more impressive geographical reach (Beaverstock, 1996). Indeed, even the relatively late globalizing law firms like Clifford Chance have over 30 offices and operate in twenty plus countries (Faulconbridge, 2008).

But, AaAs already noted, the GIC firms (table 1) and global architects such as Foster appear to have been unable to develop the same type of 'localization' strategy as other professional/producer service firms.<sup>ii</sup> The *largest* GIC firm in terms of number of offices is Gensler with 29 offices, but 24 of these offices are in the USA. The *most global* firm, Aedas, has offices in only ten countries. Yet these firms work in many more

countries and cities than they have offices. A brief review of the recent projects of leading GIC firms reveals examples including: NBBJ working in Singapore (nearest office Shanghai) and Norway (nearest office London); Skidmore Owings & Merrill working in Moscow (nearest office London) and Dubai (nearest office Hong Kong); and RTKL working in Amsterdam (nearest office London) and Abu Dhabi (nearest office Shanghai).<sup>iii</sup> Of course, as McNeill (2008) shows, in these cases it is even possible that the nearest office may not be the office doing all (or any) of the work on a project. Spatial divisions of labour are determined by geographies of expertise not proximity to the site.

It would seem, then, that standard professional/knowledge intensive business service theory cannot fully explain the globalization activities of global architects or GIC firms. Thus in any of the cases listed, designing at a distance is likely to mean buildings being conceived far from where they are to be constructed with apparently limited connection to the context in which construction will take place. This has implications as far as the process of situating designs is concerned, not least because the architects designing a building may have little experience of the cultural, economic, political and social context of the

place in which a building is to be constructed. As the global production networks approach shows, [designing at a distance without an office in situ at the construction site means](#) architects will, ~~therefore,~~ face the challenge of working across “the continuing unevenness of the spatiality of production and consumption, the differentiating role of structural and institutional conditions at various scales” (Hess and Yeung, 2006, 1193). Or, as Henderson et al. (2002, 446) point out in relation to the operation of transnational corporations such as the GIC firms, “They ‘cut through’ state boundaries in highly differentiated ways, influenced in part by regulatory and non-regulatory barriers and local socio-cultural conditions”. [But what are the implications of designing at a distance for the emplacement of a building design? What ~~affectes~~affects](#) does the absence of a ‘local’ office at the place of construction have on the ~~be~~ ‘local’ appropriateness of the work of global architects and GIC firms?

The rest of the paper, ~~therefore,~~ considers in detail both the design-side ‘regulation’ of global architects work – forces leading to changes to a building at the design stages - but also the influence of consumption-side ‘regulation’ – influences on the building once constructed - and the way together these two forces change the design, meaning and identity



of a building. It does this by drawing on insights gained from 49 semi-structured interviews, the majority of which (37) were completed with architects working for GIC firms and in the studios of global architects like Foster. Interviews were conducted in Beijing, London, New York, Paris, San Francisco and Tokyo, six of the most important cities in terms of the work of global architects according to Knox and Taylor (2005). Interviews were also completed with professional associations representing architects in different countries and with professors of architecture in four different universities in the UK, USA and Japan. All except two interviews were fully recorded and transcribed and analysed using the principals of grounded theory.

~~For all architects, not just global architects, placing a building in context through the design process, within the site and the wider city, is a major concern. Grappling with this dilemma is an integral part of all architecture training programmes and involves careful consideration of fundamentals such as the orientation of the building and its height in the context of existing buildings. But,~~

**Design-side regulation: the client, code book and embedded network relations**

Perhaps unsurprisingly, ~~these architects interviewed that~~ working in for ~~both GIC firms and in the studios of global architects like Foster global architecture firms are~~ were not ~~that~~ concerned ~~with by~~ such issues ~~and associated with~~ the process of embedding their buildings in ~~their~~ its 'local' context. Instead ~~there is often an~~ the implicit assumption ~~usually existed~~ that, as one interviewee put it:

“When somebody hires an architect from New York to design in Dubai or Taiwan, at some level the client is looking for something they don't have and so they are looking for an approach that is different to what is there” (Design Principal, GIC firm New York).

Echoing this idea, an interviewee working in a ~~start~~ architect's London studio ~~of a global architect~~ also suggested “Our work is not really contextual. I'm not saying our work is not specific to the location. It probably is very specific to a location and culture and all that. But I would still think that some kind of international style, we're not trying to do a French building in France or a German building in Germany. That's exactly what we're trying to avoid really”. ~~As a result, the office locations of global architects are not chosen because of the advantages that 'being there' brings in terms of contextualising or constructing a building.~~

~~Rather, all interviewees agreed that offices are located close to long-term repeat clients (which for GIC firms are usually transnational corporations and property investment companies) and/or in cities that act as magnets for the best architects. So as one managing partner of the London office of a GIC firm commented in relation to the latter factor;~~

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~~“The Dubai job, we don’t have an office there. We’re here and one of my team mates is based there and they are a representative in the field and the work is getting done here. The fact is that because it’s a people game, you have to have people so the location is almost irrelevant. You just need to find the right location where the right people want to be at”.~~

