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Sourcing and commodifying knowledge for investment and development in cities

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ABSTRACT
In this paper we analyse the role of knowledge and research teams in urban development, drawing on the case of London's residential market. We argue that in large real estate advisory firms, the brokers and consultants who mediate the arrival of investment into a particular site or city are reliant on research teams, which are often hidden from public awareness and under-researched in academic discussions. To acquire sufficient data to meet research demands, advisory firms have vertically integrated new types of knowledge through the acquisition of firms working "at the coal face", exemplified by estate agencies. Firms commodify the knowledge acquired to reinforce an oligopoly of development consultancy in London. Ultimately, this role – helping other estate professionals navigate the politicized nature of residential development through research-driven work – increases the cost and complexity of urban development processes. Empirically, we critically interrogate: the ways in which knowledge practices are institutionalized at a corporate level and then integrated into wider development practices; the role of specific teams within these practices; and how such knowledge-based activities enable the active seeking out of new geographies of investment. Theoretically, this paper advances urban studies by demonstrating the complementary nature of quantitative and qualitative knowledge. It also uncovers, unpacks and evaluates the activities of under-researched parts of the real estate profession, consultancies, in turn suggesting the ways in which knowledge and expertise have consequences for urban development and investment.

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Introduction

Urban development, especially the production of housing, involves a wide range of expertise and knowledge drawn from both the private and public sector (Robin, 2018), which is largely contained within extensive professional networks that develop over time and are based on past experience and trust (Henneberry & Parris, 2013). In

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recent decades the breadth of this knowledge has expanded, as a number of concomitant changes have unfolded. In particular, in the case of housing, there is a broadening of the type of finance used to bring forward development (Todes & Robinson, 2020), which is often international and less familiar with local conditions; the traditional model of the speculative developer has been largely supplanted by volume house builders, especially in cities under intense political pressure to bring forward high numbers of housing units (Colenutt, 2020); and market actors are increasingly relied on to deliver all forms of tenure – including affordable homes. These conditions have created intensely political housing systems rife with risk that must be navigated by developers and increasingly, by investors (Brill & Robin, 2020; De Magalhaes et al., 2018). To negotiate these uncertainties and challenges, real estate professionals are reliant on external expertise acquired through advisory firms. Whilst the role of intermediary organizations and consultants in relation to developers has been well explored, less is known about their internal corporate practices and how this shapes knowledge development and ownership within urban politics.

In this paper we analyse one of the world's leading real estate advisory firms, who are taken as an exemplary case. We focus on how they respond to external pressures, and the growing role of data and knowledge production and research in housing development. In particular, we engage with two key dimensions: (1) the internal research team and how its practices have developed to serve the profitable dimensions of their business, particularly advisory dimensions, and (2) the steady acquisition of other firms and how these are used as possible data sources. Both of these trends are indicative of the broader corporate strategies of the consultancy market, especially in a London context, which remains dominated by a number of firms including BNP Paribas, CBRE, JLL, Knight Frank and Savills. Our focus is on the supply-side dimensions of urban development and in this, we add to existing analysis of the role of market makers within the private sector, in particular the growing role of consultants in governance and political landscapes (see Christophers, 2014).

We offer three main contributions: firstly, brokers and consultants are reliant on knowledge and research teams, which are often less visible and under-researched in academic discussions, but are vital parts of what Henneberry and Parris (2013) refer to as the real estate ecology. Secondly, to acquire this data, large firms have vertically integrated new types of knowledge through the acquisition of smaller and more specialized firms working "at the coal face" of real estate, estate agencies. Thirdly, in doing so large firms have commodified this knowledge to reinforce an oligopoly of development consultancy provision. Their expansion allows them to entrench their position as key advisors, best able to manage the complexities of housing delivery and in turn shape the spatiality of London's development.

Collectively, the paper examines and explores the institutionalization of knowledge practices at a corporate level and reveals the importance of knowledge practices in the shaping of real estate consultancy and its influence on client firms. Bringing these into urban studies, we show, advances understandings of the firm-level practices and processes that drive the real estate sector and the development of contemporary cities (see Weber, 2015). Reflecting on these findings we discuss briefly how this advisory system works and enables developers to navigate development risk, utilizing expensive consultants who have in-house knowledge and research. The growth of such firms both reflects and reproduces structural changes in the nature of financialized and more market-oriented planning systems. The growing reliance on private sector resources and knowledge to create new urban built environments opens up new opportunities for those best able to navigate the complexities and political risks that come with obtaining planning consent. Whilst a growing range of literature has highlighted the importance of consultancies in acting as intermediaries (see Østbø Haugen, 2018; Phelps & Wood, 2018; Wood & Phelps, 2020), we take this further by showing how there is greater pressure for monopolization with the largest consultancies able to draw on both big data research to help shape markets, and small data knowledge and understanding of the embedded and place-specific nature of planning processes. We call for greater attention on what is happening within the sector and what this reveals about the broader processes and politics that underpin contemporary urban change.

