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– SCORING HIGH, PAYING UP, GATING IN: Middle-class Formation and Asset Inequalities under Digital Capitalism in South Africa

JULIEN MIGOZZI

Abstract

This article examines how modern class dynamics become intertwined with automated classifications and data-driven regimes of value creation under digital capitalism by demonstrating how housing markets shape asset inequalities and middle-class formation in South Africa. Connecting institutional practices of mortgage lending with patterns of urban development and local market interactions, I illustrate how two market filters—affordability and creditworthiness—stratify home-seekers into unequal market outcomes in terms of asset ownership and residential location. Both filters are shaped by automated classifications through the use of credit scores, turning consumer and property data into a new form of asset. Grounding my analysis in Blue Downs, a suburban area of Cape Town, I theorize the middle class as a 'filtered class', comprising asset-deprived households that manifest their boundary work by accessing debt-leveraged homeownership in gated estates. By scoring high, paying up and gating in, these households differentiate themselves from the urban poor and the elite, asserting their middle-class status. Middle-class formation results in the production of the 'mortgaged periphery'—a segmented suburban landscape where physical fences and algorithmic barriers governing the production of and access to housing assets materialize class boundaries in terms of ownership, capital gains, aesthetics and property relationships.

Introduction

Housing markets shape social stratification and middle-class formation, notably through asset-based inequalities and residential segregation (Savage *et al*., 1992; Bourdieu, 2005; Allen, 2008; Forrest and Hirayama, 2018; Adkins *et al*., 2021). Following widespread financialization, the rising gap between housing prices and wages has made housing assets a primary determinant of class position: understanding how markets distribute housing wealth and shape socio-spatial inequalities is crucial for developing a theory of class formation aligned with the asset logic of twenty-first-century capitalism (Christophers, 2020; Pfeffer and Waitkus, 2021; Adkins *et al*., 2023). This requires attention not only to asset ownership as a factor of capital accumulation or as a marker of social status, but also to the contemporary mechanisms of market-making that regulate the production of and access to housing assets.

The fast-paced digitization of housing markets across both the global North and South (Fields and Rogers, 2021; Wittekind and Faxon, 2023) is transforming

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how asset inequalities are operationalized through the production, acquisition and management of housing (Fields, 2024). This digital mediation of markets amplifies wealth inequalities stemming from racial property regimes (Bhandar, 2018; Taylor, 2019), housing financialization (Aalbers, 2016; Rolnik, 2019) and speculative urbanism (Goodfellow, 2017; Shatkin, 2017), but also affects regimes of value creation: under digital capitalism, housing markets have entered the era of automation, real-time information and predictive analytics, participating in the extraction and assetization of data as a new form of capital accumulation (Langley and Leyshon, 2017; Sadowski, 2019; Birch, 2020; Migozzi, 2024). Taking stock of the centrality of digital information and ranking algorithms over socio-economic outcomes, exemplified by the use of credit scores to make lending, tenancy or hiring decisions, Fourcade and Healy observe that under digital capitalism, 'classes of people, scores, and prices became closely connected' (2024: 71).

However, the ways in which automated classifications reshape modern class situations, affect logics of value creation, and determine the production of space remain insufficiently understood. First, it is unclear how digital technologies affect the socio-spatial structures of asset inequalities—a critical oversight given that housing assets are intrinsically linked to the spatial dynamics of real estate markets (Arundel and Hochstenbach, 2020; Le Goix *et al*., 2021). Second, the literature that examines social stratification under digital capitalism is profoundly orientated towards the US context—home of big tech and the associated uber-wealthy—and further exhibits an empirical bias towards the upper and lower strata of society. While financial and corporate elites profit from both digital asset ownership and computational power (Birch, 2020; Burrell and Fourcade, 2021), researchers have shown how digital technologies have enrolled workers from the lower classes through algorithmic control, predatory inclusion and racialized precarity—a dominant research agenda in the global South (Graham and Ferrari, 2022; Nowak, 2023; Pollio *et al*., 2023).

To spatialize the sorting mechanisms of digitized markets, and expend the analytical scope towards intermediary social strata, this article connects with the literature on urban change, middle-class formation and housing markets in the global South (Shatkin, 2010; Rocca, 2016; Page and Sunjo, 2018; Short and Martínez, 2020; Andreasen and Agergaard, 2022; Mercer, 2024). Overcoming the limits of definitions based on income or occupation, and adopting instead a socio-spatial dialectic approach (Mercer, 2024; Singh, 2024), scholars turned to real estate markets to define and locate the middle class. Indeed, real estate represents the bulk of middle classes' assets globally (Chancel *et al*., 2022). Since housing is both a home and an economic asset, a source of material and cultural capital, housing markets—as a sphere of government interventions, a site of political struggles and a vector of spatial segregation—offer fertile ground to theorize and document the middle's class 'boundary work' (Lamont, 1992), which designates the distinctions formed through 'interests, lifestyles, values, aesthetics and socio-economic positions' (Mercer, 2020: 524). Through property aesthetics, housing careers, investments towards and ownership of landed assets, the middle class differentiates itself from the elite and the urban poor (Mercer, 2014; Lentz, 2020). Building upon this literature, and also foregrounding the importance of digital technologies in sorting households and shaping asset inequalities, this article examines how digitized housing markets shape middle-class formation in post-apartheid South Africa.

The central argument is that the housing market operates as a set of filters that stratify home-seekers into unequal market outcomes in terms of residential location, asset ownership and capital gains, renewing socio-spatial inequalities engineered by settler colonialism and apartheid and thereby shaping middle-class formation. Examining how institutional practices of real estate production and mortgage lending frame market interactions between real estate agents and home-seekers, this article theorizes and identifies two filters—affordability and creditworthiness—both of which are governed

by the use of digital technologies, notably credit scoring. Against this background of acute racialized social sorting increasingly shaped by data assetization and automated classifications, the middle class is conceptualized as a 'filtered class', comprising asset-deprived households that manifest their boundary work when navigating the market to access 'debt-leveraged asset ownership' (Sparkes, 2024). As a socio-spatial process, middle-class formation manifests in the production of what I call the 'mortgaged periphery', a segmented and heterogeneous suburban space where the physical gates and algorithmic barriers that surround sought-after gated estates materialize class boundaries in terms of housing values, aesthetics and property relationships. Paying up mortgages and transaction costs, scoring high enough under the market's algorithmic gaze, and settling in gated enclaves, middle-income households distinguish themselves from the urban poor and the elite, earning their middle-class status.

The first section of the article reviews the literature on housing markets as a factor of class formation through asset ownership, focusing on the boundary work of the middle class in the global South and introducing the case of South Africa. The second section describes the mixed-method framework and the focus on Blue Downs, a suburban periphery of Cape Town. The third and fourth sections explore and theorize the market as a combination of two filters. Affordability needs to be understood beyond the racialized gaps between income inequalities and housing inflation to encompass data-driven lending practices, and foreground the social and economic capital mobilized by households to navigate the lengthy and costly path to mortgaged homeownership. The second filter, creditworthiness, emerges from the assetization of consumer data and the interpretation of automated credit scores, requiring homebuyers to display appropriate financial metrics in order to access mortgage financing. The fifth section examines how middle-class formation therefore results from and leads to the production of a segmented, class-stratified suburban space which I term the 'mortgage periphery'. The sixth section discusses the relational properties of the South African middle class produced by the market's stratifying filters, and the conclusion underlines how modern, social-spatial class dynamics become linked to data-driven regimes of value creation under digital capitalism.