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~~This is very different to the strategy of advertising and other producer/professional service firms who, as well as seeking out talent, open offices because of the need to produce and deliver products in situ (Bagchi-Sen and Sen, 1997).~~ Nevertheless, when probed further, interviewees began to reveal that putting buildings in their place is, in certain ways, actually a more significant concern than such comments might first reveal. A short-term site visit ~~was-is~~ usually used to deal with issues associated with ‘the site’ and climate. Temporary site offices can further assist with this task. However, all interviewees agreed that such offices are mostly used to deal with the pragmatics of getting the

building constructed rather than ~~with changing its~~ as a tool for contextualising designs. Indeed, by the time a temporary office is established construction has often begun or is imminent. In addition though, and often at the fringes of the consciousnesses of interviewees, it also became clear that ~~the designs of architects in global firms are~~ contextualised to varying degrees by three further influences: the client, the rule book and ~~the use of~~ locally embedded network relations tapped into throughout the design and construction process.

#### *The client*

As Larson (1993) argues, architects work in a state of heteronomy, having to defer to the client and their demands rather than working as autonomous artisans. For example, ~~for GIC firms in particular all~~ architects client budgets determine the time that can be spent on the design process whilst the economics of a particular floor plate designs ~~and client requests for the maximisation of rentable space~~ underlie the

spatial architecture of ~~the many~~ buildings (McNeill, 2007). Client demands in terms of the use of space within the building and the need for certain types of space (e.g. client reception area; executive dining room) also affect the internal layout and design of buildings built by both 'stars' such as Foster and the GIC firms. As a result, whilst many interviewees described ~~the such~~ client defined parameters for design as a constraint on architectural creativity, the more pragmatic architects ~~were aware of~~ viewed the client's ~~importance~~ input into the design process as beneficial in any project and vital for the development of 'effective' designs. As one noted, "I'm usually amazed at how well informed clients and contractors are. Sometimes they are quite smart in terms of architecture, so it's quite surprising actually. I think they deserve more credit than a lot of architects give them really" (Architect, ~~Starchitect's global architect's~~ studio London).

Ironically, one outcome of client regulation of designs can be the exaggeration of attempts not to contextualise a design. As one interviewee noted, "it is not unusual for us to go into another setting in China and if the building has regional qualities then they will say no we hired an American architect to get away from that, we want to show that

we are international and sophisticated and not backward looking people who are not sophisticated, not part of the global economy” (Principal, GIC firm San Francisco). This kind of attitude does, however, rarely extend beyond the building’s façade. So whilst the client might want a building that symbolises ‘world city’ status (King, 2004), they often want an interior that fits with local customs. As a result, clients are seen by most architects as useful players in processes of contextualising, in particular, the interior design of a building.

The fact that the client usually has a presence in the city where the new building is to be constructed and, as a result, often has knowledge of how consumers behave inside buildings in that city and the norms and expectations of occupiers is means the client’s they provide an important form of input or ‘regulation’ that helps emplace designs. also an important influence on the regulation of global architects’ work. The client is usually used to gain vital insights into the norms and expectations of occupiers. Consequently, eOne architect described as follows the type of changes requested by a Chinese client because of their insider knowledge into the norms of buildings in China:

“I don’t think people there have a high expectation of office space, here we enjoy high ceilings, but over there I don’t think they care about the

workers environment, so when talk about a grand lobby they always say no no we don't need that, also they always want the lighting to be brighter brighter brighter, in Shanghai it is all about who is the most shiniest at night and showing off the building ...[also] people here [in the USA] are more equal. In China it is different because all the leaders have their secret elevators, and they need to have their own private bathroom. If it is the headquarters the hierarchy is very important, so even the entrance separates who you are and where you enter and we are told that and we will deign that" (Principal, GIC firm San Francisco).

It is important to recognise, then, that the use of project teams in architecture and the role of the client in the team have an important affect on the design process. As studies of organisations that use project teams has shown (Engwall, 2003; Faulconbridge, 2006; Grabher, 2002), collaboration between different members of the team defines the creative process, regardless of whether team members are located in proximity or not. In the case of architecture, the client, who is often located at a distance from the architect's office but in situ where the building is to be constructed, has a vital role in the project team and uses their knowledge to begin to put designs in their place despite the architects themselves being far from familiar with the cultural, economic,

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social and political context of the place where the building is to be constructed. This raises interesting questions for theories of the globalization of professional/knowledge intensive business services in relation to how such organizations 'embed' their operations and deliver situated advice/products to clients. I return to this point below and in the conclusion section of the paper. In terms of work on global architects and GIC firms, these findings suggest that whilst many global architects often see the changes made as a result of such-client requests as simple adaptations that leave the 'concept' of the building intact, changes are actually highly significant. Indeed, as I discuss below when I turn to the consumption side influences on building identity and use, such-client-led changes are highly-particularly significant and in terms of putting a building in its place in important ways once the inhabitants arrive.

