



## From tenants to subscribers: Digital experiments in residential rent extraction

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### ABSTRACT

Rent relations from landed property are increasingly being leveraged for experimentation with new forms of value capture via digital technologies. Inspired by platform corporations, real estate actors are constantly trialling innovations for deepening and extending residential rent extraction. This paper sheds light on these mounting experiments using the case of co-living, a real estate sector with a strong elective affinity to corporate capitalist technology. First, it documents attempts to optimise the rent-generating potential of real estate assets themselves via spatial surveillance and dynamic pricing. Second, it highlights efforts to establish forms of techno-economic enclosure beyond the limits of buildings via housing memberships and subscriptions. In so doing, the paper contributes to an emerging body of literature on the intersection between digital and residential rentierism.

### 1. Introduction

In April 2017, after raising \$2.7 million USD of venture capital in a seed funding round, co-living company Bedly was undergoing rapid growth. It had amassed over 1000 tenants and was signing leases on rental properties across New York City and Boston. Bedly claimed to be the 'first online platform for end-to-end rental services', promising to turn housing into a hyper-flexible, on-demand service (VC News Daily, 2017). Landlords would be spared the burden of paperwork and logistics, enjoying optimised, stress-free rental income. Residents would become 'members' of the Bedly 'network', accessing housing on flexible terms, and spared the trouble of furnishing and setting up utilities. Brimming with confidence shortly after the successful seed round, a spokesperson from its main venture capital funder Accomplice proselytised 'The housing rental market has fallen out of touch with the increasingly mobile/on-demand society... Bedly has the potential to be the world's largest landlord that doesn't own any buildings' (PR Newswire, 2017). But as the number of units operated by Bedly swelled, so did its financial troubles. There were new competing co-living start-ups launching every week, and the company struggled to raise enough funds to keep pace with its rapid expansion. Bedly suddenly shut down in 2019, laying off the majority of its staff and informing members via the Bedly app that it would no longer be managing their property. Almost 600 residents were left with invalid leases and a month's notice

to find new homes (Brenzel, 2019).

Bedly was occupied with an idea that has captivated capitalists of all shapes and sizes over the past ten years: can housing, in one way or another, be 'platformised'? As the private rental sector across Europe and North America has expanded since the 2008 financial crisis, so have efforts to digitise how it is exchanged, mediated and operated (Burrows et al., 2024). Real estate actors are increasingly allured by the potential of digital control and enclosure of residential assets and tenants. Meanwhile, technology firms have been drawn to the handsome, very tangible, rents to be extracted from real estate. In this context, the long-standing, archetypal rent relations of landed property have become a site of intense experimentation with strategies and devices associated with digital platforms (Rogers et al., 2024).

Emerging as it has during this period of feverish platform expansion and fetishization on the one hand, and the assetisation and financialisation of rental housing on the other (Lochlainn, 2023; Wijburg et al., 2018), the 'co-living' sector provides unique insights into digital experiments in residential rent extraction. At its core, co-living is simply privately operated, for-profit multiple occupancy rental housing. But many co-living firms were conceived in Silicon Valley, refer to themselves as 'start-ups', and are run and championed by technology entrepreneurs. Venture capital firms, i.e. the financialised actors largely responsible for driving the technology industry, have played a key role in launching many major co-living brands. Co-living buildings are also

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themselves places of constant experimentation with actual technological deployments. In particular, companies claim to be at the cutting edge of the so-called ‘Space-as-a-Service’ model: the mediation of building management and use via residents’ smartphones, cloud computing, ‘Internet of Things’ devices and artificial intelligence (Verma, 2018). Co-living therefore epitomises what Shaw (Shaw, 2020, p.1038–1039) refers to as a “coming-together of real estate’s old ‘organization men’ from the financial offices of Mayfair or the City of London with a newer breed of entrepreneurial technologist-hacker that has yet to historically intervene in real estate’s oily personal connections”. The sector is uniquely positioned to offer answers to a pertinent question for housing scholars: what happens when the rentier strategies of digital platforms and corporate landlords converge?

In addressing this question, this paper contributes to a burgeoning body of scholarship on the topic of real estate technologies and platform real estate (Burrows et al., 2024; Fields & Rogers, 2019; Faxon et al., 2024; Ferreri & Sanyal, 2022; Payne, Knuth, & Mahmoudi, 2020). In particular, it complements recent efforts to highlight the changing nature of housing and home at the intersection of digital and residential rentierism (Nethercote, 2023; Rogers et al., 2024). In this endeavour, I use the empirical case of co-living to highlight how strategies and devices associated with platforms enable both the intensification of asset use and exploitation, and the potential for new forms of techno-economic enclosure involving tenants.