Housing assets and middle-class formation: a Southern perspective

– Housing markets as a site of boundary work

Housing markets shape social stratification through residential segregation and the unequal allocation of housing wealth (Savage *et al*., 1992; Bourdieu, 2005; Saunders, 2008). Housing tenure, location and access to property capital therefore shape 'the contours of middle-class formation' (Savage *et al*., 1992: 18). Since the global financial crisis the increasing mismatch between housing prices and wages means that the ownership of real estate assets is increasingly weighted by class location and socioeconomic inequalities (Adkins *et al*., 2023). Current studies on asset-based inequalities have tended to focus on Western economies, but fast-paced social change and high rates of housing inflation at the turn of the twenty-first century have already put class back on the agenda in the global South, especially in understanding the rise of the middle class (see Lentz, 2020 for a comprehensive review). Countering the definition of the middle class through 'statistical artefacts' (Bourdieu, 1987) designed to promote emerging markets (Ncube *et al*., 2011), scholars have underlined the limits of quantitative approaches to instead emphasize the role of lifestyle, aspirations and consumption. A diverse social group situated well above the median income level amid widespread poverty, the middle class differentiates itself from both the poor and the elite by a relative affluence that supports distinctive consumption patterns and socio-spatial practices (Lentz, 2015).

Investments in and aspirations for real estate ownership have emerged as central themes, with metropolitan urban spaces conceptualized as a catalyst for middle-class

formation (Donner, 2012; De Neve, 2015; Kopper, 2016; Rocca, 2016; Singh, 2024). The focus on practices and ideologies of homeownership, real estate investments, housing landscapes and residential choices has illuminated the dynamics and spaces of middle-class formation in Africa (Page and Sunjo, 2018; Gastrow, 2020; Sumich and Nielsen, 2020; Melo and Jenkins, 2023). According to Mercer, property investment is 'central to middle-class formation' in Africa (Mercer, 2024: 7). Analyzing suburban Dar-es-Salaam through a sociospatial dialectic approach, she demonstrates that suburbs and the middle class are 'mutually constitutive' (Mercer, 2020: 521) rather than one being the outcome of the other, as households self-finance 'the right kind of house in the right kind of neighborhood' (Mercer, 2020: 523) and accumulate real estate assets. Amid ongoing dispossession through the capture of real estate assets by elites (Goodfellow, 2017; Gillespie and Mwau, 2024), the boundary work of the middle class and the production of heterogenous suburban spaces underscore how both physical and social spaces shape class formation through relationships to and practices of property.

– The middle class in South Africa: missing market forces

Scholarship on the South African middle class suggests a similar and core link between class formation, housing dynamics and urban change (Chipkin, 2012; Visagie and Posel, 2013; Southall, 2016). The de-racialization of economic activities, notably by measures in favor of Black Economic Empowerment (Seekings and Nattrass, 2005; Posel, 2010), the desegregation of formerly white-only areas, and the rise of class-stratified, racially-mixed neighborhoods reflect the emergence of a new Black and Coloured middle class (Schensul and Heller, 2011; Rex and Visser, 2013; Mabin, 2014; Schotte *et al*., 2022; Southall, 2023). Ascending the housing ladder and moving from townships to suburban life has become central to middle-class boundary work (Krige, 2015; Ndlovu, 2020), aesthetically linked to the commercial success and material presence of gated communities in suburban peripheries (Kracker-Selzer and Heller, 2010; Morange *et al*., 2012).

In South Africa the long-term industrialization of the country, the racist regulation of markets on the basis of racial categories, and the presence of a sophisticated banking industry are key to contextualizing class formation. Settler colonialism and apartheid made urban homeownership an exclusive economic asset and a powerful marker of race and class, reinforcing segregation and perpetuating housing wealth inequalities across racial and ethnic groups (Western, 1981; Migozzi, 2024). Most Black households were legally barred from urban property ownership until the late 1980s, while Indian and Coloured households were included in mortgaged homeownership on predatory terms. The banking industry played therefore a major role in shaping class formation, fostering white homeownership, redlining townships, or being included in government attempts to create a Black middle class through mortgaged housing programs (Parnell, 1991). Across racial categories, housing types, access to finance and asset ownership contributed to class differentiation by enabling intra-generational wealth transfers and cultural distinctions (Wilson and Mafeje, 1963; Mabandla, 2015; Heer, 2018).

The post-apartheid housing market reflects stark, persistent and racialized asset inequalities. The top decile of South African households owns 58% of the total housing wealth, while owner-occupied housing and pensions form the majority of assets for the bottom 90% (Chatterjee *et al*., 2022). State-subsidized homeownership programs, a cornerstone of post-apartheid social citizenship, fell short of promoting upward mobility through housing equity (Lemanski, 2011; Marais *et al*., 2016). Although these policies altered the racial makeup of urban homeowners, their spatial distribution, as well as the banking sector's reluctance to value housing assets owned by the urban poor, still limited their effectiveness in narrowing racial wealth gaps, which were further exacerbated by the property boom of the early twenty-first century (Migozzi, 2020). The distributional effects of asset inflation primarily benefited White property owners, and reinforced

access to housing finance as an obligatory passage point towards homeownership for the asset-deprived majority, who were historically excluded from housing wealth and coping with structural indebtedness (James, 2014).

Meanwhile, the real estate industry embraced big data and algorithms (Migozzi, 2024), contributing to the financialization and digitization of South African capitalism (Karwowski *et al*., 2018; Pollio, 2019). With the end of apartheid, a declining share of the white population and strong rates of urban growth, banks were legally compelled and financially motivated to expand the frontier of mortgage markets: this was where credit scoring came in handy, as a seemingly colour-blind tool to standardize risk management and serve the people and areas once discriminated against on the basis of race. The demographic expansion of mortgage markets through digital means created a new market for data itself: to evaluate mortgage applications, lenders purchase enormous volumes of individual data from credit bureaus to feed their proprietary scorecards and perform credit checks under loose legal oversight. Modern class formation and asset inequalities therefore need to be contextualized within these digitized and financialized market structures that have a significant impact on housing careers and regulate property transactions.

However, except for Butcher's analysis of developers' class monopoly rents in Johannesburg's suburbia (Butcher, 2020), much of the existing literature treats housing markets as passive sites of class formation prompted by occupational desegregation (Crankshaw, 2012), rather than engines of capitalism and stratification. Market-making processes are underexplored, with transactions data merely serving as proxies for studying urban segregation (Donaldson and Kotze, 2006; Marais *et al*., 2020). As a consequence, the term 'middle class' is invoked retrospectively to explain social and urban change, conflating contrasting socioeconomic positions under a single label including both white homeowners in privileged, gated areas, and debt-laden Black households in townships (Schuermans, 2013; James, 2017; Southall, 2023). The use of single criteria such as homeownership or housing type to define the elusive middle class only adds to the confusion: government-subsidized programs have boosted homeownership among poorer households (Visagie and Posel, 2013), and gated communities are developed both for entry-level and luxury markets. Since class is relational (Bourdieu, 1987), understanding what 'doing being middle class' (Lentz, 2015) entails therefore requires us to take the market more seriously as a direct object of inquiry, and contextualize the boundary work of the middle class within wider stratification logics.