#### *Codes and standards*

Reflecting Imrie's (2007) suggestion that statutory regulations are a constitutive part of the design process, it is important to look at the multiple layers of code, best practice and performance standards that



global architects have to respond to when designing a building. Perhaps one of the best examples of the implications of such variations for architects of-working across political-economic borders is the way the regulation effects townscapes and building styles. As Willis (1995) shows in relation to New York City, changing-regulations relating to the height of buildings, their dimensions and fit within street blocks can be used to explain the architectural styles of many of the city's well-known buildings. For example, the 'wedding cake' design that symbolises the New York skyscraper resulted from the introduction of regulations in Manhattan that required skyscrapers to have narrower floor plates on the upper floors than at ground level so as to ensure adequate sunlight reached surrounding streets. The work of global architects and GIC firms continues to be affected by such city- and country-specific regulation which acts as one of the forces which help emplace designs. Indeed, as I show below, *F*ormal statutory regulation (locally and transnationally) and *i*nformal political regulatory *i*nfluence deserve particular attention because of their effects on the work of global architects and GIC firms.

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~~At one level, a mix of transnational and local *formal* statutory regulations (codes, published standards etc.) influence the design process with local standards often being a reaction against the Anglo-American domination of the architectural profession. This mix has important affects on the characteristics of the buildings global architects produce. Indeed, whilst many global architects tend to believe that they “come from a position of complexity and find ourselves in a marketplace that is different but likely to be less complex and more straight forward” (Joint Managing Partner, GIC firm), regulations need to be considered as a contextualizing force because of various forms of spatial heterogeneity in their production, application and policing.~~

~~In terms of formal regulation and codes, to a certain extent, architects interviewed suggested that the emergence of transnational standards had begun to override the ability of local regulations to put a building in its place. Forms of adaptation are peculiar to each national and even sub-national (regional) context.<sup>iv</sup> So, for example, one architect described how “in Dubai and China anyway they tend to use British or European norms and so often you find that there is the same set of rules. Sometimes it’s harder to work in places like Germany or France~~

~~because they have their own specific set of rules which have evolved over a couple of hundred years I guess. Then you have to be careful what you're doing" (Architect, starchitect's studio London). In particular, when global architects work outside of their home country the changes needed are often quite fundamental and challenge many of the norms of US or UK practice, not least because of the diverse ways UK and US regulations are appropriated. As one interviewee described this geographical heterogeneous picture:~~

"UK regulations are used quite widely in the Middle East with the exception of Saudi where they've gone more American. But in most of the Emirates they will accept either UK or British regulations. And they tend to have local regulations where appropriate. Egypt has probably got a completely different set of building codes but some of them are based on UK and American" (Architect, GIC firm).

However, whilst at first glance the influence of formal regulation appears obvious and global architects might be expected to build using transnational standards or when necessary access building codes for the city/country they are working in and apply the 'scientific' standards in their designs, more subtle regulatory forces are at work. On occasions unintentionally, or even in some cases deliberately when regulators

seek to strengthen local institutional powers, codes that are intended to follow—reproduce transnational, usually US or English standards,ed outside of their home context mutate as they move across space. Rather than being ‘immutable mobiles’ (Latour, 1987), transnational best practices used in building codes are, then, dynamic and ~~their~~ unstable. It emerged, therefore, that global architects have to changes their approach to designing a building to take into account variations in the application of transnational codes that exist between countries, changes that can often have quite fundamental affects on the design of a building. —Developing this idea,As— one architect described his views (which contradicts the simple—interpretation of the architect quoted earlier) of regulation in China:

“China has its own set of codes and they are very proud of it, although there are some pretty strange provisions in that code, when you read it it’s almost like a mistranslation of the American code” (Architect, San Francisco Office of GIC firm).

~~Indeed, language itself can be one of the most significant influences on mutation.~~ As another San Francisco based architect working for a GIC firm also noted, “the way we see words when translated into English may not mean the same as in Chinese, none of the people in this office

understands all the Chinese so the company needs to rely on the project manager to tell them what the Chinese means”. [Alongside variations resulting from translation.](#)

~~Seemingly innocent translations alongside~~ more fundamental [and deliberate variations](#) forms of place-specific building [also affect the work of global architects and GIC firms.](#)~~in codes can have, therefore As~~ one interviewee noted, [this means local norms get incorporated into designs more frequently than might be expected:](#)

“There are some cultures that expect everyone to be within five meters of a window, which means that some of the deep planned spaces that we’ve come up will give you huge economy just won’t work. These deep plan office spaces work in Europe, most of Europe, not all Europe, they work in the UK and it works in America but ... there was a situation in Italy, a kitchen in that situation wouldn’t be acceptable according to their regulations because the kitchen has to have an outside window, and to have a window it has to have an outside wall. So things that you can work with in one area just won’t work in another”  
(Architect, London office GIC firm).

[This mix of local and transnational regulation has important affects on the characteristics of the buildings GIC firms and global architects](#)

~~produce with because of the complex forms of heterogeneity~~ continued diversity in formal codes and standards across space ensuring a complete set of transnational standards for buildings cannot be developed.