### 1.1. When platform capitalism meets corporate landlordism

The co-living sector can be understood as deriving inspiration from the ‘platform’ – a dominant ideological, organisational and political-economic form in contemporary capitalism (Langley & Leyshon, 2017; Srnicek, 2017). ‘Platform capitalism’ is a contested concept (Liang et al., 2022). Not least, when it comes to housing, it risks over-stressing novelty, feeding into the ‘hype’ on which the technology industry thrives (Faxon et al., 2024; Milne, 2020). For example, we should be careful about framing digital experiments in property as disruptive given that they inevitably rest upon and exploit social difference, including histories of racialised injustice (Fields, 2024a; Migozzi, 2023). Yet, as Migozzi (2024) reflects, whilst it is crucial to keep sight of the *longue durée*, it is also key that the novelty and distinctiveness of digital experiments in property are teased out. In this spirit, the platform remains a useful way of understanding the constellation of practices, strategies and ideals associated with technology firms that co-living agents seek to apply to housing. It encapsulates the dominant thinking around digital transformation in the real estate industry, and its concomitant promises of efficiency and democracy.

Platforms are understood broadly here as a ‘socio-technical intermediary and business arrangement’ (Langley & Leyshon, 2017, p.11) that combines new technologies with existing organisational structures (Faulkner-Gurstein & Wyatt, 2021). Central to platformisation as a process is the ‘occupation of a strategic location within specific kinds of networks’ (ibid, p.3). While as Christophers (2020, p.191) notes, the very term platform ‘suggests something singularly anodyne and innocuous: an operator providing a forum for others to do or say things, while itself remaining outside the fray’, platforms are ultimately about power: finding ways of maintaining and expanding control over particular things or processes. As ‘variants on supplying technology and/or creating services, and then controlling access and collecting rent’ (Sadowski, 2020, p.565), platforms are characterised by particular forms of rentiership and value extraction that, so I argue in this paper, the co-living sector seeks to apply to housing. In practice, however, these strategies overlap and intersect considerably.

Platform businesses seek to extract value from data trails and circulation (Wainwright, 2022), even if it is often unclear how exactly this value is extracted (Fourcade & Healy, 2017; Langley & Leyshon, 2017). As Srnicek (2017, p.254) argues, ‘Essential to all of these platform businesses... is the centrality of data. Data is the basic resource that

drives these firms, and it is data that gives them their advantage over competitors’. A primary way in which value is derived from data is the profiling, managing and classifying of people and things, including through increasingly sophisticated surveillance mechanisms (Fourcade & Healy, 2017; Zuboff, 2019). This sorting and classification, which inevitably exploits existing social structures, hierarchies and biases (Meers, 2024), is a key way in which platform mediation (the coordination and facilitation of actors in a network) is translated into platform capitalisation (the process of turning said intermediated network into various forms of income) (Fourcade & Healy, 2017). In this way, as argued by Faulkner-Gurstein and Wyatt (2021, p.8), data entrepreneurialism is a key function of most platforms, referring to a ‘strategy predicated upon finding new ways to produce and valorise data’. As this paper will explore, co-living firms seek to ‘datify’ residential space in such a way that bolsters and extends their core rent-seeking strategies.

Achieving scale and network effects is another key platform business strategy, with efforts centring on ways to ‘add value through increasing the number of users and their engagement with the platform’ (Fields & Rogers, 2019, p.75; Shrestha, Gurran, & Nasreen, 2023). As Sadowski (2020, p.569) argues, ‘monopoly – or at least the aspiration of monopoly and the aggressive tactics to achieve monopoly – is a built-in feature of the platform model’. Langley and Leyshon (2017, p.4) further contend that “the ‘winner takes all’ objective of platforms is grounded in an intermediary logic and business model that hinges on cornering market-making and the coordination of network effects in particular niche domains of digital circulation”. As acknowledged across the literature, platforms fundamentally shape and intervene in markets so as to maintain and expand their control over interactions (Fields & Rogers, 2019; Langley & Leyshon, 2017; Srnicek, 2017). Having asserted themselves as necessary intermediaries, the owner or controller of said platform can then, “due to their control over access to the ‘condition or means of production’, ‘exact a tribute’ from all economic activity that includes their property” (Sadowski, 2020, p.568 quoting Harvey, 2018). In what follows I consider how co-living firms experiment with a number of strategies for achieving a dominant position in housing markets and capturing users within broader techno-economic systems.

Central to the platform logic is also the drive for enhancing efficiencies: to ‘reduce distance and overcome coordination problems in market exchange and price regime enactment’ (Wainwright, 2022, p.4), ‘eliminating friction and resistance’ from capital turnover (Mezzadra & Neilson, 2015, p.7); and reducing transaction costs (Sadowski, 2020), including through automation (Fields, 2022). This invariably involves a considerable amount of hidden labour, normally administered by low-paid, precariously employed workers, as well as tenants (McElroy, 2024). Inspired by the likes of Uber and Airbnb, many co-living firms aspire to the idea of digitally-mediated efficiency and frictionlessness.