The paper proceeds in the following way. Section two addresses existing debates in urban studies and argues that recent analysis on the particularities and necessity of local knowledge, whilst instructive in demonstrating the breadth of actors involved, misses the hidden dimensions of the development process such as the importance of research production in shaping market opportunities. It fails to capture the full extent of how advisory firms leverage their strategic knowledge to position themselves as vital actors in development projects. Addressing this gap through a focus on research processes and value, we argue, elicits a productive avenue for critically engaging with how knowledge is harvested and commodified in urban development and planning processes. In section three we discuss our methods. In section four we demonstrate the importance of the under-analysed research dimension of real estate industries and highlight the ways in which different forms of data are used in complementary ways. In section five we demonstrate how these data are being collected, arguing that the wider firm-level decisions around acquisition reveal strategic tactics by large real estate firms. Section six discusses how such tactics enable them to extract value through a reinforced oligopolistic market.

The importance of experts and the role of multiple forms and performances of knowledge in urban development

Urban development requires a vast amount of professional knowledge and expertise, which developers and investors source from other private sector actors through the use of consultants (Robin, 2018). Developers have created webs of information, both internal to their firms and through partnerships and the hiring of consultants which form what Henneberry and Parris (2013) term a "real estate ecology": an inter-connected, mutually-supporting network of actors. These connections can be project-specific, periodic or on-going and they reflect the internal, often informal, relationships at work within the industry (Adams et al., 2012).

In large-scale projects, and for those situations characterized by long-term connections, the web of expertise contains a range of professional relationships and obligations. For example, developers hire experts who specialize in navigating the planning risk associated with bringing forward sites and who report directly to developers (Brill & Robin, 2020; De Magalhaes et al., 2018) as well as experts who help forge relationships with affected communities (Geva & Rosen, 2018). Additionally, in light of the growing pressure to attract and utilize institutional capital, this web of real estate expertise increasingly contains organizations and institutions involved in the financing of urban projects and the generation of long-term returns on investment. For example, in globalized markets developers respond to pressures from international investors who will hire brokers to translate and generate confidence in place-based markets (Rouanet & Halbert, 2016) and help secure their investment into the built environments of some cities, whilst avoiding others in which there may concerns over too little knowledge and/or the (Bitterer & Heeg, 2012; Theurillat et al., 2016).

Whilst much has been said about the variety of expertise required to bring forward development and the ways in which developers and other actors are able to shape local markets (see Charney, 2003; Ehlenz et al., 2020), given real estate's highly localized nature and the complexity of planning applications, there are two dimensions of this work we intend to develop further: (1) there is a burgeoning and growing literature, including from economic geography (see for example Østbø Haugen, 2018), on the role of consultants and wider market making actors. In this paper, we build on this work to examine their internal processes – a feature of corporate practice that often remains hidden from wider understandings of the functioning of the governance process and the politics of urban (economic) development; (2) by focusing on internal logics and the performativity of data types internal to consultancy processes we turn attention towards the wider financial costs of a greater reliance on consultants as the default model of navigating uncertainty in urban development. This, in turn, underpins a process of monopolization across the sector in which there is a structural advantage for firms that are able to both influence dominant representations of markets and market trends through their research (and the heavily-resourced research capacities of their teams) *and* provide a suite of knowledge practices for potential clients that claim to support all aspects of the development process.

To expand on the first dimension, recent writings in urban geography have elucidated the range of actors required for development and their performative role. Applying ideas from economic sociology to an urban context this writing reveals the ways in which particular models and financial understandings come to both represent and create an representation of investment and development landscapes (Christophers, 2014; Raco et al., 2019). This focus on the performative dimension of both artifacts (models, ways of understanding, forms of data) and agents have demonstrated the need to examine the people involved in interpreting and framing the economic actions (see Callon, 2021) shaping in this case urban spaces. Borrowing from both economic sociology and economic geography, it is evident that actors involved in market making and interpreting create specific frames through which financial situations can be understood and acted upon (Callon, 1998; Østbø Haugen, 2018) This process is typically heavily shaped by intermediary actors who fill information gaps (Phelps & Wood, 2018). In urban geography and planning more generally there is a growing body of work on such intermediary organizations and how these groups shape understandings of what should be developed, why and where (Abbott et al., 2017; Raco et al., 2021).

As Weber (2015) notes in her analysis of commercial real estate actors in Chicago, it is necessary to unpack and critically evaluate the logics and practices behind private sector decision making (including such intermediary actors) – on both an individual level and more systemically to address those which become a culturally embedded norm within the industry. For Weber (2016), this requires engaging with the breadth of professionals – from brokers to investors – and recognizing how they articulate their particular understandings of and position within urban development processes. She shows how the performance of expertise is central to market making activities, especially in the context of housing markets where actors in all their multiplicity of disciplinary backgrounds are mediated through financial, legal and information-based experts that channel localized knowledge and understandings to produce local property cultures (Smith et al., 2006).