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At another level *informal* political regulation ~~through state officials~~ can also be significant in the design process. Influences might involve, for example, interventions from local planning officials that choose to promote a particular design style or level of facilities provision in the name of urban boosterism or another legitimating device. Alternatively informal political influences might be more 'covert' with the idiosyncratic preferences of a powerful city mayor, planning chief or other politician having to be responded to in order to lubricate planning procedures. As one architect, noted:

"I think that there have been instances where one could perceive that the officials are overstepping their bounds. I mean in the best circumstances they are like a kind of patriarch. So in [place x], which is a district in [place y], the new mayor, he's not the mayor, may be he's the head of the planning department, but the guy with the responsibility for buildings really feels strongly in the importance in architecture, in modern architecture" (Principal, GIC firm New York).

~~The~~ Suchmore covert forms of political influence are particularly significant in parts of Asia where *guanxi* (personal relationships) continue to play an important role in business (Yeung, 2000). Together with the formal regulatory influences, this leads to buildings designs being changed in subtle ways before they even leave the drawing board. But how do global architects become aware of such differences if they are not designing in situ? It became clear from interviews that regulatory diversity cannot be dealt with simply by accessing the code books for different cities/countries. Instead, global architects have to take account of regulatory heterogeneity by incorporating 'local' architects into the design process.

*Embedded network relations: working with local professionals and the construction industry*

The final component in the design-side 'localization' process is the role of a series of actors who are 'on the ground' and involved in the local embedding of the regulatory and construction process. All interviewees

agreed that there comes a point in any project when 'local' knowledge becomes critical, both in relation to design regulation but also the pragmatics of constructing a new building. One strategy to meet the need for local—such knowledge is to employ as many different nationalities as possible throughout the firm. All of the **GIC** firms studied have multiple nationalities in each of their offices. This provides both language capabilities and cultural awareness that can be exploited on overseas projects. However, having foreign architects in an office is often not enough to deal with all of the complexities of working at a distance. In particular, because of the more 'subtle' unwritten social practices and norms and the informal regulation described above, employing a suite of local consultants is a strategy all global architecture firms adopt. As one interviewee put it:

"we\We depend heavily either on the client or consultants who are advisors on what is going on. And we have a case now for Dubai where we tailor something to the specific approach of what they like. And we need to be advised on that. You can't second guess it really" (CEO, San Francisco office GIC firm).



Consultants are even needed when intra-national scale variations in practice exist;—for example when a US GIC firm is working in a US state in which they have no office. As the interviewee went on to note:

“For example we are doing a 64 storey building with an architect from [city x] and they have hired a local waterproofing consultant, a local acoustical consultant and they have a local architect because you need somebody with a [state x] license who understands the drawings and knows the public process to get things through the regulatory authorities”.

This highlights, then, another reason for using a consultant: professional regulatory hurdles. The ‘profession’ of architecture, defined by formal closure regimes that restrict the use of the title ‘architect’ to those with approved qualifications (Abbott, 1988; [Faulconbridge and Muzio, 2007](#)), requires practitioners to be registered in the country in which they operate. This is different to ‘unbounded professions’ like management consultancy where no ‘local’ registration is required (Glückler and Armbrüster, 2003). As most of the architects working for global firms are only registered in a few US states or in the UK, it is necessary to employ a locally registered architect from an established local firm. This architect is then responsible for submitting the final plans – the

construction documents - to regulators for approval. As one interviewee described this process:

“foreign architects are not allowed by law to do work in China, they can do work but they cant produce the working documents and so the local designer does that, so it means that you draw on their title block and they turn it in. So they don't actually do that much work, but the idea is to create a partnership and elevate the knowledge base in China” (Architect, San Francisco office GIC firm).

Again, at first glance, as the interviewee hints, the affect of local contractors on the design of a building are slight. Most of the design work and drawings are produced by the global firm with the local architect adapting them to meet local requirements. However, the mutations that occur as local architects make the final adaptations can result in fundamental changes that get exaggerated once the building's inhabitants arrive (see below). ~~As one interviewee noted:~~

~~“we set criteria for a project and then a lot of delineation is done by others. Same in Shanghai, they want the initial design [and] one of our guys in Shanghai got into trouble because the contractors didn't want him on the site anymore, they were just so used to changing things as they go” (Associate Architect, GIC firm's New York office).~~

~~This also highlights, then, in addition, the role of t~~The firms actually constructing the building ~~and the way they also play an important role in putting a building in its~~also have a similar effect on a building place.

Whilst there are now many global construction firms, the workers they employ are usually locals. As a result, only if there is a ~~skilled~~-local workforce ~~familiar with US or UK building principles is it possible, able to construct the building in the way the architect envisages, is it possible to operate in the same way as in the firm's home country.~~ Often this again leads to subtle adaptations as skill sets, or even materials, are unavailable. As one interviewee noted about the concerns this creates for global architects:

“the workmanship is not so good; the design may not involve so many specialist consultants like in western countries. Sometimes the finish is pretty rough or they don't have the money, the budget to do nice things... the most challenging task here because as said, workmanship, everything is still a developing country and our services here are still not full services and the industry is not organized like in the western

countries. So sometime you feel you cannot control everything”  
(Managing Partner, GIC firm Beijing).

