Form Follows Function: On the Interaction between Real Estate Finance and Urban Spatial Structure*

David S. Bieri†

Urban & Regional Planning, University of Michigan, Ann Arbor, MI 48109, USA

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THE CONNECTION between the spatial development of cities and financial markets has received little attention from either urbanists or economists. To be sure, Marxist theories of urban development recognize that capitalism has to urbanize to reproduce itself, thus suggesting a link between capital accumulation and space (Lefebvre, 1970; Harvey, 1978, 1985). Yet, while Marxian urban theory views the city, above all, as the spatial locus for the accumulation of fixed capital via the built environment and infrastructure, this school of thought offers no explicit framework for analyzing the spatial consequences of finance. In an attempt to fill these theoretical lacunæ in urban theory, I attempt to lay the

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†Corresponding author: A. Alfred Taubman College of Architecture and Urban Planning, University of Michigan, 2000 Bonisteel Boulevard, Ann Arbor, MI 48109-2069, USA. Email: bieri@umich.edu (David Bieri)

groundwork for spatializing the analysis of finance in the tradition of Keynes (1930) and Schumpeter (1939). Within the purview of a larger research program on "money and the city", this work thus emphasizes the hitherto neglected linkages between the institutional evolution of money, credit and banking and urban spatial structure.[1]

In this essay, I argue that part of the post-crisis recovery is predicated on a multifaceted understanding of the subtle causal linkages between financial flows and urban morphologies. I speculate about the key channels through which the dialectical relationship among capital, its regimes of accumulation, and its unequal spatial distribution affects the design of the urban fabric. I identify two interdependent economic processes that define the nexus of real estate finance and urban systems in capitalist economies: (1) the process of financial globalization and deregulation, and (2) the post-Fordist forces of organizational fragmentation that have altered the role of architecture.

The process of financial globalization and deregulation has been instrumental to the financialization of real estate in a broad sense. In this context, "financialization" refers to the increase in the size and significance of financial markets and financial institutions – from lending institutions to investors, such as real estate investment trusts (REITs) and pension funds – in the modern macroeconomy.[2]

To be clear, the production of both commercial and res-

[1]In a companion paper (Bieri, 2013), I highlight the importance of Minsky's work on financial instability (Minsky, 1977) and monetary non-neutrality (Minsky, 1993) for understanding the dynamics of urbanization under capitalism. This work pays special attention to the role of the financial sector as a source of fluctuations in the real sector and the spatial structure of cities.

[2]In the U.S., for example, the 50 largest real estate investment trust (REITs) had a combined market capitalization of around $580.7 billion in 2011, accounting for approximately 3.5 percent of GDP. By comparison, the largest pension fund in the U.S., the California Public Employees' Retirement System (CalPERS), currently has more than $18 billion invested in global real estate – approximately 8 percent of the fund's $228 billion investment portfolio.

idential real estate has always required capital and land as intermediate factor inputs in a capitalist economy. But over the past forty years, far-reaching institutional changes in financial markets have increased the role of financial motives, financial actors, and financial institutions in creating real estate credit and in operating domestic and international real estate development processes. At the same time, the organizational principles of real estate development have become more complex, more decentralized, and more standardized. As a result, capital and the spatial configuration of cities have become more integrated.

In addition, the post-Fordist forces of organizational fragmentation and layered institutional inconsistencies – all key components of the postmodern paradigm – have altered the formational principles of real estate development and the fundamental role of architecture and urban design. Because form, space, money, and the design of real estate are all intricately bound up with one another, increased capital flows in real estate have brought about profound failures of design at all spatial scales.