Robin (2018) has drawn from a similar theoretical position to assess the politics of expertise in relation to urban development projects in London. She shows that attending to questions over whom is deemed a legitimate actor – in her case, developers – helps unveil the ways in which particular values permeate through development processes, particularly planning applications and their early design stages. In this regard, her work builds on the idea that developers and their consultants rely on long-term relationships with the state (Elsmore, 2020; Ruming, 2009), but also that there is an imbalance between state and private-sector levels of expertise (Parker et al., 2018). As such, expertise, from architectural advice to planning consultancy, has huge value for real estate actors because it skews the politics of planning negotiations.

However, for Robin (2018), and departing from Smith et al. (2006) and Weber (2016), researching the instrumentalization of expertise requires recognizing *the ways in which expertise is expressed*: the planning documents, instruments and the meetings or fora. In making clear the case for analysis that attends to a broadly conceived network of actors and instruments, Robin's analysis is suggestive of a need for more attention be paid to the *hidden* elements too – and the ways in which data processes and the knowledge itself is embedded within urban development. Moreover, as Robin demonstrates in the particular case of King's Cross in London, the planning system in England is reliant on calculative practices that require developers to negotiate how much affordable housing they will provide through Section 106 value-capture agreements,[1] which in turn are dictated by viability assessments. These assessments embed particular ways of understanding value in an urban context, but they remain constantly in flux, with developers and the private sector more generally using the flexibility within the institutional setup to leverage their knowledge base to contest and limit requirements (McAllister et al., 2016).

The pressure – and desire – to engage in deliberative and path-dependent planning negotiations (Lord et al., 2019), as well as the broader need to understand local contexts, especially if actors involved are international (see also Ballard & Harrison, 2020) means there is a huge demand for data and knowledge in the real estate sector. The acquisition of such expertise, especially by world-leading consultancy firms, plays an important role in creating legitimacy for a project, in relation to both market confidence and urban politics. However, this expertise goes beyond the technical or quantitative analysis of "big data" which is often the focus of research (Chiodelli, 2012). Indeed, if we are to understand how processes of valuation and knowing urban development are constituted we need detailed analysis of actors' approaches (Crosby & Henneberry, 2016) and to decloak the often-shrouded practices of consultants (Wood & Phelps, 2020). Unpacking the diversity of information required for urban development and the ways in which it is legitimated – rather than just the firms which are included within the web of project development – necessitates understanding what type of data are used, for what purpose and with what outcomes. This, we argue, requires adopting an approach that is both agent-centred and that attends to the less visible elements of the process – the ways in which particular types of information are passed around, sourced, the mechanisms by which the information is captured and the devices through which these are transformed, translated and made actionable by real estate professionals (see also Fields, 2022).

The second element of recent research on consultancy firms that we draw on are studies of the diversity of knowledge types that exist and their impacts on the practices of development and material outcomes (Robin, 2018). Whilst the material outcomes of negotiation practices are well explored (see, for example, Rosen, 2017), the impact on the finances or economics of development is less understood. In particular, how the institutionalization of firm-level knowledge practices relates to the economics of housing delivery. Recent analysis of the UK's housing market has addressed how the demand for more knowledge has driven up prices. For example, as Colenutt (2020) highlights, the big consultancy firms in the UK are seen as vital parts of the development process. Their involvement increases the cost of development, meaning only some development firms are able to flourish, and increases the value of advisory firms and consultants alike. To explore how this value is made – or perceived to be made – requires unpacking the firms involved in the process and how the work of their research teams influences the financial cost of housing development.

In the remainder of the paper, we draw from and build on this extensive body of research to question the processes behind development consultancy work, the role of different forms of knowledge or expertise and how these are integrated into particular forms deemed value by other real estate professionals, and the consequences of this for how developments unfold. In doing so we attend to the issues raised above – looking at the *how* of consultancy and the consequences of its role in residential development. To do so we focus on the role of internal research teams within the real estate sector and their roles in creating representations that both describe urban markets and help bring them into being.

Methods

This analysis is based on in-depth analysis of residential real estate in London between 2018 and 2020, with a particular focus on consultancy firms and their actions during 2018 and 2019. Interviews were conducted with individuals and experts identified through their membership and involvement with the Society of Real Estate Researchers. These were supplemented with approximately 60 interviews with professionals across the city, including investors, developers, researchers, analysts, lobbyists and planners that addressed the governance of urban investment, patterns of development and the role of different firms. Throughout the paper, interviewees are anonymized in line with their self-described job title. For each interview we received informed consent. This information was triangulated through a critical interrogation of annual reports from real estate consultancy companies identified through their prominence in the industry news source The Planner (from incorporation till 2019) and the companies these consultancies acquired (sampled from 2008 till 2018). This critical reading involved analysing the discourses and narratives generated by consultancies and reading them alongside the interview transcripts. These were all cross-referenced for key themes around data and knowledge using Nvivo.