Changes that result from the work of local contractors, when combined with the changes made to compensate for client requests and changes suggested by 'local' architects integrated into the project team to help address geographical variations in code requirements, suggest, then, that global firms are actually operating as more intensely embedded and various regulated organizations than it appears at first glance. Returning to the ideas about project teams introduced above, this suggests that the state of heteronomy (Larson, 1993) in which ~~global~~ architects work in when operating as part of a project team in which the client, engineers, architects 'local' to the site and construction professionals all have an influence on designs are all involved, results in buildings being put in their place in subtle ways. Whilst representatives of the global architecture firm might be numerically dominant in the project team and have most power, the ~~input of these~~ other actors involved in the team still makes important interventions in the design process, interventions that situate the building and helps begin to put it in its place. In many ways this emphasizes the argument of Hess (2004) that, as a socio-economic process, embeddedness is not about spatial fixity or

locatedness but is about enrollment in various networks of association that have local and transnational dimensions. In the work of global architecture firms, projects teams, are then, made up of those designing at a distance but also actors that are in situ and have in-depth knowledge relevant to the place where a building is constructed. This embeds the work of apparently disembodied global firms. As the data analysed above shows, Hence global architecture firms, whilst not being present in the places that they design buildings for, are affected by a range of forces that subtly embed their work in the social, cultural, economic and political dynamics-fabrics of the locale. Whilst the result is adaptation, rather than a fundamental rethinking of design, the consequences can, nonetheless, be significant. Indeed, the affects of the changes that occur in the design-side adaptation process are even more significant when life is breathed into the structure-building by the entrance of its occupants.

## Consumption-side regulation: hybrid productions of social life

### *Social practice and the utilization of space*

As a number of studies have documented (Bunnell, 1999; Imrie, 2003; Jacobs, 2006; Lees, 2001; Shove, 1991), the identity of a building is as much a result of the way spaces are appropriated by ~~their~~ [the building's](#) inhabitants as it is the result of the 'hand' of the architect. As Imrie (2003, 51) points out, architects often do not recognise this and miss the fact that buildings are "‘there as part of us’, or as material matter that is being constantly produced in the course of its (bodily) use". The inhabitants of buildings are, therefore, often viewed by architects as little more than what Shove (1991, 10) calls 'Letraset zombies', objects whose dimensions (average height etc.) need to be accommodated in plans. These zombies are assumed to act rationally, "some satisfied, some miserable, but all propelled through the built environment, involuntarily pushed this way or that by someone else's decisions". In reality though, "the nature of an individual's role as a user depends on

his/her position within the social structure of, in this case, the employing organisation". Hence this "reminds us of the social positioning of individuals and of the relations of power embodied in and recreated by buildings" (Shove, 1991, 11).

~~Indeed, as~~ Work on theories of social practice s(Reckwitz, 2002);  
~~also reinforces the idea that there is an intimate relationship between~~  
~~peoples' routinised behaviour and understanding of the world and the~~  
~~material landscape they inhabit. Because s~~ Social practices, which, can  
~~be place-specific and are as routinised everyday behaviours based on~~  
~~forms of knowledge and competency, that are constructed over time,~~  
~~and, and, they thus affect in geographically heterogeneous ways, in~~  
~~ways that varies between places, m~~ how individuals interact with their  
built environment ~~in a way that varies between countries~~. As a result,  
inhabitants of the buildings designed by global architects often engage  
in 'unscripted' actions that reflect local social practice but challenge the  
designer's conceptualisation of a building and the way it should be used  
(Ingram et al., 2008). Consequently, as Lees (2001, 56) puts it, "if we  
are to concern ourselves with the inhabitation of architectural space as  
much as its signification, then we must engage practically and actively

with the situated and everyday practices through which built environments are used” (see also Bryden, 2004).

~~Occupants and their actions also affect a building's identity. So seeing “architecture as a social product, as the spatial configuration of the built environment incorporating economic, political, and ideological dimensions” (Goss, 1988, 394) is vital. For example, Bunnell (1999) shows that the identity of the Petronas Twin Towers in Malaysia is as much a result of the supposed on-goings within the towers (which were rumoured to house an office of the prime minister) as their physical structure, thus bringing into question the extent to which architects' strategies alone put designs in their place.~~ For Jacobs (2006) such an approach can be enhanced by drawing on work from science and technology studies and actor-network theory so as to understand the way buildings ‘move’ across space as an idea and identity. Jacobs therefore argues that “Diffusionist models of explanation have a relatively stable thing moving through space and time by the way of social effort. Translation, in contrast, brings into view not only the work required ~~to a think for a thing~~ to reach one position from another, but also the multiplicity of add-ons that contribute, often in unpredictable and

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varying ways, to transportation” (Jacobs, 2006, 13). All of the above leads to what King (2004) calls a post-colonial perspective on the built environment that allows a better appreciation of suggests, then, that whilst the work of the global architect and GIC firms. A post-colonial perspective suggest that, the work of global architects and GIC firms might be being assumed to lead to cultural homogeneity, in reality their work is might be place-specific not only because of design-side strategies that might alter the material structure of the building but also because of the way materiality, social structures and practices interact ‘on the ground’ in situ. Two dimensions of this interaction are outlined below.