Financial Function and Institutional Form

IN LIGHT of the legendary wastefulness of Emperor Nero's architectural projects, or the cost overruns of architect Frank Lloyd Wright's Johnson Wax Building in Racine, Wisconsin, or, more recently, of architects Herzog & de Meuron's ill-fated Elbe Philharmonic Hall in Hamburg, Germany, it might be argued that the tension between financial interests and design interests is an age-old architectural reality.[3] But the intuitive appeal of regarding this conflict as immutable masks the changing nature of the political economy within which real estate is being produced. Focusing on the nexus between what economists refer to as "real" and "financial" variables, I contend that the changing

[3] I am grateful to a reviewer for highlighting this point.

nature of real-financial linkages in real estate is intimately connected to the transformation of design and the spatial structure of urban areas. As such, my argument is part of a wider discussion about the political economy of regulation and the process of building cities. A central element of this discourse maintains that architecture is fundamentally influenced by the noncodified regulations of its broader political-economic context (see Jones, 2009).

In the context of real estate, real variables are, for example, the demand for housing services, the total factor productivity of the construction industry, or – focusing on architecture – qualitative aspects of urban spaces and the design of the built environment. By contrast, mortgage rates or credit supply to households and firms are considered financial (or “nominal”) variables. For the purposes of this essay, I adopt a narrow interpretation of the term “real-financial linkages” as it pertains to the relationship between real estate finance and the built environment. Although the orthodoxy of the classical dichotomy ascribes no economic importance to the interaction between real and financial variables, post-Keynesian and monetarist thought counts functional and institutional variation as among the most influential pathways for change in real-financial linkages. From an historical perspective, financial functions appear to be more stable than the institutional form of the financial system (Merton, 1995). Yet the link between the financial system’s most basic function – to facilitate the allocation and deployment of economic resources across time and space – and its institutional form remains an issue of much debate (Dixon, 2012). Thus, institutional form does not necessarily determine financial function. But changing institutional form might induce qualitative adjustments in the relationship between financial function and the allocation of capital, which in turn affects spatial outcomes.

The latter effect and its implications for the design-form nexus are perhaps best illustrated by considering the role of iconic architecture across different regimes of capitalism.[4] The early architectural icons of the Gilded Age of U.S. capitalism, from the Biltmore Estate to Fallingwater, were the inspiration behind suburbia as we know it today (large tracts of quotidian design), as if to pass on some of the success of their sponsors to the broader public. Yet these emblematic sites do more than just celebrate the achievements of their patrons; they also embody the nature of real-financial linkages of a bygone era in real estate. The Vanderbilts did not take out a home equity line of credit to complete all of Olmsted's grand plans in the Great Smoky Mountains of North Carolina. Nor did magnate Edgar Kaufmann utilize a jumbo adjustable-rate mortgage with a "teaser" rate to finance the daring cantilever designs at Fallingwater on his Bear Run site in Pennsylvania. Even the Empire State Building in New York City – unlike most of its modern contemporaries, including the most recent generation of high-rise building from Taipei 101 (formerly known as Taipei World Financial Center) to London's Shard – was not financed by complex multinational REITs, but relied on straightforward private equity.

In much the same way, the architecture of the central business district of the monocentric, industrial American metropolis accommodated the structural codes of the prevailing form of industrial organization of its era: Tayloristic principles of scientific management conjoined with the city grids, quasi-linear functions, and formulaic land-use regulations that governed the built environment. In this universe of clearly discernible capital-land substitution, architectural practice was firmly embedded within the conventional institutional guidelines of the day. In the era before the onset of the current wave of globalization

[4]The role of iconic architecture in globalizing cities has received substantial attention from urban theorists. This literature pays particular attention to the transformation in the production and reception of iconic buildings, as well as the role of the transnational capitalist class and new financing mechanisms. See Sklair (2006a,b) for good overviews.

(roughly pre-World War II), it was what Willis (1995) labels "city vernaculars of capitalism" that shaped the skylines of central business districts in unique ways from local land-use patterns, municipal codes, and zoning.[5] The architecture of this regime was inextricably linked to aesthetic configuration and the functional design of external spatial relations. In the U.S. this lasted until the early post-war boom, when, with the first signs of financializing real estate, "the differences in skyscraper design and urbanism in New York and Chicago, and everywhere diminished in response to the forces of finance, market values of design, and prevailing theories of urbanism" (Willis, cited in Sklair, 2009, p.2706).