The role of research in real estate development

In this section, we address how research teams fit within the broader ecology of the real estate sector and the ways in which firms use data. We show how multiple sources of data are amalgamated through specific, internally developed, calculative practices to inform their wider company objectives. This, we argue, requires both quantitative data accumulation and analysis, and supplementary qualitative data collection, which we, building on Kitchin and Lauriault (2015), distinguish as big and little data. It is through the commodification of this data that firms position themselves as powerful knowledge mediators in the real estate sector. In doing so we add to debates on calculative practices and processes that enable development and investment in housing (see Raco et al., 2019; van Loon, 2016), by showing the practices often hidden behind the externally visible metrics and measurements.

For expanding consultancy and advisory companies, research, and relatedly knowledge and data, have been important for decades: "It was a good learning curve to begin with. Why do it? Well, the private sector is the same as public sector in many ways. Not much different, it needs information and evidence" (Researcher 2, 2019). In the case of one firm, the research team has grown from 8 employees "in the so-called 'information' department who were librarians rather than researchers" to over 170 worldwide (Researcher 10, 2020). Research is conducted by an in-house team and then used in three key avenues: publicly available reports which are widely circulated as part of the broader research output within the private sector and which hope to both explain and make market trends (Researcher 1, 2019); bespoke advisory jobs requested by external clients when they want to understand a new market; and to inform their wider advisory work with developers (Researcher 10, 2020). The bulk of research is therefore "produced for the clients … research teams are intermediaries" (Researcher 2, 2019).

It must therefore cover a wide range of topics because the outcomes "span everything from slightly geeky statistics to policy … everything from planning to development to investment" (Researcher 10, 2020). As such, the research team is essential for the wider work of consultants because it is used in a host of activities from development advisory services to investor consultancy work: it is a behind-the-scenes mechanism by which more prominent teams extract value from urban development, as one interviewee succinctly explained: "if we wanted to market it [a development] we had to get the data".

Since the instigation of in-house research teams in consultancies, market demands for analysis have changed significantly, both in scope and scale. With a growing internationalization of investment sources into prime markets such as London, trusted researchers and multiple forms of data are needed to explain the market. As the research team established themselves as those with information "very quickly clients expected brokers to have a great deal of additional information, data, on a property and on a market" (Researcher 1, 2020). This trend has been exacerbated by the concomitant historically low-interest rates and unstable yields on traditional property asset classes such as retail, where housing, especially multi-family properties, has become a more viable asset for institutional investors.

As such, large investors, including international pension funds and private equity groups, have sought to better understand potential capital gains – and most challenging in the UK context – income stream potentials from property. As a range of writing on real estate has shown, and contrary to much of the writing on gentrification in the critical urban studies field, property represents a difficult, complex, and risky asset for potential investors (Crosby & Henneberry, 2019). When compared with other investment assets, property fares poorly and is open to multiple risk variables – ranging from place-specific conditions to macro-economic and regulatory changes – that can impact on its liquidity and longer-term returns. Representations of market trends and opportunities therefore represent a potentially powerful role for private knowledge producers.

When asked about who typically wants the analysis they can provide, one interviewee explained it is "particularly new investors coming from somewhere who wants to invest in London" (Researcher 10, 2020). In this regard, the researchers' analyses and market representations take on the form of translations that enable capital to anchor itself in new locations by delineating or "framing" particular places or types of development as the only way to understand what could or should be built (see Callon & Muniesa, 2005 for a discussion of framing practices more generally). With increased demand for data, especially quantitative analysis within the wider real estate ecosystem, firms have to find a way to assemble data sets from within their firm to give them a perceived, or arguably constructed, competitive advantage over their rivals.

To make their research effective and meet the needs of brokers and other professionals within the firm, requires the research team to effectively integrate their activities into the wider internal corporate organization. As one researcher explained:

> That's always the danger with a very large organisation, that you can just be siloed, so I'll get my analyst to sit in team meetings in other teams, so that they're aware of what other teams are working on, where there might be crossover and a need for research that they haven't identified and we'll be able to say "actually, we just looked at that problem for someone else. We can help you with that."' (Researcher 4, 2019)

A wide range of data sources is used to meet demand, including "big data" such as those produced by the Office for National Statistics, and the relatively recently privatised Land Registry data. The acquisition of the latter provides evidence of the imbalance of knowledge access and the ways in which larger firms gain access to data that others, especially citizens, are unable to access easily and affordably.[2] Land registry data were considered by interviewees as "publicly accessible – it's entirely publicly available – it's just the cost" that prevents people using it all (Lobbyist 2, 2020). As Shrubsole (2019) shows, who owns land in England is hard to ascertain, but large firms benefit from the fee structures of Land Registry data: "wholesale is modestly priced" one interviewee boasted – the data they buy is the "foundational dataset for value-add services" (Regulator 4, 2020).