#### *Social practice and the use of global designs*

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It became clear from interviews with architects that .tThe autonomous, hybrid lives of buildings, as well as the architects hand and imagination, are critical parts, then, of the inter-related design- and consumption-side process that put the work of global architects in its buildings in their place. So, at its most simplistic, inability or unwillingness to use a

building in the way it was designed can transform its meaning. The vignette provided by one interviewee describes the potential impacts of

this:

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“I spend a lot of time in China and my experience there is that even the maintenance issues are enormous, I’ve been in fairly new 12 story apartment buildings where half the toilets aren’t working because there is nobody who knows how to fix them, there is no understanding that what we really need to do in this town is to set up a trade school that learns people to fix toilets, air conditioning, etc.” (Professor, Architecture School, San Francisco).

This is an extreme example of what Ingram et al. (2007) describe as the failure of scripting: when objects and technical systems fail because designers do not consider the hybrid construction of an object and the way it only ‘works’ when social norms, capabilities and knowledges exist

that support it. ~~The use and, as I show below, the identity of a buildings, therefore, get produced as a result of the powerful situated understandings and social practices of its inhabitants, not just as a result of the vision of the architect.~~ Consequently, Aas one architect

acknowledged, “How do people use it, how do they navigate, how do they arrive, what do they do while they are there? And they are functions

of cultural difference that are hard to ~~accomodate~~accommodate”  
(Architect, ~~st~~architect's global architect's studio, London).

Of course, if powerful enough, a design might lead to changes in understandings and practices themselves. ~~The latter state of affairs~~This is the architect's ultimate ambition. However, as the following vignette story told by~~from~~ one interviewee illustrates, in reality such scripting of behaviours ~~often fails~~cannot be assumed and is less common that might be hoped for:

“this one school, it [a design criteria] was how convenient for public transport and the question was put down with a view to, it should be convenient. And the headmaster said it's too convenient. He'd got children with learning difficulties and what the problem is actually keeping them at school, there's a bus outside and they are all saying, oh we'll go and catch that and they are off. So you know, what someone said, is a way of saying yes this is a good design because it's convenient for public transport but the headmaster said it was a bad design because it's too convenient for public transport” (Architect, GIC support firm).

The inhabitants of the buildings designed by global architects are not, then, 'Letraset zombies' (Shove, 1991). Instead, ~~by they are~~ active producers of the building. Consequently, ~~and drawing on~~ Law (2002), ~~shows, it seems that designers~~ global architects and GIC firms always deal with the absent presence – those influences on designs that are not obvious but nevertheless profoundly affect the way ~~a final material~~ their products – buildings - performs and is appropriated. Therefore, we need to “avoid the flattening effect of imagining that there is on the one hand a great designer, a heterogeneous engineer, and on the other a set of materially heterogeneous bits and pieces. Instead, we need to hold onto the idea that the agent – the ‘actor’ of the actor-network – is an agent, a centre, a planner, a designer, only to the extent that matters are also decentered, unplanned, ~~undesigned~~ undesigned” (Law, 2002, 136). This is particularly also important in understanding how a building's situated identity emerges.

*Social practice and the situated identity of built forms*

~~The hybrid production of meaning by absent presences in the design process can be particularly significant when local peculiarities give a building an unexpected local identity. Debates about the work of global architecture firms and other global design and consumption related producer and professional services would seem, then, to need to move beyond simple examinations of whether a design fits with the local vernacular or context. Exploring how social practice makes identity is instead imperative.~~ As one interviewee put it:

“what I’m worried about with ~~globalisation~~globalization is that in a way it dehumanizes architecture and I think the human being, the inhabitant, the occupants, the clients, the users, whatever they want to call them, are actually kind of very important. And all you have to do is look back to the modern movement and architects were virtually arrogant enough to think that there was such things as global style. You could transpose whatever you did in Finland to Chicago, from Chicago to Paris and Paris to Rome and from Rome to India...it clearly failed because architects saw themselves not only as engineers, spatial engineers but also kind of social engineers” (Professor of Architecture, London).

Following Imrie (2003) and Shove (1991), it is possible to argue, ~~therefore,~~ that architects but also academics ~~exploring the identity of~~

~~'iconic' and tall buildings~~ are ~~often also~~ too quick to forget the role of the inhabitant ~~and their socially complex form~~ in the production of a building's identity and meaning. The following vignette from an interviewee further exemplifies why such considerations are so important:

“what was interesting was that we proposed a greenish glass on it [the new building] and when you looked at the building in plans the client said that it looked like a fish and he also said that it looked like it was facing towards the East. And in terms of Chinese symbology a fish is understood as symbol of prosperity and facing the East was also seen as important, so their reading was important as it gave a value that wasn't intended” (Design Director, New York office, GIC firm).