Urban Spatial Structure and the Geography of Finance

THIS EMERGENCE of a new kind of capitalism coincided with the advent of new forms of industrial organization during the early post-war period. Accompanied by large-scale automation in manufacturing, globalizing capital flows began to facilitate a reconfiguration of the built environment along the principles of postmodern, multidimensional narratives. The combination of financial globalization and shifts in industrial organization induced substantial shifts in the urban spatial patterns across U.S. metropolitan areas. The paradigm of monocentricity as the dominant urban form was widely challenged by morphological and functional polycentricity.[6] Between 1950 and 2000, the average densities of U.S. cities and the density

[5]In related research, Sklair (2005) highlights that the production and representation of architectural icons in what he terms the "pre-global era" were mainly driven by those who controlled the state or religion, whereas the dominant forms of architectural iconicity for the global era are increasingly driven by those who own and control the corporate sector.

[6]Urban economists have long argued that the evolution of urban structure is closely tied to the location and internal decisions structure of firms (see Rossi-Hansberg and Wright, 2007).

gradients of urban areas generally declined (Kim, 2007). Across the nation, intense activity in the real estate sector, in both residential and commercial construction, began to replicate, reproduce, and entrench the edgeless, polycentric city as the defining trait of American (sub)urbanism.

With double-digit growth rates and large-scale suburbanization during the boom years after the war, U.S. metropolitan areas represented a fragmented and multinodal mixture of employment and residential settlement, with a fusion of suburban, exurban, and central-city characteristics. With these new, primarily suburban settings in place, the reorganization of industrial processes gave rise to the corporatization of landscapes. These landscapes of sleek office parks and parking lots emerged from a historical moment when corporations reconceived their management structures and dispersed into low-density, auto-dependent spaces on the peripheries of their respective metropolitan regions (Mozingo, 2011). At multiple physical scales, changing urban spatial forms have generated physical and social landscapes that reflect the shifts in the political-economic structures. Aesthetically, these sites are largely ones of excess and affect, what Knox (2005) has called "vulgaria." The mostly suburban settings of vulgaria are perhaps best visualized by the vast tracts of prefabricated homes with floor plans that, over time, grew to be both much larger and ever more standardized. Indeed, the median size of a single family home increased from 1,535 square feet in 1975 to 2,169 square feet in 2010, only 5 percent below its historic peak in 2007. At the peak of the McMansion boom in 2005, nearly 3.9 million homes in the U.S. had 4,000 or more square feet of space, an increase of 35 percent since 2001 (U.S. Census Bureau 2012).

The monotonous, stereotypical post-war American suburb would not have been possible without the unique evolution of federal credit programs that underpin the American mortgage system.

The rapid process of post-war suburbanization was mirrored by the increasing real-estate-related indebtedness of U.S. households.[7] From the 1949 Housing Act to the 1992 Government-Sponsored Enterprise Act and the large-scale foreclosures that followed the recent collapse of the housing boom, financial and governmental interests in the U.S. have engendered a structure that is not sustainable for real estate and the constituencies that rely upon it. Perhaps on a par with federal transportation policy, real estate finance has been playing a pivotal role in shaping these post-war geographies of urban spatial structure.[8] As the circuits of the globalized financial system continue to move the levers of real estate markets, it is unlikely that this role will change.

By the early 1980s, the process of market-based globalization was accelerating in direct response to the regulatory liberalization that emerged from the collapse of the Bretton Woods system. Propelled by both financial innovation, such as the securitization of mortgages, and the ambitious policy goals of a federally sponsored homeowner society in the U.S., the housing finance revolution aligned insatiable demand for physical real estate with large-scale supply.[9] At the same time, it promised attractive investment opportunities for global investor classes with excess savings in their search for yield; these opportunities were based largely on government-sponsored enterprises or private-label residential mortgage-backed securities and collateralized debt obligations. Both at its very core and at the periphery, this real-estate-led

[7]Mortgage debt was 18 percent of U.S. GDP in 1950, but rose to 28 percent of GDP by 1970, and 41 percent of GDP by 1990, before reaching its historic peak at almost 75 percent of GDP in 2009 (Board of Governors of the Federal Reserve System, Flow of Funds Accounts of the United States, last accessed July 2012).