Yet even those working with this data are largely unaware of the inequality of access:

> I didn't think we had to pay for Land Registry because there's so much data now that has to be freely available, but I'll ask them, I could be wrong. I know if I went to get one record, I'd have to pay, but we go in and we take it all, so every quarter, we update. (Researcher 2, 2019)

Land Registry data are supplemented by commercially acquired data, sourced from Zoopla and Experian (Researcher 4, 2019), along with surveys and other forms of research by internal teams (Researcher 10, 2020). They then have:

> millions and millions of bits of data that you have to crunch. Right Move, we get all of that, EPC data, so we match every sale to an EPC record, so we can look then at new build pricing, so yeah, it's just become very data intensive and the more data you have, the more you can tell. (Researcher 4, 2019)

These data are then shaped through internally developed, calculative practices. As one interviewee working at a leading consultancy reflected their firm develops market and data analysis in response to demands for other actors within the industry:

> We had to help attract investors and worked out that housing stock would never be vacant, but we still had to invent value income streams to show how this would play out over time. [Researcher] developed a new method of discounted valuation. So robust that used – they estimated a programme of work for entire stock over 30 -year period built into the cash flow.

These practices are developed in-house, drawing on what is both known by those interacting with developers and investors, and experiences from those selling property. The amalgamation of this wide range of expertise across the internal network is used to develop further knowledge management practices. Reflecting on how particular indices developed over time, one interviewee explained that "talking to the agents about the trends … we noticed that the transaction based indices did not pick up the downturn that we knew had happened" (Researcher 9, 2020). This demonstrates, we argue, the ways in which widely collected data are effectively harvested and put to use to serve a particular form of calculative practice about urban development. Moreover, it demonstrates how the approaches around data management and use observed in other specialisms within real estate development are informed by – and arguably made – within research-specific contexts in development advisory firms.

A key theme which emerged in our interviews, and which is important to stress in terms of the debate around knowledge production and commodification, was the *complementary relationship* between quantitative data and qualitative data types. Initially, in interviews with researchers, people were keen to emphasize the role of quantitative dimensions of their work, explaining that their research was "quite close to what you might expect a surveyor to do … but with data not culpable evidence" (Researcher 10, 2019). For this researcher in particular, there was an emphasis on the perceived value in quantitative analysis: "if there is hard data out there, we'll use it, and when there isn't much, we'll use that". But invariably, as interviews progressed interviewees reflected that their information base was much wider, necessarily capturing both qualitative and quantitative data available because of the breadth of issues they cover.

In the case of qualitative knowledge for real estate, unlike quantitative data which is compiled from a mix of three sources: commercially acquired data, nationally released statistics and internal surveys, qualitative data are only acquired through the internal company network. As one researcher reflected, when he needs qualitative data he and the research team "mostly talk to our teams … the easiest thing is to phone them up … they'll probably have talked to their clients this week' and so will have the necessary information from 'on the ground'" (Researcher 10, 2020). In this regard the performance of urban expertise becomes about finding a way to integrate into the calculative practices a performance of expertise evidenced in the wide range of functions and teams involved in the overall business (see Callon, 2021; Robin, 2018). Acquiring this data to understand the market in more qualitative terms, in some cases, was about speaking with those working directly with developers or investors: "lots of it is anecdotal from colleagues who work very closely with developers", but in other cases data are acquired from those at the "coal face" of the development industry (Researcher 1, 2020): estate agents. As one researcher explained: "it's applied research, so we have a lot of information and data that we have collected. We've got 200 offices across the country, so we know about most sites" (Researcher 4, 2019).

Commodifying new forms of data: the case of information from the coal face

This section addresses how companies have used a strategy of mergers and acquisitions to add to the type of data they have access to, with a particular focus on acquisitions of a range of smaller often niche companies. We use the example of acquiring a London-based, specialist estate agency, to demonstrate the ways in which firms have expanded their research and commodified it. Through this, we argue, they have generated and captured new forms of knowledge from "on the ground" sources, or what we term small data to complement their other forms of data, "big data" discussed above. In this, we build on the body of existing analysis differentiating between the two to exemplify trends highlighted by Kitchin and Lauriault (2015): the creation of new data infrastructures that re-configure how small data are treated. In this case, combining the "small data" with larger institutionally accepted "big data" the firm is able to create new artifacts of performance (Mitchell, 2010) that enshrines their position as an expert. This addresses two corporate aims: (1) it allows firms to more effectively advise clients and (2) in turn this has a performative dimension as they position themselves as key mediators of knowledge about London in future pitches for clients.