The rentier strategies of platforms are underpinned by a range of technological deployments, including: the networked, algorithmic and automated digital technologies that characterise ‘smart’ things; financial technologies for the purpose of exchanging or valuing; and legal technologies such as intellectual property rights that assert control and ownership over intangible assets (Sadowski, 2020). They are also accompanied by distinctive investment logics – predominantly venture capital. Venture capitalists target dominance of certain economic niches and processes, characterised by a quest to achieve market dominance (Cooiman, 2022; Kampmann, 2024). In so doing, they are associated with high levels of capital gains risk, although this is mostly borne by the capital providers rather than the VC firms themselves. Venture capital can be understood as a particularly fictitious form of capitalist experimentation that involves decoupling financial value from business fundamentals. As Kampmann (2024, p.45) argues, in this space, ‘business model narratives’ geared around ‘technology fetishism’ are ‘crucial for capitalist entrepreneurs and investors to rationalize and anticipate corporate profits’. Co-living firms, many of which were propelled by venture capital in their early days, often build on established ideas about the future disseminated by global technology giants in order to attract

investment.

What happens when platform strategies and imaginaries come together with the somewhat more mundane, technocratic world of corporate landlordism? Both are, after all, forms of rentiership (Christophers, 2020). Both involve the creation of assets, whether tangible or intangible, valued on the basis of future benefits (Birch & Muniesa, 2020). Inextricably, both are narrative-driven, fictitious, and based on future imaginaries (Ward & Swyngedouw, 2018). Both extract value through monopolistic private property relations (Birch & Ward, 2022), and involve exclusionary rights to access, whether based on fees, subscriptions, or rents (Faulkner-Gurstein & Wyatt, 2021). Both ultimately privilege economic rationalities and financialised actors (ibid, p.6). Sadowski (2022, no pagination) has indeed argued that the increasing ubiquity of digital platforms means ‘we are now forced to deal with an explosion of landlords in our daily life – constantly paying rent, both in terms of money and data, for all of the different tools and services we use’. But while the similarities between these economic formations have been considered in theoretical terms, a pressing task for housing researchers is to understand what happens when these different forms of rentiership, and their accompanying configurations of power, control and extraction, are combined.

This paper contributes to recent efforts to this end both within this special issue and beyond. Nethercote’s (2023) empirically rich analysis of digital technologies in the build-to-rent sector, for example, concludes that tenants are increasingly subjected to ‘double threat’ enclosure, where the ‘traditional material enclosure of real property and extraction of monetary rents combines with the digital enclosure of renter subjects and extraction of data rents to drive returns on rental investments’ (p.1). Rogers et al. (2024) similarly focus on the coming together of landed and technological property in Australia’s private rental system, demonstrating how PropTech is being leveraged both to increase the capital value of and rental opportunities associated with rental properties themselves, and to collect, consolidate and commodify rental and renter data. Focusing instead on the figure of the ‘tourist-led rentier’, Gil et al. (2023) identify the emergence of ‘polyplatform rentierism’ in Spain, arguing that digital platforms enable landlords to flexibly switch their properties between the short and long-term rental market in order to circumnavigate tenancy laws and maximise rental income. Cocola-Gant and Malet Calvo (2023) make a similar point in their discussion of the platformisation of short-term rentals in Lisbon.

Bringing to the discussion the empirical case of co-living, in this paper I argue that the coming together of platform and corporate landlord strategies manifests in two ‘experiments’ that seek to extend and deepen the possibilities of residential rent extraction. Experimentation here refers to a process of testing and trialling digital innovations. The term is used to emphasise that these practices are far from established and coherent, but are instead messy and contradictory, prone to failure and collapse. In keeping with Fields (2024b) recent intervention, experimentation highlights the ‘fallibility, mutability and unpredictability’ that goes hand-in-hand with processes of technological innovation (p. 362). Leveraging the archetypal landlord-tenant relation, these experiments are about extending the possibilities of residential rent extraction: subjecting novel residential spaces and activities to rent relations (see Madden, 2024). Residential rent extraction rests upon the ownership or control of landed property - something both valuable and finite by virtue of historically and geographically situated socio-legal practices and relationships (Moreno Zacarés, 2024; Madden, 2024). In its purest form, land rent occurs as a result of ‘the monopoly that certain persons hold over portions of the globe’s surface; it is a tribute that landowners charge “for the very right to live on the earth” (Moreno Zacarés, 2024, p.7 quoting Marx, 1993, p.908). With landed property as a springboard, the experiments set out in this paper exploit this fundamental, age-old power asymmetry. Although in the case of co-living these experiments might be administered by firms operating and managing buildings rather than the owners themselves, they rest upon the very same dynamic. In all, I seek to paint a picture of a housing sector

with a strong *elective affinity* to corporate capitalist technology, a sector ideologically and institutionally inspired by possibilities of platformisation (White & Madden, 2024). In so doing, the paper advances understandings of urban residential change at the confluence of digital and residential rentierism.