[8]The role of post-war federal transportation policy in the process of suburbanization is discussed in (e.g. Baum-Snow, 2007).

[9]For more discussion of the interplay between federal housing goals and post-war suburban morphologies, see Chaves *et al.* (2011).

expansion of the financial system has since transformed financial markets and their institutions and processes at unprecedented rates. In combination, these developments fed into the vicious circle of "irrationally exuberant" expectations for perpetually rising real estate prices and rapid credit growth facilitated by deteriorating lending standards, eventually culminating in the global financial meltdown that led to the collapse of the U.S. housing market.

Under the current regime of globalized capitalism, what has fundamentally changed in the production of space is that the real estate financial system has revolutionized access to credit. Overcoming the constraints of a spatial mismatch between borrowers and lenders, different real estate stakeholders have never been more geographically dispersed, which can have several types of consequences. On the one hand, the operation of global financial entities in local markets means that financial risks taken in one region can have consequences for another. Decisions made in suburban households in the U.S. could, for example, jeopardize teachers' pension plans in a small Icelandic municipality. Undeniably, the recent dislocations in the housing market have highlighted the paradox that financial innovation can lead to a concentration, rather than a diversification, of risks among market participants (Bieri, 2010).

On the other hand, the standardization of real estate design – in parallel with the standardization of its modes of financing – has permitted an ever-increasing diffusion of real estate capital from central cities to the suburban areas. As with any mass production, technologically induced standardization plays a pivotal role in the process of commodification; in the context of real estate finance and mass-produced suburban real estate, it seems highly probable that standardized architectural design for residential and commercial structures favored real-estate-oriented financial innovation, which in turn engendered more standardization of the built environment. Indeed, all aspects of real estate finance rely heavily on standardization. Without a standardized approach to determining the value of real estate collateral, for instance, neither simple credit creation nor the originate-to-distribute model of securitization would be possible. Consequently, the system of real estate finance has emerged as an important factor in advancing the homogenization of architectural and urban design.[10]

Although the integration of the global financial system is proceeding despite a temporary slowdown in the wake of the recent financial crisis, I argue elsewhere that increased globalization does not mean the "end of geography" for finance Bieri (2009). Rather, it implies a different kind of geography; it is no longer the "old" geography with competing nation-states and clear urban hierarchies as the key spatial units of interest. Instead, a new geography is emerging, where globally dispersed creditors and debtors are the main actors.

Within this new geography, the traditional roles and interactions between real estate borrowers and investors are being reconstituted with regard to both their spatial and their institutional organization. At the same time, these new configurations are mirrored and reinforced in the recurring patterns of mass-produced suburban housing and standardized office parks and towers that dominate the pastiche of polycentric employment centers outside of the traditional central business district.

Spaces of Speculation

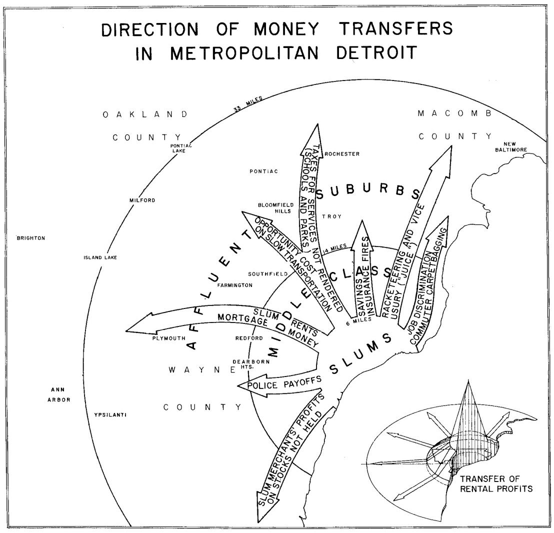
FROM THE PANIC of 1837 to the recent financial turmoil, land speculators have been at the center of a varied and colorful history of U.S. real estate markets. Although early instances of land speculation are usually