Research rationale and methods

To address these empirical and theoretical gaps, this article employs a mixed-method framework integrating qualitative and ethnographic approaches with computational and spatial analysis. During repeated periods of in-depth fieldwork from 2014 to 2024, I conducted 103 interviews across the real estate industry's value chain—including real estate agents, property developers, attorneys, mortgage brokers, investors, banks and homebuyers, and encompassing the racialized social fabric of the post-apartheid city from townships to luxury estates. Concurrently, I compiled a database of 900,000 geolocated sales that took place from 1984 to 2017, using digital archives of 21 million title deeds and cross-referencing with census and planning data to analyze the evolution of housing prices and mortgage lending across the post-apartheid city. Acknowledging the relevance of a socio-spatial approach to study how housing dynamics shape class formation (Mercer, 2024), I use this mixed method to focus on Blue Downs, located in the eastern suburbs of Cape Town and characterized by an ongoing sporadic urbanization since the late 1980s (Figure 1). This selection was informed by qualitative and quantitative aspects; Blue Downs is a mortgage-driven market where developers are particularly active, and is situated on a spatial corridor of upward mobility that connects Black and Coloured households moving from the townships of the Cape Flats to the

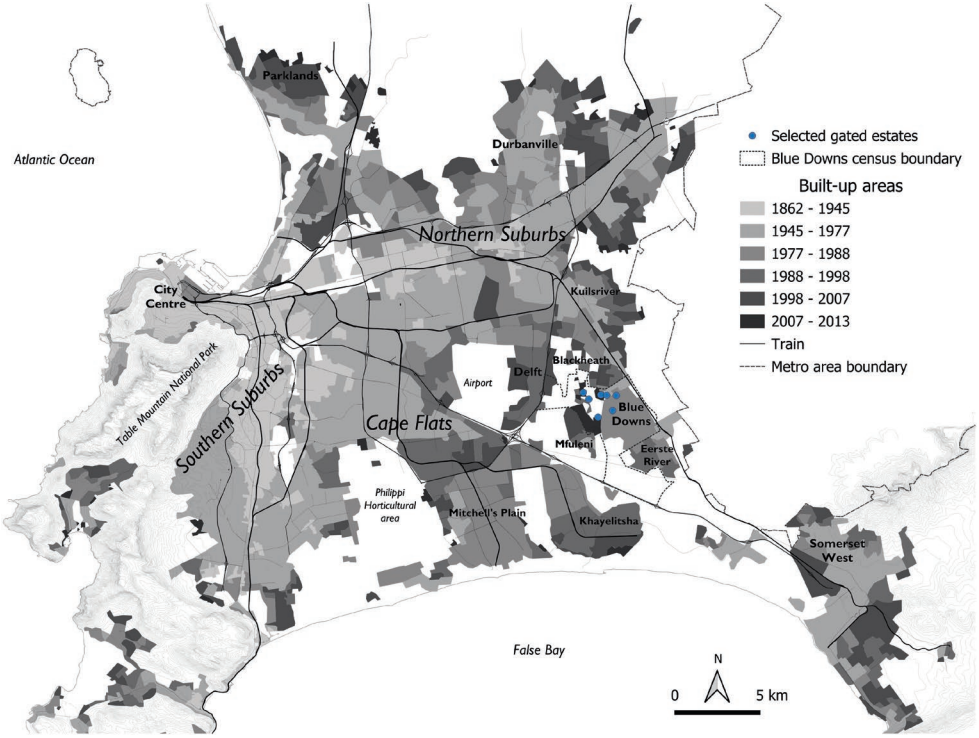

FIGURE 1 Blue Downs: a suburban periphery of the Cape Town metropolitan area (*source*: the author, using City of Cape Town planning data)

Northern Suburbs. Over the last 10 years I undertook regular site visits to Blue Downs to observe the evolution of urban space and interview local brokers, developers and residents. In this article I focus specifically on the practices of real estate professionals that affect market interactions and outcomes (see list of interviews in the Appendix).

The urban fabric around Blue Downs reflects the ordering of space by apartheid. Southward lie the hyper-segregated townships of Mfuleni (96% Black in 2011) and Khayelitsha (99% Black). To the north is Blackheath, an industrial area separated by railway infrastructure from Kuilsriver, a previously White-only and now desegregating suburban town (53% Coloured, 33% White, 12% Black). To the west is Eerste River, a former Coloured township (82% Coloured, 16% Black), while to the east are Delft, a Coloured township, and Delft South, developed by post-apartheid housing programs for the urban poor (60% Black African, 38% Coloured). Blue Downs itself, originally zoned as a Coloured area, remained mostly farmland until the late 1980s before developing into a loose patchwork of human settlements. Since the late 2000s private developers have driven a sporadic urban sprawl, producing new housing stock in the form of gated estates scattered across grazing farmland and surrounding a modest mall (Figure 2). These local market dynamics are profoundly shaped by the filters of affordability and creditworthiness.

Paying up: unpacking affordability as boundary work

In post-apartheid South Africa, the capacity to acquire housing assets is a key factor of socioeconomic differentiation. Without housing equity a mortgage is essential, but this financial product is unaffordable to most households in the context of high rates of poverty (55% in 2016) and unemployment (27%). In 2022, 97% of the 233,829