Traditionally, estate agents are under-valued by other real estate professionals with one interviewee even using the term as a pejorative: "he's basically just a glorified estate agent with a bigger bunch of keys" (Investor 1, 2018). That said, some consultancies such as Knight Frank and Savills have long been involved in residential sales, albeit with a focus on super prime property or large country estates. However, in contrast to their traditional markets in the "super prime" areas of central London and large country estates (Researcher 1, 2020; Data manager 1, 2020), many consultancies have begun to get "more men [*sic.*] on the ground" (Researcher 1, 2020) in the last decade, across London (and the wider South East region in the UK), particularly in areas considered underrepresented within the traditional business (Advisor 1, 2020). Through this new geography of representation, consultancy firms are able to increase their knowledge base in terms of understanding what is happening in the sales and lettings markets as it unfolds, as one estate agent turned strategic advisor reflected "when you're front of house you just know … Now we're substantiating it". For her, there is value in the real-time information estate agents hold, and the commodification of this knowledge is vital in providing accurate advice for clients. This in turn allows them to advise on new geographies of development and therefore shape the geography of urban development in London in a way that reflects their expertise: towards the east (Advisor 1, 2020).

As has been shown elsewhere, private actors are increasingly guiding the geography of urban development, as their role in directing investment, relative to policy-makers, grows (Rouanet & Halbert, 2016). In this case, in contrast to existing analysis of developers' capacity to shape the geography of new projects, we demonstrate how advisors, drawing on data acquired within their firm's networks, play a role in actively shaping markets and trends. This, we argue, is a reflection of the way they perform their roles and utilize different artifacts – both internally developed models based on their in-house data collection processes and externally sourced "big data" – to bracket certain types or places as more desirable development locations.

In interviews, consultants and advisors stressed their research team's capacities to draw on data from a wide range of actors involved in market making practices, including estate agents that "know who is in the market … they'll know people who say 'If I can buy for a million then that works'" (Researcher 10, 2020). Through the experiential and grounded knowledge estate agents understand place-market tendencies and trends, even when patterns have not yet been established in formalized data sets. This knowledge can also therefore be understood as a form of tacit, informal, knowledge: "the people in the market know what price the market would clear but without either the buyers or sellers you didn't get the data" (Researcher 9, 2020). Getting this expertise in-house enables major consultancy and advisory firms to pitch for new clients because they can provide investors and developers with a full suite of services. In this way, they commodify knowledge that is available within their wider networks and through their own activities. Moreover, once they successfully tenure for large advisory roles they can draw on wider sources of data and feel more confident in the advice they give, partly because this advice plays a part in re-shaping the markets and bringing their descriptions into being (Advisor 2, 2020).

As such, beyond the direct benefit of having access to new forms of data, there are two other key benefits. Firstly, estate agents provide a rental income stream (Researcher 10, 2020). Secondly, and most importantly for this paper, having a more vertically integrated structure enables a firm to position themselves as more effective advisors – they are able to justify particular forms of advice in a more comprehensive way. As one leading researcher argued, to be successful in any contemporary real estate consultancy, research teams have to "integrate the knowledge across the network to ensure best research – a lot of the data we get ourselves that you can't get from anywhere else" (Researcher 2, 2019). This goes beyond addressing the valuation processes associated with financial actors' demands (see Crosby & Henneberry, 2016) and instead requires consultants to utilize qualitative or "small" forms of data. Speaking with a senior member of the research team who has been involved in real estate research for their entire career, they reflected that having a breadth of "on the ground coverage" enabled them to differentiate themselves when pitching advisory work.

In particular, in acquiring estate agency activities and firms, companies have expanded their market through new forms of expertise and data acquisition, in ways that reflected fundamental shifts and trends in London, such as the growth of new development sites in the east of the city, the importance of new builds and shared ownership projects (Advisor 1, 2020). Applying these specific forms of expertise, one analyst explained that since integrating into a big consultancy they had become involved in a large-scale urban development and relied on the expertise acquired through estate agents: access to real-time information from agents "gives a profile, who is moving, tenure changes, what they're buying" and this allows researchers to "help inform what a development should be". For those doing the consulting, their role becomes concerned with using the research team's outputs (or the researcher embedded in the advisory team as is sometimes the case on larger projects) to shape a development plan. For her, estate agency data are vital because it allows them to develop a reputation for accuracy and legitimizes their position as a trusted consultancy. In this respect then, acquisition of more firms, such as specialist estate agents, can also be understood as serving a performative function in that it is used to perform the role of expert and attract future clients.