## 2. Methodology

The research for this paper centres on the co-living sector: for-profit, privately managed and delivered shared housing (Harris et al., 2023; Ronald et al., 2023). Over the past decade, co-living has emerged as a financialised real estate sector attracting significant capital flows. It is tipped as one of Europe’s fastest-growing residential asset classes, where it reportedly secured €963 million in 2022 alone – over half the total investment it received between 2015 and 2021 (Power, 2023). A 2024 Knight Frank report suggests that the co-living sector in the UK has attracted £1 billion of investment since 2020, whilst the number of operational co-living beds has increased fivefold since 2019 (Knight Frank, 2024). The sector encompasses a variety of investment interests with diverging timelines and risk appetites (Casier, 2023). Organisational forms are also diverse, including asset-heavy developer-operator companies that both own and manage co-living buildings, and asset-light operator-only firms that simply provide management services.

Co-living is a distinctly inter-urban, transnational phenomenon; as will be explored, this is critical to the platform promises of firms. This means that a comprehensive exploration of the sector requires engaging with data across a range of geographies. Here I focus particularly on companies based in North America and Europe with spaces in major cities such as London, Berlin, San Francisco and New York. However, co-living can also now be found in most small and medium-sized cities across the Global North. Data collection involved three methods. Firstly, 24 interviews with co-living professionals: CEOs, investors, real estate strategists and consultants, including self-professed PropTech entrepreneurs and start-ups. Interviews took place between July 2019 and June 2021 – initially in person, but latterly, due to the pandemic, mostly online. The interviews were arranged by identifying key personnel in the field and emailing them or speaking to them at industry events. They took a semi-structured format, and ranged between 40 min and two hours. A key purpose of the interviews was to understand the players, strategies and devices behind this emerging market. Why is co-living attracting capital, and what role do digital technologies play? The anonymised interviews were transcribed and analysed using manual thematic coding on NVivo. Pseudonyms are used in this article to protect the identity of interviewees.

Secondly, secondary data, comprising material produced by and covering the co-living sector – including industry reports, think tank analyses, company websites, marketing and news coverage – was collected between October 2018 and June 2023. In total, over 300 reports, documents, articles or webpages were analysed via inductive content analysis, including many focusing on the notion of applying digital technologies to co-living spaces. Finally, a third strand of data on the co-living market was collected via participant observation at 23 industry events, attended both online and in person. These ranged from launch parties for new spaces, to co-living-specific conferences lasting several days, to workshops for those interested in digitalising management functions. At each event I took rigorous fieldnotes by hand, documenting key insights and quotes, and also noting organisations and individuals with which to follow up.

Across sources, the disruptive potential of technology is invoked, and digital systems were seen by most interviewees to play an important role in the co-living business. It should be noted that many of the interviews took place when WeWork was still on the rise, a time of colossal growth for technology firms pumped full of venture capital. Since then, the profitability of platform corporations, and the promises of technological liberation and disruption that underpinned them, have been put under greater scrutiny, even in the mainstream political arena (Griffith, 2023).

Clearly, the efficacy of the technologies discussed in this paper will also have been overstated in many interviews and marketing campaigns as companies seek to appeal to investors and residents. As Shaw (Shaw, 2020, p.1042) puts it, ‘to research new digital real estate technologies it is vital to understand that their deterministic marketing claims are absolutely not foregone conclusions, but may nevertheless be doing work to produce the necessary discourses and knowledges of their adoption’. However, the purpose of this paper is not to scrutinise the effectiveness of these rapidly evolving technologies in and of themselves, but to identify some consequential platform-inspired ideas and deployments emerging in service of residential rent extraction.

### 3. Experiment 1: Rental optimisation

Prior to big data, it was hard to track people’s movements 24 h a day, and it was too expensive to conduct these ongoing experiments... Today, we’re able to harness the power of technology and see exactly what spaces people congregate in, so that we can better allocate limited space.

-Grasso, 2018

The first key area of digital experimentation in the co-living sector is about intensifying rent extraction from real assets themselves: optimising asset use and yield. Platform businesses often centre around claims to enhancing efficiencies, facilitating frictionless market interactions and eliminating resistance from capital turnover (Fields & Rogers, 2019; Mezzadra & Neilson, 2015; Sadowski, 2020). Corporate landlords have increasingly been drawn to the potential of digital tools for eliminating administrative, operational and spatial inefficiencies (August, 2020). Many platforms collect data without a clear understanding of how, exactly, they intend to extract value from it (Fourcade & Healy, 2017). But in the case of co-living, which combines new technologies with existing organisational structures (Faulkner-Gurstein & Wyatt, 2021) – including physical buildings – data collection has some direct applications.