Of course, the building described in the vignette may well have a distinctly 'world city' appearance. Yet the story ~~behind it~~~~of the building's~~ identity indicates that urban forms are understood by those who interact with them on a day-to-day basis in ways that are very differently to those of distant onlookers. The hybrid production of meaning by absent presences in the design process is, then, particularly significant when local peculiarities give a building an unexpected local identity. Debates about the work of global architecture firms and other global design and

consumption related producer and professional services would seem, therefore, to need to move beyond simple examinations of whether a design fits with the local vernacular or context. Exploring how social practice and situated knowledges, ~~competencies~~competencies and logics makes identity is instead imperative and opens up a series of questions about how the affects of globalization on the products of cultural industries, such as architecture, can be better theorized so as to recognize the many ways that buildings, adverts or any other cultural product gains local identity and meaning. As the discussion here shows, this is not simply about designing-in local sensitivities to a product. Emplacing a design—but also involves understanding the effects of consumption on the product.

## **Conclusions**

It is not uncommon to hear debates about the homogenization of design and the destruction of vernacular by the worldwide exporting of American architecture by global architecture firms. But as Cody (2003), King (2004) and other have suggested, understanding the affects of the

globalization of architects and architecture firms requires more nuanced theorizations of the hybrid social lives of buildings. In this paper I have adopted such an approach and begun to unpack the work of [GIC firms](#) [and](#) global architects and consider the ways their buildings get 'put in their place' by design-side and consumption-side regulation [by actors](#) including clients, codes and standards, local collaborators and building occupants. These actors mean the global architect's work is subtly adapted and emplaced, despite the fact that practitioners are [design](#) designing at a distance and moving designs across space.

In terms of debates about regulation, the paper highlights the importance of recognizing both codified regulatory influences on architectural design (rule books, performance standards etc.) but also other forms of socio-technical regulation (i.e. the multiple parties involved in the design process, [and](#) social practice and [its-their](#) influence on the use and identity of built forms). More broadly, the paper's findings also talk to two different but equally significant theoretical debates [in](#) [economic and urban geography](#).



First, the now extensive literature on the transnational corporation and their embeddedness in host-country contexts can be enriched by the findings of the paper (Dicken et al. 2001; Henderson et al. 2002; Hess, 2004). In particular, the findings presented here suggest that global architecture firms cannot be fully understood through existing ideas advanced in work on services (Daniels, 1993; Bagchi-Sen and Sen, 1997) and professional services in particular (~~Beaverstock et al., 1999;~~ Faulconbridge, 2008; Jones, 2005). Global architecture firms not only prosper by selling non-local designs but also manage to produce from a distance designs that are 'in their place'. The intermingling of design-side influences but also consumption-side influences on how buildings are constructed and made sense of is central to this 'embedding' process. Thus the received wisdom that transnational corporations localize their services through ~~embedded~~ in situ ~~network~~ operations that allow access to 'local' knowledge which informs that adaptation ~~to~~ ~~of~~ products and services ~~through physical presence~~ seems to be in need of embellishment and further consideration.

Global architecture firms may well be unique and one-off cases. But it is equally possible that, as has been shown here in relation to global

~~architecture firms, other~~ ~~other~~ design-related firms also experience the ~~similar~~ processes of 'localization' described in this paper because, like in architecture, of the way ~~members of the project design team are~~ embedded in the cultural, economic, social and political context of the place in which the product is to be consumed. Whilst existing studies have highlighted the role of spatially distributed teams in innovation (Engwall, 2003; Faulconbridge, 2006; Grabher, 2002), these studies have not identified the role of such teams in the production and delivery of 'localized' services and cultural products, such as buildings or adverts, that are 'in place'. It would, therefore, seem worthwhile further investigating the use of the team as a strategy for delivering contextualized professional/knowledge intensive business services without the establishment of offices 'in situ' and ~~close~~ in proximity to the client.

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Second, the paper also develops existing work on the social production of architectural forms (Bunnell, 1999; Goss, 1988; Jacobs, 2006; ~~Lees,~~ 2001; Knox, 1987). In particular it uses existing work inspired by science and technology studies ~~as well as cultural geography~~ to explore the activities of global architects and the social production of their work. The

~~introduction—use~~ of work on social practice (Ingram et al., 2007; Reckwitz, 2002) ~~to-in~~ these debates is particularly significant as it offers a complementary theoretical perspective that can be used to further understand the hybrid lives of built forms, or what to paraphrase Jacobs (2006, 11) could be called ‘the field of relations that hold buildings together’. Lees (2001) ~~begins to~~ develops this line of thinking and here I have further shown how everyday routinised behaviours that exist in the context of influential social structures and power relations affect both how a building and its facilities are used but also the identity of a building. Indeed, this would seem ~~one of the~~another important future avenues for research identified by the paper. The now maturing body of work on theories of social practice deserves better interrogation ~~into the~~ ~~context of~~ discussions about the geography of architecture, ~~something begun here but in need of a more extended discussion~~in particular in the context of global architecture firms and transnational standards relating to building design and sustainability. It would seem worthwhile to further consider how the ‘performance’ of building designs and the hybrid process that gives meaning to designs leads to architectural approaches being rendered appropriate and inappropriate in different contexts. This might have impacts on both the social appropriateness of a design (e.g.

whether a building is liked and found to be well-designed by users) but also the technical performance of a building (e.g. whether it is financially successful in terms of occupancy levels and use of electricity and heating), all of which concerns both architects but also academics.