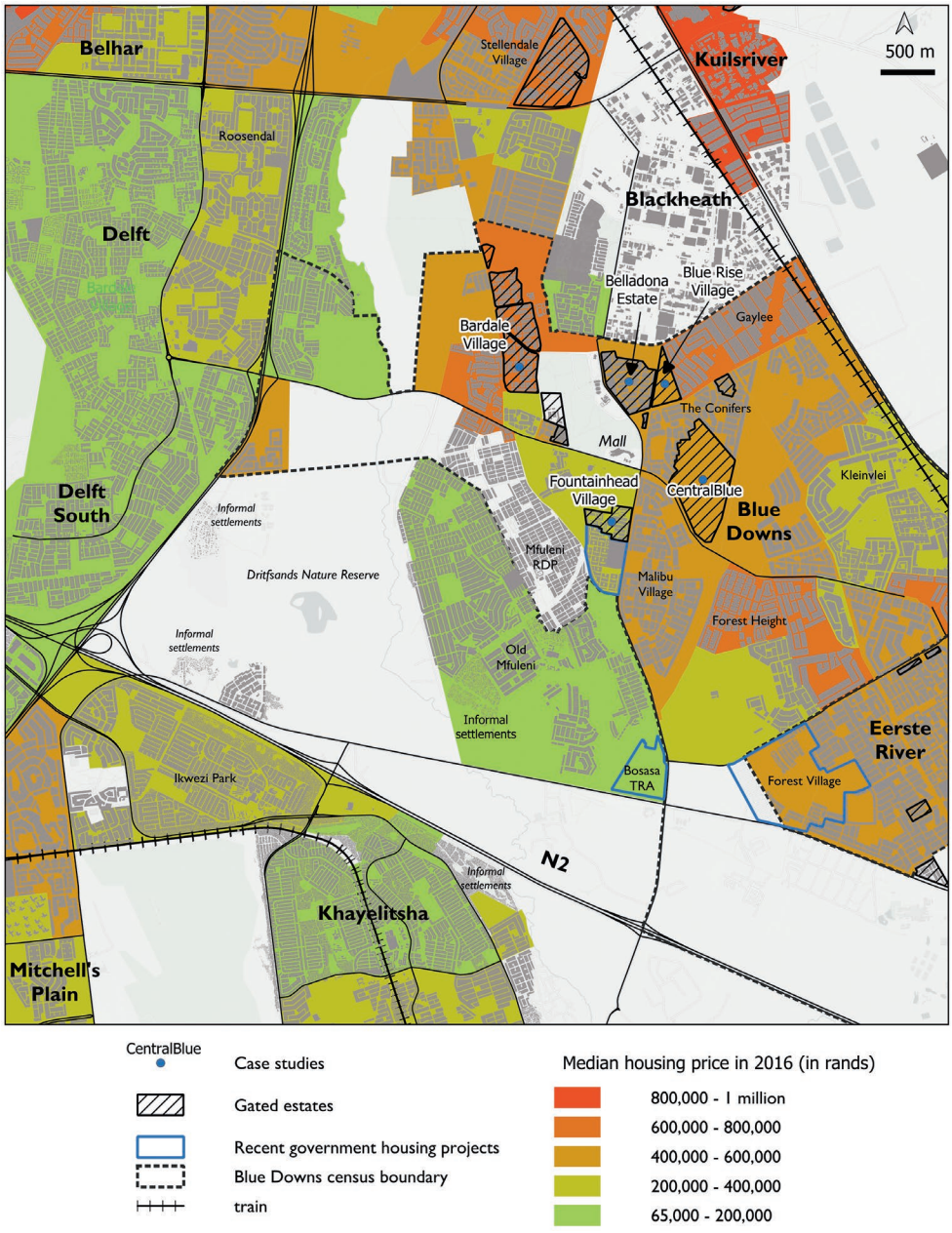

FIGURE 2 Housing prices and neighborhood contexts in Blue Downs (*source*: Deeds data, City of Cape Town; author's own calculations; Census 2011, Statistic South Africa)

mortgages issued nationwide went to salaried individuals earning over ZAR 15,000 per month (National Credit Regulator, 2022), placing them in the upper quintile of the population. Access to housing assets is shaped by conservative lending practices structured upon high interest rates (prime rate hovers around 10%) and historical discrimination towards people of colour, who are framed as a risky population (Butcher, 2020; Migozzi, 2024).

Lending practices further discriminate against households on terms of the cost of housing. Households earning under ZAR 25,000 are directed to the 'affordable' loan market, which has higher lending rates. Loan-to-value (LTV) policies also vary by sale price: above ZAR 3 million banks tend to limit LTV to 90%, requiring buyers to leverage savings or equity. Estate agents in low- and middle-income markets have noted that such deposit requirements often filter out buyers who qualify in terms of income but live paycheck to paycheck. Beyond the deposit, additional costs like transfer duties, attorney fees and bond registration add to the affordability challenge, which extends beyond the strict realm of the transaction. Buying a house to finance upward mobility entails budgeting for future expenses such as furniture, property taxes, utilities, transport, groceries and school fees—all of which contribute to the social selectivity of affordability. Understanding all these components of the affordability equation emphasizes how being able to pay for all transaction costs manifests boundary work in terms of lifestyle and socioeconomic status.

This equation is governed by the power of banks and the use of data. To perform property valuations—a key step in mortgage applications—and price their mortgage products, banks purchase geolocated real estate data from third-party brokers and feed it into proprietary appraisal algorithms. They also directly influence the production and valuation of new housing stock. Securing a bank's pre-approval is a crucial step for developers: with four major banks (FNB, ABSA, Standard Bank and Nedbank) controlling 90% of the mortgage market, it is imperative to secure their participation ahead of the sale process during the design of a project. To price their properties and define their target clientele, developers seek the bank's approval, purchase geolocated consumer data, and factor in their investors' expected returns.

Blue Downs illustrates how financial capital and norms shape the production and valuation of housing assets, defining local regimes of affordability. All the gated estates in Blue Downs bear the footprint of financial institutions. Bardale Village, a five-phase development started in 2005, was funded by a consortium of German investors led by the software company SAP. Belladonna Estate (740 homes and apartments) was constructed by MSP, a large-scale developer financed by Old Mutual, an insurance company listed on the Johannesburg and London Stock Exchanges. Completed in 2023 by the Motlekar group, Fountainhead Village (598 houses) was a pilot project for the Finance Linked Individual Subsidy Programme, a new government initiative to facilitate access to housing finance among first-time homebuyers. Launched in February 2024, CentralBlue is operated by Citra, a Swiss-backed developer which acquired the land from Old Mutual to develop a secure estate of smart and eco 'e-homes'. Sold out in August 2024, Blue Rise Village is run by IGrow Wealth, a Cape Town-based investment group offering buy-to-let schemes. Selling prices across these estates ranged from ZAR 400,000 (Fountainhead Village in 2014) to ZAR 900,000–1.2 million (CentralBlue in 2024), strategically set to fall below the value threshold required for the highly sought-after 100% home loan:

> At one stage the banks were not lending 100% loans. They wanted [a deposit of] 10%, and the business went quiet. This business is driven by a 100% loan (INT6, developer).

The evolution of housing prices underlines how these gated estates increased the cost of entry in Blue Downs compared to Delft, Khayelitsha or Eerste River (Figure 3). At the neighborhood level, the spatial distribution of housing prices reveals a clear socio-spatial differentiation between gated areas and the older urban fabric (see Figure 2), setting up an affordability barrier between older and new residents in Blue Downs: 'people in our neighborhood cannot afford to come and buy in our [CentralBlue] estate' (INT5, sales manager).

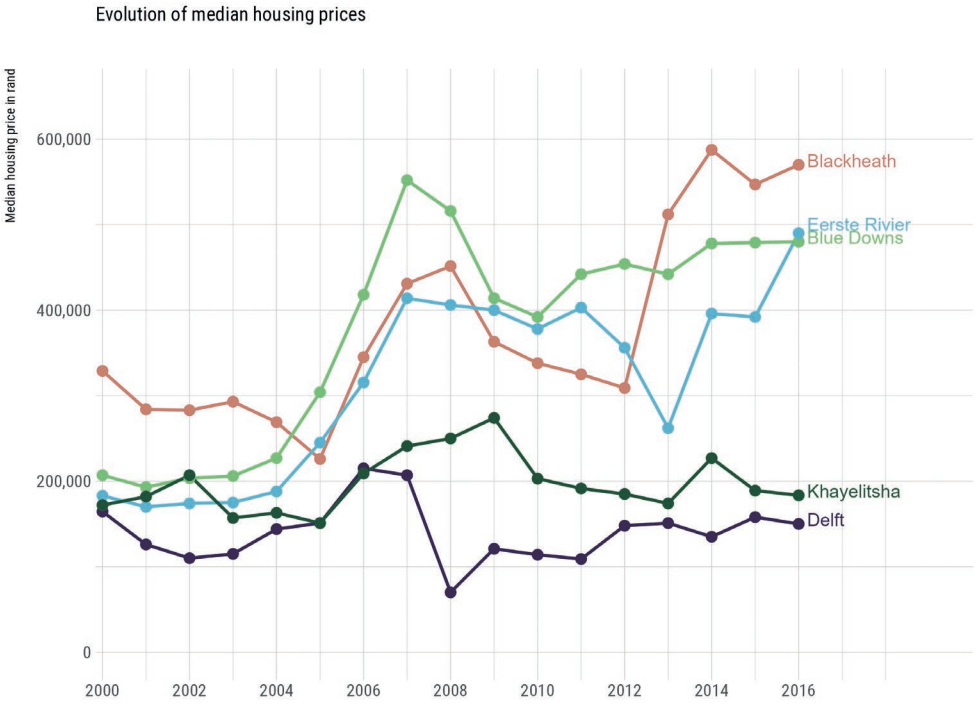

FIGURE 3 Evolution of housing prices in selected areas. Prices adjusted to value of ZAR in 2016 (*source*: Deeds data, City of Cape Town; author's own calculations)