This was supported in interviews with developers who reflected on their reliance on consultancy firms for all stages of the development process, from early design to eventual sales. As one developer explained, their advice enabled him to understand the position of his site relative to the market and in turn his pricing strategy:

> we've done a lot of work with [consultancy] from a pricing perspective to understand who they think will be looking at this, so again, first time buyers, also attracted to buy to let investors because of the price point we're at. We think it's circa £550/600k, so it's a territory which remain quite competitive, but also reasonably priced for an investor bracket. (Developer 2, 2019)

As such, the institutionalization of particular practices of knowledge can be seen to have a material impact on how development decisions are made and ultimately on the built environment.

Towards a reinforced oligopoly?

The acquisition of new firms also demonstrates how vertical integration within the real estate sector is reinforcing an oligopolistic market of advisory work, which in turn reinforces the power of larger real estate corporations at the expense of both smaller firms and those civil society and governmental actors who are increasingly required to negotiate over development rights (Colenutt, 2020). The acquisition of data, be that data sets from commercial sources or through large internal networks, creates a high barrier to entry. As such, whilst a number of firms perform some advisory or consultancy work for urban development, four consistently outperform others, as ranked by UK turnover: CBRE, JLL, Savills plc and Knight Frank (Property Week, 2019). In 2018, these firms had a combined annual UK revenue of £3,538,100,000. Whilst CBRE consistently outperforms the other firms by a considerable degree, this reflects the type of business they do: they focus on commercial property whereas the other firms have a broader range of expertise, including in residential markets – the focus of this paper.

What is important to recognize when understanding how these firms operate, is the multiplicity of teams and services offered *within* the organizations, the heterogeneity of the firms themselves in terms of what they offer, and the differential performances of sub-sectors. Since 2008, real estate has become a more broadly recognized asset class, partly as a result of low-interest rates. On an individual level, this has led to more people investing in one or two properties and using the income streams as pension replacements (Aalbers, 2016); and on a large-scale, institutional investors have seen property as a viable asset class for long-term returns in terms of investing in developments. However, in the UK, in light of political instability, currency changes, longer-term bond yields and the uncertainty of Brexit more generally, transactions have been down (Savills, 2018). As such, within consultancies, an increasing percentage of their revenue generation is from non-transactional work (Savills, 2018). As one interviewee reflected on the income-generating nature of research:

> We get funded, we get paid for our consultancy, so where we work with a client, we really think about their problem and we might come to a solution for the client and then that solution is viable to our agents when they come to similar sites and similar situations and then we might be able to turn that piece of applied consultancy into something that's more generic and can say "these are the broad principles that you need to think about when you're bringing forward a large site," but it generally comes from this applied piece and then it filters through, so there is a very strong link. You asked if there was a link with our consultancy … very, very strongly. (Researcher 4, 2020)

As is evident in the quote above, the research team see their role as part of the wider business and revenue-generating parts such as consultancy. Consultancy business revenue is the engine of their company's growth. It represents a significant part of their work and importantly, in the context of market downturns, is classified as defensive, less risky work.

This oligopoly matters because the limited pool of potential advisors grants those with the necessary knowledge significant market power and therefore influences the costs and location of development. The urban development landscape in London is complex, with investors requiring in-depth knowledge to navigate the particularities (Raco et al., 2019). In terms of housing development and bringing forward large sites which advisory firms specialize in consulting on, development risk heavily shapes developers' capacities to undertake new projects (Brill & Robin, 2020; De Magalhaes et al., 2018). For many advisory firms, their position as producers of relatively expensive specialist political knowledge on how the planning system works in London, and how best to navigate the complexities of the planning process and public engagement, has further boosted their appeal to potential clients. This adds to the asymmetry of knowledge across the sector, with a limited number of firms making sufficient profits to afford such high-end advisory services: largely volume housebuilders (see also Colenutt, 2020). Data consultants are therefore influencing the form and character of the markets that they are "describing" and "analysing".

The limited number of advisory firms with sufficient expertise in London's housing development, which is reinforced through consistent vertical integration as evidenced in this paper, generates new forms of *market capture*, and enables them to be relative price makers. Reflecting on the analysis above and its consequences: if costs of development include advisory fees, if fees increase so does the cost of building housing and therefore the price houses are sold for. Additionally, section 106 agreements are based on viability assessments, where developers report through a particular performed understanding of the market (see Christophers, 2014), the cost of their development and their expected profit and from this negotiate with the local planning authority what is required of them in terms of affordable housing provision. In viability assessments, all professional service costs are captured under consultancy fees (Planner 4, 2020), if the cost of advisory work increases then the margin developers can make on a project (if they do not increase the price of houses for sale) decreases.

As is evident in the local authority's guidance advice, for example, in both Tower Hamlets and the London Mayor's discussions of viability assessments, professional fees constitute around 10% of the cost of building out a site, although this can be up to 12–13% (Private planner 2, 2020). As such, understanding the variety of services captured within the umbrella category of professional service costs helps to uncover the constituent parts of building costs which are relatively under-explored in academic discussions. In contrast to narratives that value generated through urban development is primarily extracted by investors and developers, a better understanding of how vertically integrated firms align themselves within the market demonstrates a new angle for future research by suggesting the need to explore how multiple layers of consultancy costs underpinned by particular performances of expertise and the utilization of in-house data and metrics shapes consultants' abilities to extract value.