A primary motive of data collection within co-living spaces is scoping out – as it was variously referred to during interviews – ‘latent’ ‘wasted’, ‘redundant’ or ‘underused’ space, i.e. which parts of a scheme are being used, when and by who. This notion was captured by real estate investment advisor Paul, who explained that co-living is like transferring the logic of hotdesking to housing:

We have hotdesking because we know that desk space is not used optimally. You could start thinking about the same principles [for housing].... So in an apartment, the amount of space that is wasted within that could be 20 % of the asset. Quite clearly, you know, it’s space that’s not used, it isn’t needed. [...] [investors] see the value in unlocking that seven trillion or whatever it is in underutilised housing.

It is an ethos often rationalised with reference to the ideological formation of the ‘sharing economy’. For example, co-living company Outsite contends ‘From shared cars to filling extra space in your suitcase transporting items for others, the world has begun to take advantage of surplus space through the rise of the sharing economy. The housing industry is no exception.’ (Outsite, 2019).

It follows that co-living companies are observing and analysing spaces in order to generate detailed insights into their usage. This includes tracking and surveillance tools embedded within buildings and residents’ smartphones. For example, co-living companies often install cloud-based sensor and key card software like Salto Systems. Salto Systems promises landlords that they will ‘gain detailed, real-time occupancy data for effective monitoring of rooms, door status and users’ (Salto Systems, 2022). The spatial and temporal information harvested by this software is constantly processed and fed back to co-living operators. As a prominent commentator on the co-living sector puts it, the advent of ‘big data’ via software like Salto Systems has been key for

enabling companies to constantly track tenants’ movements and reallocate space accordingly:

Prior to big data, it was hard to track people’s movements 24 h a day, and it was too expensive to conduct these ongoing experiments... Today, we’re able to harness the power of technology and see exactly what spaces people congregate in, so that we can better allocate limited space (Grasso, 2018).

Similarly, real estate investment advisor Adam explained how ‘behavioural activity and mapping people’s movement’ has become an integral aspect of the co-living business model, allowing companies to reconfigure and optimise developments accordingly:

Data collection is a huge part of it because it drives the decision that you’re making, how you run that building. So for example, if you’ve got three things in there, three amenities, you’ve got a co-working area, you’ve got a gym and you’ve got a games room. You need to be able to know which one of those three, are they being used? At what times are they being used? You know, even down to who’s using them and how long for. Because that space potentially could be used for something else if it’s not being used.

The end product of these deployments often takes the form of a ‘heat map’, illuminating where within buildings people congregate and spend the most time (Ziliak, 2022).

This data-driven quest for optimising spatial efficiency has clear links to the strategies of platform corporations. As Sadowski (2020, p.568) argues, ‘platforms pitch their services as a way of turning idle resources into maximally productive assets and unlocking the value of latent space in existing places... Airbnb turns the unused bedroom into a productive asset that generates rents, while Uber turns the empty car seat into a productive asset that generates fares’. These firms are not ‘data mining’, but ‘data manufacturing’: generating new types of data for the particular purpose of enhancing existing organisational structures (Sadowski, 2022). In practice, this targeted and applied data collection enables real estate actors to enhance value through the reconfiguration of discursive and material dimensions, whether within existing or future real estate assets (Birch & Muniesa, 2020). For example, having installed sensors tracking residents’ movements in and out of rooms in a property, company co-founder Fred explained that he had discovered a significant ‘redundancy’ in private space:

[We discovered that the residents] leave at eight and they’re not back till eight thirty. So there’s this 12 h space where all this investment in capital is underused. We noticed that the actual number of hours people spend in their private space was 17 to 19 % excluding sleep. And we recognised that they weren’t using this space, which was costing a lot of money to produce and operate that intensely. And that made us think, well, how could that redundancy in this space that exists for up to 60 to 70 % of the day be reformed?

The answer was to reduce the size of said private spaces and focus on improvements to communal areas. A co-living software firm similarly promises to ‘show operators which rooms are used most often (broken down by demographic) and suggest ways to optimise the space’ (Res: harmonics, 2023). Of course, this process could generate insights about how the space might genuinely be improved for residents. But given the underlying imperative across the co-living sector of maximising the liquidity of real estate assets for shareholders, it seems more likely that they will be used to squeeze additional rent out of the spaces – including inserting further revenue-generating beds wherever possible (White, 2024).

Co-living firms not only seek to enhance rental extraction by monitoring and reorganising residential space, they also draw inspiration from the dynamic pricing strategies of digital platforms. For example, investment and expansion strategist Karl spoke of developing a surge pricing tool to increase rents when spaces are in high demand:

[We] have a tool that perfectly sets the price for a room, because it looks into the demand side, it looks how many people look for this room, what are positive characteristics of this room, so for example is it high up in the building, does it have big windows, does it look on the park side or does it look at another building? I think if you price discriminate perfectly on this, or not discriminate but price target perfectly, and you make 20, 30, 40, 50 Euros extra per room per month, on your margin this is a huge chunk.