However, affordability needs to be unpacked beyond the spatialized filtering mechanism created by housing prices, income inequalities and banks' lending criteria. To afford mortgaged homeownership households must mobilize various forms of economic and social capital, exercising boundary work by investing 'time, money, and energy' to navigate the market and 'make themselves legible' (Mercer, 2024: 24) to both state and financial entities. In the context of mass unemployment and systemic poverty, even basic market interactions—finding a house, attending a viewing or providing legal documents—reflect distinctive property practices: scrolling property portals incurs costly data usage; organizing a house viewing requires dealing with poor public transport, heavy traffic and limited car ownership. Estate agents in low-income areas described how gathering documentation for a transaction is often complex and time-consuming. Engaging with a bank demands legal literacy; gathering, scanning and submitting ID documents, bank statements, payslips, marriage certificates, proof of employment and offers to purchase may be routine for experienced or upper-class homebuyers, but can be a significant hurdle for others. Executing a transaction requires building and maintaining relationships with key intermediaries such as estate agents, attorneys and mortgage brokers, often over several months, during which time unexpected costs like car accidents or medical bills can disrupt a household's budget and derail the process. Although the South African market differs from Dar-es-Salaam because of the commanding presence of financial capital, a transaction journey in Blue Downs echoes how the 'bundle of competencies, social networks, and experience' required to acquire housing assets is 'a defining feature of middle-classness' (Mercer, 2024: 76). However, even for those who can afford a mortgage and can manage the transaction's time and costs, scoring highly enough remains essential.

Scoring high: passing over algorithmic walls

Advances in cloud computing and classification algorithms, along with the standardization of consumer data reporting, have made credit scores readily available and low-cost, altering organizational practices across the real estate and finance industries (Migozzi, 2024). Sales and analytical departments have adopted credit scores to design their products, determine LTV ratios and sort customers:

> **- Home loan consultant**: Our loan-to-values are determined … I can show you. This is our credit matrix [pulls out a large, plastic printed spreadsheet from a drawer]. This is our bible, by which we work. See, there is the minimum credit score for each type of product, and for the different levels of LTV: 70, 80, 90, 100%. The higher the risk, which is the 100% bond, the higher the rate is going to be.
> **- Me**: So the minimum score for a 70% bond is 575?
> **- HLC:** Correct. That's our lowest score. But for affordable housing—the 100% loan—the minimum score is 600. We use TransUnion (INT1, home loan officer).

Using credit scores and reports to categorize prospective homebuyers is a routine, hegemonic practice. In a context of high indebtedness, many mortgage applications are declined; in 2023, it was estimated that consumers earning over ZAR 20,000 spent 70% of their income on debt repayment (DebtBusters, 2023). Due to high rejection rates, agents aim to evaluate customers' creditworthiness early in the process, performing credit checks as soon as possible to avoid investing time and resources in clients who are likely to be rejected. Agents input ID numbers into cloud-based software provided by market leaders in mortgage origination, such as Ooba or BetterBond, or directly through credit bureaus. Since both consumption and upward residential mobility are driven by credit (James, 2014) and dependent on mortgages, acquiring housing assets requires being legible to the state, but also 'available for measurement' (Fourcade and Healy, 2017: 19) from the outset of market interactions.

Credit checks are a daily occurrence in the gated estates of Blue Downs. Sales agents carry out an 'affordability assessment', combining automated credit reports with paper-based forms in which applicants detail expenses such as school fees, groceries and transport. These calculations shape market interactions: in 2018, eight out of ten applications at Fountainhead were declined internally by on-site agents because of poor creditworthiness. With sales targets to meet and extensive paperwork, agents prioritize clients who have higher chances of mortgage approval. Their need to see and sort customers through data results in inquisitorial interactions:

> We do a credit check, we do an affordability check: I want your payslips, I want your bank statements, I want to know what you have for breakfast, for lunch, whatever (INT7, real estate agent).

> We obviously look at the scoring, we look at the payment profile and from there, like the banks do, we do an affordability calculation using the info on the credit report. Also, with the info we pick up on the bank statements and the payslips, we do a calculation, and if it is within what the banks are looking for, then we'll send it (INT2, sales agent).

On the receiving end of automated classifications, agents draw on their experience of banking practices to interpret scores and sort customers:

> The major banks … won't look at the application if the score is under 622, which is in the 'good' category. I think it's 622 goes to good, and then you get the excellent, the good part, which is about … I think it's from about 650 or something up. SA Home Loans will look at it if it's under 622, they'll probably go up to about

> 5 … well, according to them, the minimum is 575. But we found on Compuscan, if it's about 590, it will go through; below that it doesn't (INT2, sales agent).

> According to the different scorecards of the different banks, once a client approaches us, we can actually profile that client and say, for example, 'this client is a typical ABSA client'. On his scorecard, on his payslips, and the way he … his payment profile and salary, he will fit into … like I said, the ABSA scorecard (INT3, developer).

Technological innovations have accelerated and obscured the classification process. In 2017 credit checks at Fountainhead, Bardale and Belladonna were conducted via laptops. In 2024 CentralBlue's sale agents adopted facial recognition to screen walk-in customers, using a smartphone app leveraging biometric technologies developed by a new tech company, and priding itself on offering 6,000 data points for one ID number to mortgage originators:

> It's quite exciting. We've partnered with BetterBond, and they've created an app that we are able to use to screen our clients within probably five minutes, and we'll be able to get an indication of what the credit status is. So I'm just going to click into it. … It can be done in the comfort of your home (INT5, sales manager).

After filling in an ID and phone number, or taking a picture of the client, the app connects to databases at the Department of Home Affairs for identity verification, and then retrieves credit information from credit bureaus. Within three minutes the following brief email is sent to the agent: 'We have conducted a credit health check for [name]. Their status is red. This client needs to work on [his/her] score. The BetterBond team will be in touch with you'. Since the exact score is not communicated, agents at CentralBlue rely on colour-coded categories ('green', 'amber' or 'red') to guide their decisions. Only green and amber profiles will be processed. Overall, all agents interpret credit scores by translating them into moral categories to classify clients as 'good', 'bad' or 'irresponsible'.

Beyond initial market interactions, credit scores are used at many stages of the transaction process. Banks apply scoring procedures first when evaluating a mortgage application, but also later during the bond registration which can occur weeks after the initial evaluation, or even months later if the house is purchased off-plan:

> Especially in the affordable housing market, I mean, we stress to them that they must not go and make any more debt because they try and get a bond now, but the property is only going to be finished in nine months' time. And we stress over and over, myself, the developer, the estate agent, please do not create any more debt, because there is going to be another credit check right before registration. And nine times out of ten, like yesterday, I was sitting with five deals that were threatening to be withdrawn because clients went into personal loans (INT1, home loan officer).