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TBC

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**-Table 1. Leading GIC firms, ranked by number of offices.** Firms in italics indicate at least 1 interview completed with representative of firm.

Data source: Firms' websites.

| <b>Firm</b> | <b>No. Offices worldwide</b> | <b><u>Geographical distribution of</u></b> |
|-------------|------------------------------|--|
|-------------|------------------------------|--|

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| <b>offices</b>                      |         |  |
|-------------------------------------|---------|--|
| <i>Gensler</i>                      | 29<br>8 | <u>Europe =3</u><br><u>USA = 24</u><br><u>Asia = 2</u>   |
| <i>Aedas</i>                        | 4921    | <u>UK=10</u><br><u>Rest of Europe=1</u><br><u>USA=3</u><br><u>Asia=4</u><br><u>Rest of World=3</u> |
| <i>Kajima Design</i>                | 19      | <u>Europe=5</u><br><u>USA=5</u><br><u>Asia=6</u><br><u>Rest of World=3</u>                         |
| <i>HOK</i>                          | 4620    | <u>Europe=5</u><br><u>Asia=3</u><br><u>USA=10</u><br><u>Rest of World=2</u>                        |
| <i>RTKL</i>                         | 11      | <u>Europe=2</u><br><u>USA=6</u><br><u>Asia=3</u>   |
| <i>NBBJ</i>                         | 8       | <u>Europe=1</u><br><u>USA=5</u><br><u>Asia=2</u>   |
| <i>Skidmore Owens &amp; Merrill</i> | 8       | <u>Europe=1</u><br><u>USA=5</u><br><u>Asia=2</u>   |

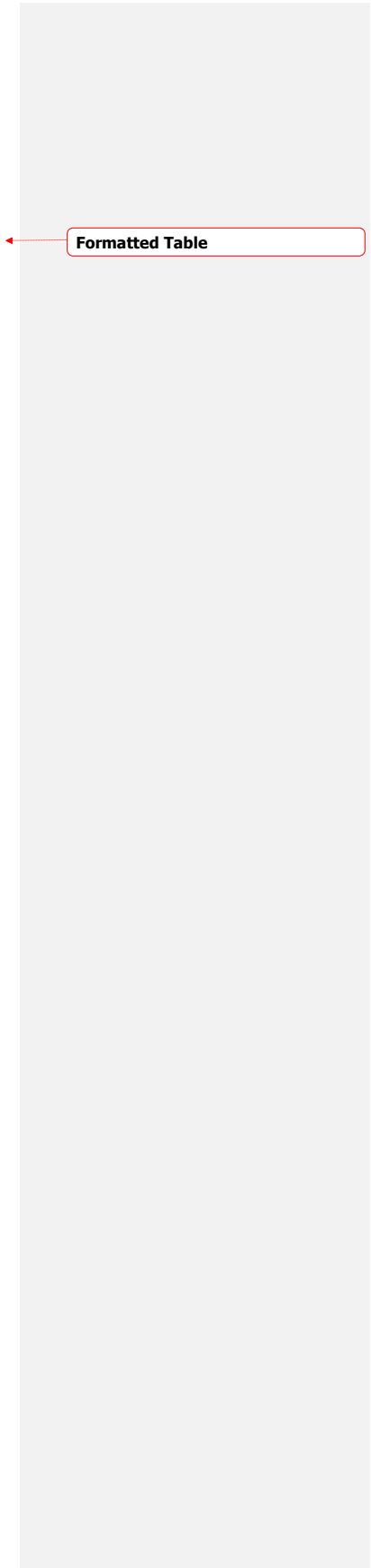
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**Table 2. Leading star-global 'star' architects studios.** Firms in italics

indicate at least 1 interview completed with representative of firm.

Data source: Firms' websites

| Firm   | No.<br>Offices<br>worldwide |
|--|-----------------------------|
| Foster & Partners  | 1                           |
| <i>Office for<br/><del>Metropolitan</del>Metropolitan<br/>Architecture</i> | 3                           |
| Gehry Partners   | 1                           |
| Studio Daniel Libeskind  | 1                           |
| <i>Zaha Hadid Architects</i>   | 1                           |
| Jean Nouvel  | 1                           |



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<sup>i</sup> ~~This does not mean global architects are not constrained by clients' budgets.~~

However, architects such as Foster first and foremost prioritise the production of an iconic design whereas many of the global firms like SOM have developed a reputation for ~~being~~ prioritising 'corporate friendly' architects capable of designing buildings that designs that are efficient in both their construction costs but also in their use of space, thus allowing returns on investment to be maximised (e.g. by minimising design costs and optimising rentable floor space in the building).

<sup>ii</sup> ~~Aedas was formed as a result of a three way merger between three firms from the UK, Australian and Asia-Pacific.~~

<sup>iii</sup> ~~Data collected from each firm's website.~~

<sup>iv</sup> ~~Sub-national variations are particularly important in the USA where state-level building codes have significant heterogeneity. At present an attempt to develop an, strangely names, 'international code' within the USA is ongoing. This is designed to minimise variations and form inter-state standards.~~

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