Co-living management software firm Powerhouse similarly offers 'dynamic pricing to automatically adjust rates based on demand and occupancy, maximizing revenue during peak times and maintaining steady income during low-demand periods' (Powerhouse, 2023). Here we can see how the digital tools of algorithmic sorting and automation are harnessed to exploit housing demand to the fullest. Co-living companies are also taking advantage of automated lead generation software in order to leverage and analyse patterns of demand. As a blog on co-living software laments:

A consistent challenge for coliving startups is the draconian task of maintaining high occupancy levels. However, with innovative tools like automated lead generation, these companies are now harnessing walk-in data to significantly boost conversion rates and streamline lead-flow management, turning a once cumbersome process into a refined, data-driven strategy that maximises efficiency and ensures steady revenue generation (Anand, 2024).

By subjecting housing to pricing and lead generation practices reminiscent of flight or taxi booking applications, these strategies not only seek to extract opportunities from high housing demand, but also level out periods of lower demand, optimising occupancy rates for co-living firms.

In all, rental optimisation is a key experiment emerging at the intersection of digital and residential rentierism, echoing a familiar Silicon Valley ideological commitment to efficiency geared around turning idle space into revenue. In practice, this involves various forms of software for harvesting information on building demand, occupancy and usage. Such strategies represent an applied form of 'data entrepreneurialism' (Faulkner-Gurstein & Wyatt, 2021), involving the continued harvesting of data to reshape material dimensions such that additional value can be extracted (Birch & Muniesa, 2020). They function to provide landlords with detailed insights into patterns of demand, including within the parameters of buildings themselves (which rooms, which floors, when). In so doing, they enhance the rent-generating capacity of the spaces: optimising price points and space allocation, streamlining rental flows, and pushing per square foot rents to new extremes. In keeping with Madden's (2024) recent intervention, the innovations presented above demonstrate how the 'rentability' of residential space is being extended via the 'reconfiguration of property at a quasi-molecular level', enabling 'rents to be demanded and extracted where they previously could not' (Madden, 2024, p. 8). At their core, these experiments are about filling in the remaining cracks that exist in housing as a maximally productive asset, inevitably exerting inflationary pressures on already merciless urban rental markets.

#### 4. Experiment 2: Housing membership

It's a little bit like software-as-a-service. Once you have a software that you cannot get rid of like, I dunno, Salesforce. Basically it's easy to get in, but to get out of Salesforce is super, super difficult <laugh>. And you pay until your death, every month you pay that. And I think this is what [venture capitalists] saw with co-living as well...

-Karl, investment and expansion professional for co-living company

Intensifying rental extraction from assets is all very well, but what if digital tools could be leveraged to turn co-living firms into purveyors of

globe-spanning residential social networks? The second manifestation of platform experimentation in the co-living sector is attempts to turn tenants into 'members' or 'subscribers'. This takes different forms, but is characterised by a quest to transcend the standard locationally-specific contract-contingent landlord-tenant arrangement so as to capture repeat revenue streams, user relationships and corresponding data trails (Fourcade & Healy, 2017). Membership of co-living companies generally involves a separate fee to the accommodation itself. For example, before booking a bed at Outsite residents must select a 'membership plan' of either \$399 for a 'lifetime membership' or \$149 for a 'yearly membership', whilst Docked Living charges a one-off \$220 membership fee, and Habyt demands €150 (prices true to October 2024). At the former, this payment enables residents to join an 'online community' of 5000+ members from 40+ counties. Members get access to a 'member hub' (also downloadable as an app), where they make a personal profile, communicate with other residents across the globe and access a range of 'perks', including deals with businesses and social events. They also gain 'exclusive booking access to over 30 Members Only locations' and are able to 'accumulate credits with each stay' which can be used for future bookings (Outsite, 2024).

Of course, these memberships provide co-living firms with additional fees, and are often justified by the highly serviced residential experience on offer (Buyuklieva et al., 2024). But they go beyond this. A key purpose of memberships and their corresponding applications is to encourage residents to continue paying rent to the co-living firm as they move between locations, with many companies claiming to offer a network of interconnected spaces, services and communities accessed via their platform. As one co-living report puts it, 'For coliving businesses, subscription living can be structured as a partnership that provides subscribers with a wide range of spaces spread worldwide, accessed through a single platform.' (Spatial Experience, 2020). Companies with multiple locations often allow members to move easily between different spaces using their app, without having to sign new contracts. For example, co-living company Selina offers a 'subscription-based product' called 'Colive Flex', which allows members to purchase 'night credits' that can be flexibly used across up to 10 of the 74 Selina Properties (Selina, 2022). Access to a library of locations is sold in much the same way Spotify sells access to their music catalogue. In each location, the 'subscriber' can expect the same package of services and amenities: furnishings, daily wellness classes, a co-working space, discounts on local businesses, and a free welcome drink (ibid). Similarly, co-living company Starcity allows members to 'Experience living in a new neighborhood with our flexible Starcity transfer program - applicable to all homes in the Starcity galaxy!' (Starcity, 2021), while Common promises

... greater ability to transfer seamlessly between buildings and cities than any other property manager. We're currently opening in one new city per month, and as we expand, the value proposition of seamless movement is all the more powerful (Hargreaves, 2020).