Conclusion

This paper demonstrates how under-researched and hidden parts of the real estate industry are vital in understanding urban development processes and market dynamics. It offers three main conclusions. First, it demonstrates the centrality of research teams in urban consultancy work and their importance within the real estate ecology – this time looking beyond a periodic or project-specific group (see Henneberry & Parris, 2013) to demonstrate the wider networks and relationships of practice in the on-going construction of real estate markets (Callon, 2021). This advances understanding of the practices and processes of a wider range of real estate professionals and highlights the importance of analysis at a firm-level, especially for understanding the institutionalization of knowledge practices through intermediary firms. It is notable that even in cities in which there exist large scale public universities, much of the research knowledge around property markets and regulation is now produced by a new class of *private-sector experts*, operating below the radar of public accountability and drawing on a range of resources and databases beyond the public gaze. Their research plays both a performative role in shaping (representations of) the markets that they operate in and provides clients with market advantages. They are not just intermediaries (see Abbott et al., 2017), but active players in the reproduction of market. In turn, analysing the practices and processes of these research teams highlights the importance of data harvesting and commodification. This adds to our understanding of the ways in which the multiplicity of actors enrolled in urban investment and development position themselves relative to one another and how the industry is being re-shaped through knowledge and data management practices.

Secondly, we argue that in order to acquire the necessary knowledge, we are witnessing a process of attempted and selective monopolization in which large firms are vertically integrating smaller firms and selected experts into their structures in order to provide a suite of services and forms of advice. Specifically, we highlight the growing recognition given to the complementary (rather than binary) nature of qualitative and quantitative data that sustains the competitiveness and financial viability of the real estate sector. We demonstrate how knowledge practices – the acquisition, manipulation and utilization – are institutionalized trough particular data-driven performances within real estate professional practices at a firm-level and the importance of multiple place-based understandings of the urban development process, along with a wider grasp of macro-level economic and regulatory trends and structures.

Thirdly, and building on the second conclusion, we argue that this vertical integration has cemented the already oligopolistic market of consultancy work. Understanding the market structure of knowledge provision elucidates a more comprehensive analysis of how the private sector's commodification of knowledge translates into the built form by drawing out the relationships within the sector. Reflecting on these conclusions, we suggest that the existence of a vertically integrated oligopolistic market contributes to furthering the already large costs of development which are, for the most part, used to drive up asset prices when properties go on sale and by default reduce the available capital that can be captured for welfare and/or social contributions. This, we reflect, requires further analysis to unpack more precisely the direct financial consequences of expertise-driven approaches to urban development.

Beyond the specifics of development consultancy, our analysis highlights the multiplicity of forms of information captured under the umbrella of "data" in property development and investment, building on established differentiations between big and little data (see Kitchin & Lauriault, 2015), to reveal the complementary and performative dimensions of different types of data within one company. In our interviews, respondents interchangeably used data, information and knowledge, especially those who work with both qualitative and quantitative forms of data. In analysing the use of different terms, we highlight how data demands in urban development extend beyond the technical or quantitative forms typically associated with investor demands, to show the value of qualitative and judgement-based practices. In attending to both, this analysis demonstrates that the commodification of data – in a broad sense – has led to an enclosure of data that extends beyond expensive, technologically-driven extraction methods to include the harvesting of data from people on the ground – or at the coal face.

These conclusions demonstrate the benefits of analysis that attends to the covert processes behind knowledge and practice development within the real estate sector, through a focus on one particular firm. Such an approach to urban geography enables analysis of how knowledge is utilized, and helps elucidate a more comprehensive understanding of the mechanisms by which different actors within the urban development process interact around knowledge and data demands. Doing so sheds light on the broader issue of urban politics and the politics of an expertise-led form of development – especially housing development. The hiring of a wide range of consultants results in a politics of development expertise where developers – and investors, as well as sites – are deemed legitimate because they have employed consultants (see also Robin, 2018). Understanding how such forms of expertise are created and the financial implications of expertise-led development as the dominant form of organizing real estate teams, is vital in challenging this now normalized form of development practice.

Notes

1. Planning obligations under Section 106 of the Town and Country Planning Act 1990 are a mechanism which makes a development proposal acceptable in planning terms. They are focused on site specific mitigation of the impact of development. S106 agreements are often referred to as "developer contributions" (https://www.local.gov.uk/pas/pas-topics/infrastructure/s106-obligations-overview).
2. Interviewees noted that the cost of acquiring large data sets for commercial purposes from the Land Registry is substantially cheaper than acquiring individual titles by citizens.

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