[10] Interestingly, from the U.S. Treasury's OCC regulation that governs real estate appraisal rules to HUD's conforming loan limits for residential mortgages, government agencies play an important role in the standardization process of real estate finance. Thus, perhaps somewhat unexpectedly, public sector activity might actually end up undermining heterogeneous design outcomes across space.

tied to narratives of the Western frontier, the earlier transition to capitalism along the "first Western frontier" – land to the west of the Appalachian Mountains, north of the Ohio River and east of the Mississippi River – was regularly accompanied by real estate speculation (Dunaway, 1996). A good case in point is the historical trajectory of real estate in the state of Michigan, where land speculation and the process of urbanization were – and still are – actively intertwined. In fact, less than a decade before the state capital was moved north from the city of Detroit in 1847, the city of Lansing had been the setting for a 105-acre fraudulent real estate deal. More importantly, Michigan provides a unique backdrop against which to assess the widely acknowledged, albeit little understood, role of land speculation and its interaction with the morphology of cities.

In Detroit, the spectacular rise and decline of real estate cycles remains closely tied to the activities of prominent individuals, such as legendary banker and speculator Charles Trowbridge during the 1830s or his modern-day counterparts, who are positioning themselves ahead of the much anticipated re-emergence of the Motor City from the vortex of shrinkage, disinvestment, and tax foreclosure abandonment. Figure 1 portrays the qualitative dynamics of land rent extraction and spatial redistribution that can be mapped directly onto the presence of speculation in real estate. This process is still very much in place today and without much modification can be generalized to other metro areas in the U.S., in particular cities in the Rust Belt, from Buffalo, New York, and Cleveland, Ohio, to Pittsburgh, Pennsylvania, and also to the larger cities in other mature market economies that have experienced a significant spatial reconfiguration of capital. Willis (1995) emphasizes the importance of speculative development and the impact of real estate cycles on the forms of buildings and their spatial distribution. In the context of the recent great housing boom and bust, Kuminoff and Pope (2013) identify substantial

Figure 1: Decentralisation of Capital Flows in Detroit



Sources: Reproduced with permission from Bunge ([1971] 2011).

heterogeneity in the evolution of the market value of land and structures within U.S. metropolitan areas. Surprisingly, lower-value land at the urban fringes of metropolitan areas experienced the most price volatility during the most recent boom-bust cycle, largely as a result of speculative housing construction.

In parallel with speculative activity, urban design and urban form have also been codetermined by more elusive forces associated with the increasing financialization of both residential and commercial real estate markets. The financialization of the built environment has come to be typified by the sharp divergence of financial interests and design interests with regard to real estate and the built environment. There is a latent need to systematically uncover the close interactions among urban spatial structure, the design of the urban fabric, and speculative real estate activity in much more depth than is possible here – a project that I am pursuing elsewhere. Pushing beyond the immediate example of Detroit, this work will complement similar efforts that document the dynamic interactions between real estate finance and physical structures at different scales as well as historic patterns of movement, land use, ownership or control, and occupation (see Soja, 1980; Brenner, 1998).

Towards a New Synthesis? Real Estate Finance, Organization and Urban Form

IN A PERIOD of rapid yet spatially segmented financial development in the U.S., the postbellum mortgage market holds many clues to a systematic understanding of the contemporary interdependencies between real estate finance and urban development, including its spatial patterns. Although mortgage lending expanded at unprecedented rates during the last two decades of the nineteenth century, an underlying lack of financial integration impeded urbanization efforts in the Frontier West (Snowden, 1988). These structural and institutional financial market imbalances conferred initial urbanization benefits to borrowers in the New England and along the Atlantic seaboard through preferred access to finance for both commercial and residential real estate.