In addition to building a transnational network of platform-mediated spaces, some co-living companies seek to keep residents within their systems in the context of changes in personal circumstance by allowing them to move between, upgrade or downgrade units. For example, an industry blog post argues that 'Giving users the freedom to move out of an apartment they have outgrown or relocating to a new city hassle-free are benefits that can retain a customer potentially for a lifetime' (Spatial Experience, 2020). A Bungalow board member similarly suggests that allowing movement between units across their spaces retains residents within their 'network',

If you want to upgrade your bedroom or downgrade your bedroom based upon a promotion or getting fired, we allow you the flexibility of changing the price point where you're renting from us without having to break your lease... We also allow you to move across

neighborhoods, change your commute, change your job, always staying within the Bungalow network (Carson, 2019).

In this way, applying a subscription-based business model to housing enables these firms to extract repeat revenue streams that stretch beyond the period of tenancy. As Bergan & Power, 2024 highlight, memberships also allow co-living companies to flexibly lease out their spaces over different time periods so as to maximise profitability.

Beyond encouraging repeat custom and enhanced revenues, there is often a more intangible strategy to housing memberships. As explained in a report on 'subscription living', turning tenants into long-term subscribers enables companies to capture both recurring revenues and tailored market data: 'Purpose Built Shared Living (PBSL) operators and investors should bear in mind that, for multiple reasons, subscribers are better than customers. Beyond providing recurring revenue, subscribers tend to purchase more and generate tailored market data' (Spatial Experience, 2020). This suggests that data trails from 'user engagement' are also assets to be leveraged via housing memberships, providing co-living companies with superior market intelligence, including patterns of demand and the typical tenant profile (see Shrestha et al. (2023) in this special issue for a discussion of how flatsharing platforms leverage network effects and user engagement). Such is the perceived value of this user engagement that a Construction Week article argues it is making the ownership of assets secondary:

New age coliving operators, acting as intermediaries in providing a bundle of housing services to end-users, are capturing the client relationship and the associated economic benefits, resulting in the underlying ownership of the asset becoming of secondary importance (Ackermann & Mac Bean, 2021).

It follows, then, that the quest for scale and scalability – a core and defining motive of platform businesses – lies at the heart of housing memberships and subscriptions. As a blog on 'Coliving PropTech Investment' affirms,

...emerging players are poised to take significant market share from incumbents.... firms can immediately capture a large proportion of new and existing development and lock in customers to increase switching costs (Brumback, 2020).

By constantly expanding their membership base, co-living companies are potentially able to 'add value through increasing the number of users and their engagement with the platform' (Fields & Rogers, 2019, p.75), an aim 'crucial to a platform's capacity to cultivate and capture value, and to do so over time and on an ever-greater scale' (Langley & Leyshon, 2017, p.12).

The notion of a housing 'membership' therefore reflects a quest to develop a form of techno-economic infrastructure that transcends the physicality of buildings and enters other realms of residents' lives – yielding user engagement and data trails on a long-term basis (Fourcade & Healy, 2017). Outside, for example, claims that their 'subscription model' allows them to 'convert long-term customer relationships into recurring streams of revenue' (Timalsina, 2019). This has strong links to the 'X-as-a-service' business model and imaginary, geared around turning "social interactions and economic transactions into 'services' that take place on [a] platform" (Sadowski, 2020, p.567; see also Bergan & Dufty-Jones, 2023), and leveraging 'mediation and enclosure to achieve extraction and control over its subjects' while collecting data on users' interests and behaviour (Sadowski, 2020, no pagination). Indeed, investment and expansion professional Karl made a comparison between co-living and software-as-a-service, referring to platforms so ubiquitous that users (and their rents) remain within the system 'until death':

It's a little bit like software-as-a-service. Once you have a software that you cannot get rid of like, I dunno, Salesforce. Basically it's easy to get in, but to get out of Salesforce is super, super difficult <laugh>. And you pay until your death, every month you pay that.

And I think this is what [venture capitalists] saw with co-living as well...

We can see here the drive to achieve a form of 'lock in' to digital enclaves, with companies seeking to position themselves as the dominant intermediary in urban group rental accommodation (Birch & Muniesa, 2020).