This repeated use of credit scores has significant effects on market outcomes. Low scores result in agents not serving certain clients, or redirecting them towards other modes of housing tenure. At CentralBlue, clients classified as 'red', interpreted as 'clients that need work' (INT5, sales manager), were referred to debt counselors and potentially offered rental options. Similar outcomes were observed in Bardale and Belladonna:

> So typically, our rentals are 5,000 up, and a lot of people who rent are people who should actually buy, but they have a black mark against them, or something happened to their credit rating (INT6, developer).

Low scores also result in higher interest rates and mortgage payments, therefore increasing the cost of housing. They contribute to racialized rejection rates, since Black and Coloured households are overrepresented in indebted populations:

> And the banks check you out with Experian and with all the other credit controls. And so, interestingly, demographically … if 10 Coloured people apply for a house, one will get it. If 20 Black people apply for a house, one will get it. Maybe it's a little bit higher now, but you'll get many, many more rejections in the Black section than in the Coloured section (INT6, developer).

Beyond sorting customers and regulating access to finance, credit checks further cement the centrality of data in today's market. Since selling an entire estate is a long-term game with many properties in the pipeline, developers see value in using credit checks to register prospective buyers in their digital memory bank. By keeping the names and contact details of disqualified customers, they grow their own database in the hope that credit profiles will improve over time and these clients will eventually pass the filter of creditworthiness. Meanwhile, the assetization of consumer data to stratify home-seekers into unequal market channels supports a flourishing industry: in 2023, TransUnion's Africa branch recorded a gross revenue of USD 60.6 million, a 24% increase since 2020 (TransUnion, 2023).

Gating in: fences and values as class boundaries in the mortgaged periphery

In this context of acute social sorting, middle-class formation both results from and leads to the production of a 'mortgaged periphery'—a segmented, heterogenous suburban space where the physical fences and algorithmic barriers that regulate access to gated estates materialize the boundary work of the middle class through asset ownership, capital gains values, housing aesthetics and property relationship.

Over the last 20 years several gated estates have sprung up in Blue Downs, complexifying the juxtaposition of highly unequal neighborhood contexts (Figure 2) and producing a class-stratified space made up of Coloured neighborhoods from the late apartheid era (Malibu Village, The Conifers), government-subsidized houses for the poorest (Forest Village, 5,000 units; Nuwe Begin, 1,200 units), and dystopian '*temporary transit areas*' such as Bosasa, where steel and wood shacks sit on sandy soil behind concrete pylon fences. Gated estates introduce socio-spatial differentiation through housing aesthetics, property values and tenure modes, illustrating how market filters create a class-stratified suburban periphery. Crucially for middle-class formation, properties in gated estates record a systematically higher housing appreciation (Figure 4) compared to the rest of the area.[1] This appreciation is due to strong demand, but also because bank appraisals benefit more security complexes. Agents described how some residents have 'traded up', leveraging capital gains to move further north towards Blackheath and Kuilsriver, or even into newer gated estates within Blue Downs.

Ubiquitous in Blue Downs, gates, walls and fences serve both economic and marketing purposes (Figure 5). Developers, aware that their clientele comes from townships associated with high crime rates, replicate a similar gated model to signal lifestyle and security. Seven years before building Blue Rise Village, the developer was already inspired by Belladonna:

> You know Belladonna, right? … I'm talking about perceptions here. If you do a proper, secure, fully controlled estate, and you look at the rental you need to get

1 Moreover, our dataset only includes sales up to 2017, and therefore does not reflect the impact of the newest and most expensive estates on the local distribution and evolution of property values.

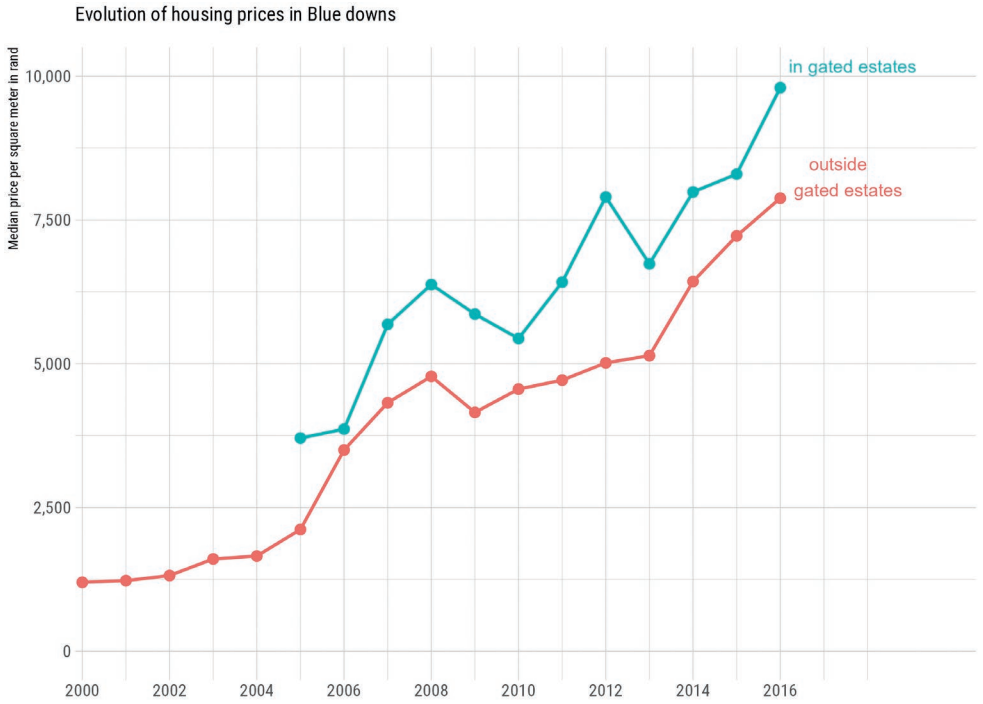

FIGURE 4 Evolution of housing prices in Blue Downs. Sample: 8,051 sales selected within a 500m buffer zone of existing gated estates at the time of transactions. Prices adjusted to value of ZAR in 2016 (*source*: Deeds data, City of Cape Town; author's own calculations)

> … It's a sweet spot area. I must take these people [the investors] on a tour. … This place has a spirit; the area is bubbling! (INT4, developer).

> My selling tool is lifestyle. We are offering a lifestyle to the community. There'll be a shopping center here behind you, a private school, you've got the family festival area. So yes, we are more expensive, but you're getting a quality-built home (INT5, sales manager).

Fountainhead Village was initially marketed as a gated estate. The construction of prominent entrance blocks, hinting at a future boom gate, sparked curiosity among passersby (INT2, sales agent). At Bardale access is card-controlled, while at CentralBlue—where buyers seek to 'escape crime' (INT5, sales manager)—a drone, heavily promoted during the public launch in February 2024, patrols 24/7 alongside security guards.