Economic historians have long provided significant evidence that social elites may restrict financial development to limit access to finance, a trait we traditionally associate with the institutional arrangements of less-developed economic systems. Yet the financial history of United States in the early twentieth century provides ample evidence that credit rationing by land-owning elites can prevail on a large scale, even in countries with well-developed political institutions (Rajan and Ramcharan, 2011). The recent burst of urban economic (re)development, in Asia in particular and in Latin America to some extent, highlights that these forces are global in character, even if their local typologies might vary commensurately with the idiosyncrasies of institutional and organizational structures of developing economies.

The conduits of linkages between finance and design discussed in this essay permit two simple hypotheses about possible future scale-specific trajectories of urban form and financial function. At a macro level, more globalized markets for real estate finance are acting as centripetal, dis-agglomerating forces in space, which produce, *all else equal*, more fragmented, polycentric urban forms. Because real estate is the quintessential durable good – it can be built quickly, but disappears slowly – urban decline is not the mirror image of growth. In fact, these asymmetries in urban development imply that "too big to fail" also applies to real estate markets. Given the systemic importance of real estate to all aspects of overall economic activity, large-scale negative externalities are likely to emanate from failures in real estate markets.[11] As a consequence, governments regularly provide bailouts to the real estate sector in times of crisis. During the Great Depression, for example, major federal initiatives to reduce foreclosures and reform mortgage market practices saw the creation of the Home Owners' Loan Corporation under the New Deal. In the wake of the recent housing market fiasco, the U.S. government has deployed an even broader array of multi-agency measures to prop up various elements of the real estate sector. These measures range from the Home Affordable Modification Program, which assists homeowners with loan modifications on their home mortgages, to

[11] Before the great housing bust in 2005, housing services and residential fixed investment accounted for almost 19 percent of U.S. GDP. By 2012, this share had plummeted to just below 15 percent. Indeed, Leamer (2007) shows that, of the components of GDP, residential investment offers by far the best early warning sign of an oncoming recession. A large literature debates the effects of financial and housing wealth in the determination of consumer spending (see Bostic *et al.*, 2009).

the inclusion of commercial mortgage-backed securities in the Federal Reserve's Term Asset-Backed Loan Facility and the Neighborhood Stabilization Program, which helps local governments address the neighborhood effects of concentrated foreclosures. Invariably, the regulatory rhetoric of financial stability that accompanies such actions is anchored in a logic of containment, with the promise to minimize potential contagion of large-scale fallouts to other sectors in the economy. At the same time, however, the role of the "lender of last resort" is rarely well defined and quite often ad hoc.

At the micro level, the financialization of real estate is accelerating the commodification of design and architecture. In turn, facilitated by overregulated land markets that accentuate the impact of speculation, these developments reinforce the logic of standardization, architectural monotony, rapid depreciation, and disjointed urban design. To critical urban theorists, the main justification for contemporary urban design practices is that they mask the spatial aspects of real internal inconsistencies of capitalist economies, particularly in the United States (see Gunder, 2011). Rather than camouflaging the spatial fissures of globalized real estate capital, visionary urban design should become the unifying post-crisis protocol of urban development.

In light of the interdependent processes of financial reorganization and postmodern spatial fragmentation, I argue that urban form, its financing mechanisms, and its design principles remain very closely linked to their economic function. Accompanying this finance-led splintering of urban space, the role of architecture has been transformed and has become largely disconnected from the quotidian reproduction of the urban fabric. The organizational disintermediation of architecture from the spatial relations of real estate presents one of the most pressing challenges for an emergent post-crisis paradigm. As Saarinen reminds us, "much of the planning work of today must deal with the correction of earlier mistakes, which – let's put it frankly – are the result of a serious neglect of one of the nation's most vital problems" (Saarinen, 1943, p.141).

The dislocations of the post-crisis environment provide a unique set of opportunities to re-develop grand narratives, visions that are capable of intervening at the finance-design node within a broader reformulation of the urban project. Above all, design- and policy-related actors-from architects and urban designers to planners-should be encouraged to recast the "form follows function" duality in terms of an emergent urban re-envisioning whereby "structure follows strategy."

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