In all, housing memberships and subscriptions embody a quest among co-living firms to harness their position as gatekeepers to housing in order to cultivate and scale an engaged user base. This, quite literally, is about pushing and extending the logic of rent from the conventional tenancy to the enclosure of users within digital systems. Taking influence from Big Tech, housing memberships aspire to the extraction of what Birch & Cochrane (2022) refer to as 'enclave rents'. This involves the 'construction and control of digital ecosystems... locking in users... [to] a particular techno-economic arrangement', including by controlling access to the data collected via said ecosystems and imposing legal and technical restrictions and conditions on users (ibid, p. 54). Precisely what is done with the data harvested via co-living memberships, and the extent to which these strategies actually retain customers on a long-term basis, remains to be seen. But it is clear that at the heart of housing memberships and subscriptions lies an exclusionary logic: the creation of a virtual, as well as a physical, privatised world through which mobile, transnational subjects can flow. The notion of a housing membership also functions to obscure what is often a profoundly insecure, temporary form of tenancy. By reinventing residents as 'members', co-living companies are able to circumnavigate tenancy regulations, granting occupants diminished security – including via 'license' agreements equivalent to what you might have in a hotel room (White, 2024). But by embracing Silicon Valley narratives of a globalised, networked sociality, co-living firms dress this combination of precarity, exclusion and extraction up as flexibility, innovation and liberation.

## 5. Conclusion

This article sheds lights on recent developments at the intersection of digital and residential rentierism. It does so by bringing a novel empirical case to the discussion on 'platform real estate': the co-living sector. Emerging as it has in part from the world of Silicon Valley and venture capital financing, yet premised resolutely on the mundane practice of rent collection from tenants, the co-living sector represents a unique fusion of strategies associated with corporate landlords and digital platforms. This convergence, I argue, manifests in two distinctive experiments that seek to deepen and extend residential rent extraction.

The first area of experimentation, rental optimisation, is about sweating real estate assets to the highest possible degree. I highlight how firms seek to intensify rental extraction by identifying redundant, undercapitalised space, exploiting demand to the fullest and maximising occupancy rates. The second area of experimentation is more amorphous and intangible, involving a search for new modes of value capture from the tenants themselves. The drive to turn tenants into 'members' or 'subscribers', I argue, can be viewed as a strategy for enclosing residents within broader techno-economic systems whilst seeking to harness user engagement and data trails.

It is important to situate analyses of digital experiments in property within their constitutive power relations. In the case of co-living, underlying these experiments is an age-old power dynamic: that between the owner or controller of housing and those who wish to occupy it (Li, 2023). Unlike most cases of platformisation, in which businesses insert themselves into processes 'not previously subject to rentier relations' (Sadowski, 2020, p.564), the experiments here rely upon and expand existing, deeply entrenched rentier relations. Speaking the language of platform studies, these businesses occupy an already-dominant position within a network or value chain (Faulkner-Gurstein & Wyatt, 2021) by virtue of being gatekeepers to the essential infrastructure of housing. In this way, the monopoly rent achieved through the ownership or control

of real property (rent in neoclassical terms) opens up the possibility for experimentation with new forms of value capture and control via digital systems – resonating with what Nethercote (2023) in this issue refers to as ‘double threat enclosure’. The power relations upon which these digital experiments rest are not uniform (Howard, 2024), but they are certainly exacerbated by the increasingly precarious and unaffordable nature of the private rental sector across much of Europe and North America (Byrne, 2020; Howard et al., 2023). Moreover, the experiments described here are often enabled by the compromised material conditions of the co-living model: besides their small private quarters, the remainder of tenants’ living space is ‘communal’, and therefore a largely unrestricted testbed for digital deployments.

In some ways what we have here is a typical case of Silicon Valley hyperbole: appealing to the now-ubiquitous imaginary of the optimised, flexibilised, networked world sold to us by global technology giants. As Rogers et al. (2024) argue, such framings offer a distraction from the more mundane, less marketable structural changes that could be made to ameliorate contemporary housing woes. But in other ways, these incipient experiments do have potential social harms. They are yet another string in the bow of real estate actors exploiting unprecedented housing desperation to extract unprecedented profit margins – recalibrating and inflating already impossibly tight housing markets. This is not about optimising housing for its occupants, but harnessing the structural flaws of housing systems to full advantage. Such tools essentialise the function and purpose of the domestic, reshaping it around the imperatives of optimisation, efficiency and frictionlessness (for example, inscribing the understanding that a lesser used room is pointless or wasted), potentially at the expense of its other, less efficient and more complex social functions. The techno-utopian vision of a decentralised, globalised housing network also raises concerns. At best, memberships are an excuse to extract additional fees, reframe precarious forms of tenancy and extract data on renters and assets. At worst, they gesture towards the creation of exclusionary virtual, as well as physical, residential citadels.

In future research, it would be helpful to attend more closely to the concrete outcomes of these experiments for tenants and housing economies. To what degree do sensors, key cards and tracking devices enable the realisation of rent-gaps within real estate assets? How exactly is the harvested information translated into new forms of income? On the topic of housing memberships and subscriptions, it would similarly be helpful to trace if and how the associated data streams and virtual networks are converted into revenues. It would also be fruitful to understand what sort of virtual communities these new subscription-based residential platforms are building, particularly in terms of their inclusions and exclusions.

### CRedit authorship contribution statement

**Tim White:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

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There is no conflict of interest to declare.

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