However, gates vary in quality and effectiveness; Belladonna's on-site manager admitted to frequent break-ins, with thieves bypassing the electric fences. The true significance lies in the gate's symbolism, representing secure estate living as a marker of social distinction. Marketing materials capitalize on this, drawing on the power of naming as a form of symbolic classification. Maps on printed brochures and websites omit the neighboring and stigmatized Khayelitsha and Delft, highlighting instead proximity to formerly white-only areas such as Kuilsriver and even Stellenbosch. Naming further introduces subtle distinctions between estates; the newer, more

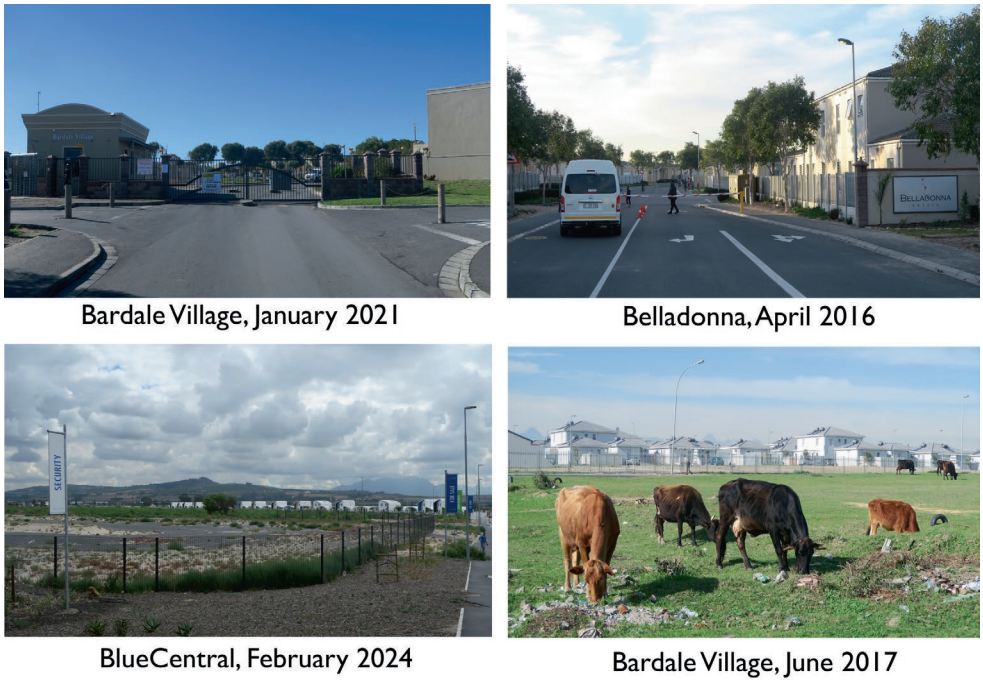

FIGURE 5 Gates and fences in Blue Downs (*source*: photos by the author, 2024)

northerly and more expensive sections of Bardale Village (Figure 2) are referred to by residents as 'Bardale Upper' (INT6, developer).

Behind the walls, most property owners hail from Coloured and Black townships like Khayelitsha, Delft and Eerste River, or from smaller towns in the provinces of Eastern Cape and Northern Cape. Racial diversity is binary, with very few white households. Incomes range from ZAR 20,000 (Fountainhead) to ZAR 35,000 (Bardale, CentralBlue). As evidenced by the common presence of cars, transport is predominantly individual, contrasting with the urban poor's reliance on taxis and trains. Government employees dominate the residential population since their steady incomes attract banks—nurses, teachers, police officers, navy soldiers, clerks. Mortgage lenders like SA Home Loan, which finance their activities through mortgage securitization (Migozzi, 2020), offer these government employees preferential lending terms tied to automated salary deductions. For these households, navigating the high costs and lengthy process of debt-driven asset acquisition through life-long mortgage repayments yields not only the perspective of slow wealth accumulation, but also immediate social distinction behind the gates.

Gated estates bind residents to distinctive and institutionalized property relations—a key element of becoming middle class (Chipkin, 2012). To safeguard the collective value of individual assets, and maintain a contrast with nearby townships and older urban areas, corporate bodies and homeowners' associations regulate public spaces and enforce social norms, such as behavior and architectural guidelines, through levies and fees, leaving little room for individual differentiation in housing aesthetics. In Belladonna, the manager bills for security and gardening services, and fines residents for issues such as broken-down vehicles, loud music or attempts to run a business within the estate. In contrast, however, the homeowner's association in Fountainhead Village, initially formed 'to try and keep a certain standard' (INT2, sales agent), was

ineffective and unable to collect levies from financially-stretched residents; self-constructed extensions of steel and PVC roofing sheets quickly multiplied, and by 2024 Fountainhead had aesthetically blended with nearby government-subsidized houses. Finally, the connection to public governance through taxable asset ownership and private property rights shapes homeowners' boundary work at the local political level; in 2019 the Conifers Ratepayers Association strongly opposed the completion of social housing in Blue Downs, citing class-based concerns over declining property values and infrastructure strain from non-taxpaying poor residents.

Discussion: a filtered class

Shaped by centuries of land dispossession and deprivation of property rights, aspirations for a property-owning democracy and asset-based economic growth in South Africa have been undermined by structural unemployment, jobless growth (Hart, 2014), soaring housing prices and prolonged economic stagnation since the global financial crisis. Racialized, selective lending practices persist via mass datafication and algorithmic classification, making occupation and income levels insufficient to capture middle-class formation amid the growing significance of housing assets for socioeconomic positions and cultural distinctions. Against this backdrop, this section discusses the relational properties of the South African middle class produced by the market's stratifying filters.

The capacity to afford all the costs of a lengthy property transaction, including the necessary mortgage, distinguish the middle class from the urban poor, but also from the upper class and the elite, since the acquisition of housing assets is exercised under heavy economic constraints produced by the legacy of racial property regimes and the modern construction of mainstream financial products. Unlike social elites, middle-class households see their purchasing options and locational strategies spatially restricted not only by social preferences, but also—in fact, mostly—by the racialized distribution of housing wealth. Unlike the urban poor who access housing via squatting, occupying or government programs, middle-class households are rather filtered in and sorted out by the real estate industry and financial institutions. While they are, like the elite, a 'propertied class' (Shatkin, 2010), ownership of multiple urban properties or several rental investments remain out of reach.

The relationship with debt is a distinctive feature of middle-class formation and attributes. To access housing and accumulate housing wealth, the middle class, unlike the urban poor, waits not for the state (Oldfield and Greyling, 2015) but for the bank. However, unlike the upper class, market interactions with financial institutions are depersonalized and largely automated: the opportunities to explain a poor score and negotiate lending terms through private banking are not available. Retrenched behind computational walls, banks communicate their rejection decisions via email with minimalist PDF form letters that merely state that an application has been 'declined on score', 'does not meet the minimum requirements of our credit scorecard', is 'unsuccessful' because of the 'current credit profile', or has been declined in view of a 'mitigated risk area'. Mortgages are a selective product contracted upon acute algorithmic screening combining individual metrics (credit scores) with geolocated data (property values to determine LTV). Long-term debt is a necessary and initial step towards capital accumulation and a residence in a distinctive location; in that sense, the making of the South African middle class exemplifies how geodemographic classifications induced by software sorting procedures 'classify and shape populations', fostering class-making through space (Burrows and Gane, 2006). Conceptualizing the middle class as a class *filtered in* financialized market structures echoes the role of mortgages as a 'biotechnology' (García-Lamarca, 2022); unlike the urban poor, the middle class is algorithmically calculated as eligible for, and is incorporated into, the banks' mortgage portfolios regulated by international guidelines. Finally, middle-class

households are neither banished by market forces (Roy, 2017) nor expelled by bulldozers (Levenson, 2022), but may be evicted by the sheriff if they default on their mortgages.

In the digitized housing market, the rules are clear: scoring highly—or highly enough—is a pre-requisite. Upper-class buyers may receive low credit scores due to high levels of debt-driven consumption, but they often possess sufficient assets or savings to secure property ownership or offset a lower loan-to-value offer with a higher deposit, thereby bypassing the creditworthiness filter. Conversely, a low-income individual may theoretically score highly enough by disciplined and closely-monitored consumption patterns, but is more likely to be excluded from the structural barriers of affordability posed by lending policies and property prices. Scoring highly enough as a *sine qua non* condition for accessing housing finance to acquire much-coveted assets attests to a distinctive socio-economic position, and stands as an enactment of 'doing being middle class' (Lentz, 2020) under digital capitalism.

Nevertheless, real estate agents tend to disagree on the internalization of credit scores; some mention an increasing awareness among their clientele, while others emphasize how credit scoring, as a technology and a practice, remains opaque and unknowable:

> Only 50% are aware. Some of them don't know that they can get a free credit report from TransUnion … A lot of people forget they've got credit cards or accounts opened … like a clothing account, whatever it is, and then they don't fill it in [the application form] and obviously it affects their credit scores (INT5, sales manager).

> The clients are aware of it, but a lot of them do take chances. Anybody knows the accounts that you have, things like that … They don't always disclose the things, and we try to get them to disclose as much information to us, because if you know what the situation is, then you can assist them better and work around (INT2, sales agent).

Scoring highly should be nonetheless seen as a critical form of boundary work in financialized and digitized markets, even if it is not necessarily conscientized. The calculation draws on various aspects of economic and administrative life—employment, income, consumption, residential location—captured through digital traces. Credit scores weave algorithmic ranking and moral categories of self-discipline, and extend over time, as two years' worth of data can be leveraged to repeat credit checks throughout the transaction process. For middle-income households leveraging cultural and social capital to navigate the market, credit scores represent a form of '*eigencapital*', a top-down, embodied and relational measure regulating access to goods and services (Fourcade and Healy, 2024). It is not the awareness of credit scores that constitutes a common form of capital for the filtered middle class, but rather their ability to access asset ownership as a result of being algorithmically validated as creditworthy by the real estate and finance industries. Consuming but avoiding over indebtedness, budgeting, finding housing opportunities, scoring highly enough, applying for a mortgage, waiting for the bank's decision, moving and gating in by committing to lifelong repayments, avoiding repossessions in a stagnating economy: the housing market is a crucial arena where middle-income households earn their middle-class stripes.

Conclusion

As digitization introduces new mechanisms of social regulation in capitalist markets (Törnberg, 2023), this article has demonstrated how data assetization and automated classifications operationalize stratification through filtering mechanisms, sorting people into unequal market outcomes in terms of asset ownership, tenure,

residential location and housing wealth. In South Africa, the digitized housing market functions according to a pair of filters—affordability and creditworthiness—that shape asset inequalities and class formation. As performed and interpreted by market agents, algorithmic classifications reproduce mechanisms of social stratification, create notably racialized debt and asset inequalities, and introduce new ones through a reliance on credit scores, turning consumer and property data into an asset for the real estate and finance industries. As such, these filters influence middle-class formation. Grounding my analysis in the suburban space of Blue Downs, I theorize the middle class as a *filtered class*, highlighting how its formation is embedded in the production of a stratified, segmented suburban space that I call the mortgaged periphery, wherein asset-deprived home seekers manifest their boundary work by negotiating the market's filters when acquiring debt-leveraged housing assets in gated estates. The resulting socio-spatial differentiation is both material and immaterial, marked by the overlay of developers' barbed-wire electric fences and the invisible, cloud-based algorithmic walls formed by credit scoring technologies.

Adopting a market-oriented perspective to circumvent the imposition of predefined 'criteria for class membership' (Fourcade and Healy, 2017: 23), this article has examined the effects of digitally mediated housing assets on social stratification and urban processes. While this approach foregrounds the roles and practices of developers, real estate agents and financial institutions, it is essential to acknowledge that middle-class formation must also be understood through the lived experiences, voices and perceptions of the households navigating these market structures (Mercer, 2020), although these are beyond the scope of the current study. Furthermore, the state's role in shaping social stratification should not be forgotten either; acting as an employer, a regulator of credit systems, a financier of mortgage subsidies, and a shareholder of securitized lenders (Migozzi, 2020), the state apparatus significantly engineers middle-class formation. Similarly, theorizing the middle class as a filtered class does not dismiss the significance of occupational stratification, but rather refines its scope by situating income and employment within the space of 'actually existing economies' (Peck, 2005) that govern the production and acquisition of the most significant form of asset, namely housing. Indeed, in the era of algorithmic screening, having a stable income by itself does not guarantee access to homeownership.

This definition of the middle class bridges statistical, income- and occupation-oriented studies with qualitative research on housing consumption and lifestyle, acknowledging the role of spatial dynamics in class formation (Mercer, 2024). With credit checks as an obligatory passage point towards homeownership for the asset-deprived majority, the relationship with debt and the roll-out of mortgage technologies have therefore emerged as a crucial axis of stratification in post-apartheid South Africa. If access to housing finance and asset ownership were previously determined by state-enforced racial categories, they are now regulated by the automated, market-based classification of home-seekers, cementing the role and value of algorithms and data over contemporary mechanisms of social sorting (Migozzi, 2023; 2024).

As housing wealth and digital technologies increasingly influence socio-spatial inequalities, the case of South Africa illuminates how urban change, automated classifications and value creation can be intimately linked through the urban process under digital capitalism. Complementing studies that show how digital technologies affect stratification through the exploitation of lower classes via platform labor (Vallas and Schor, 2020) or automated tenant evictions (McElroy and Vergerio, 2022), the research in this article underlines how data-driven classifications can affect the intermediary social strata through organizational practices that attempt to filter and stabilize a class of mortgaged homeowners within a controlled urban environment. Common to these forms of tech-operationalized inequalities is the use of algorithms to assemble socio-economic groups across space, opening up new regimes of value

creation. While mortgage payments from the gated estates of Blue Downs bolster banks' and investors' balance sheets, the enclavization of urban life under digital capitalism goes hand-in-glove with the assetization of data via the interplay of physical and algorithmic barriers; an automated, detailed market report on Bardale Village's properties and homeowners can be purchased online for USD 7—on credit.

Julien Migozzi, School of Geography and the Environment, Oxford University, South Parks Road, OX1 3QY, United Kingdom, julien.migozzi@ouce.ox.ac.uk

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APPENDIX 1 List of interviews

Code	Position	Industry	Development/Firm	Year
INT1	Home loan officer	Banking	SA Home Loans	2017
INT2	Sales agent	Sales	Fountainhead Village – Motlekar	2017
INT3	CEO	Property development	Belladonna – MSP	2018
INT4	General Manager	Property development	Blue Rise Village – IGrow	2018
INT5	Sales manager	Property development	CentralBlue – Citra	2024
INT6	CEO	Property development	Bardale Village – Integrated Housing Development	2017
INT7	Real estate agent	Sales	*Anonymized*	2018