Moonlights, Sunspots, & Frontier Finance

On the Nexus between Money, Credit, & Urban Form

Political Space Economy Lab

Moonlights *Sunspots* *Frontier*

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Political Space Economy Lab

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Acknowledgments

This research was made possible by seed funding from the University of Michigan Taubman College Research on the City grant program. Incentivizing interdisciplinary research on urban topics, this grant program and the associated exhibition are generously supported by Cynthia and Alan Berkshire.

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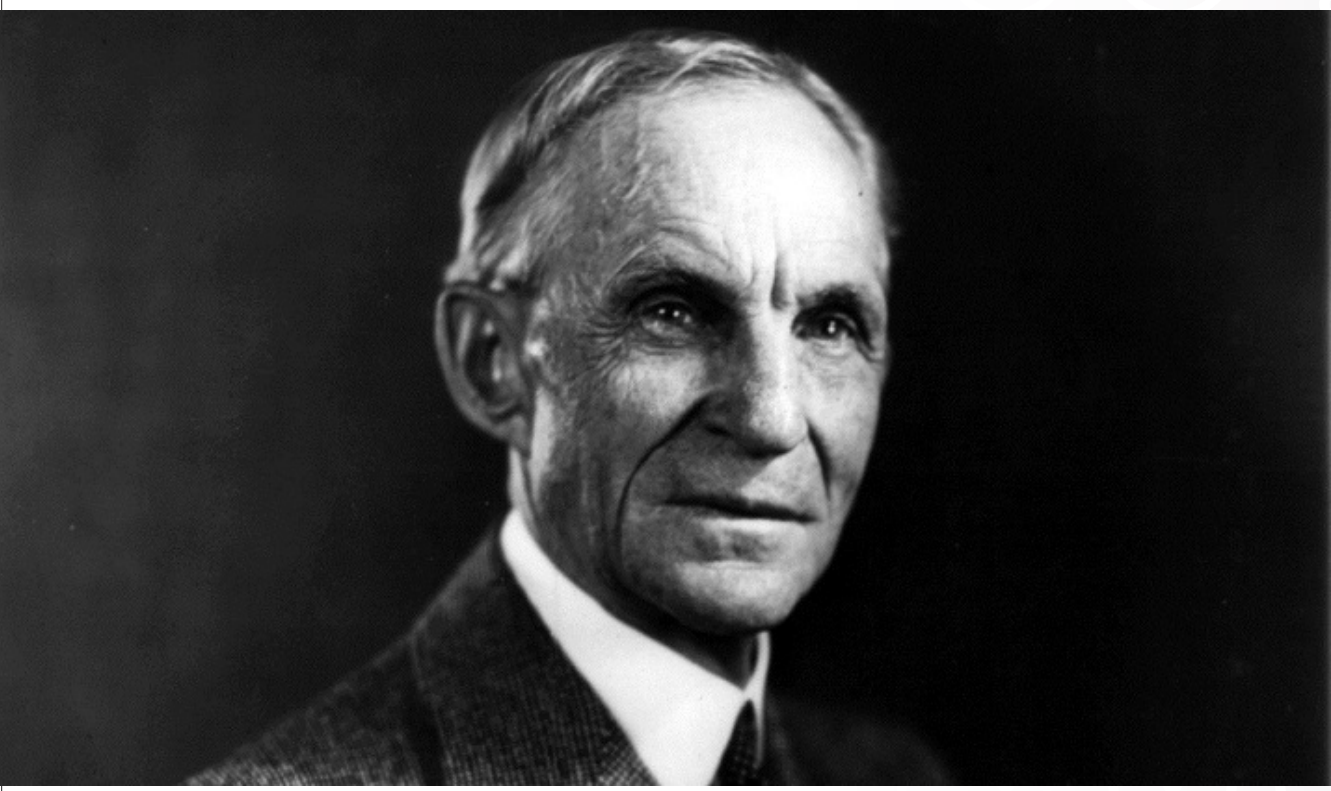
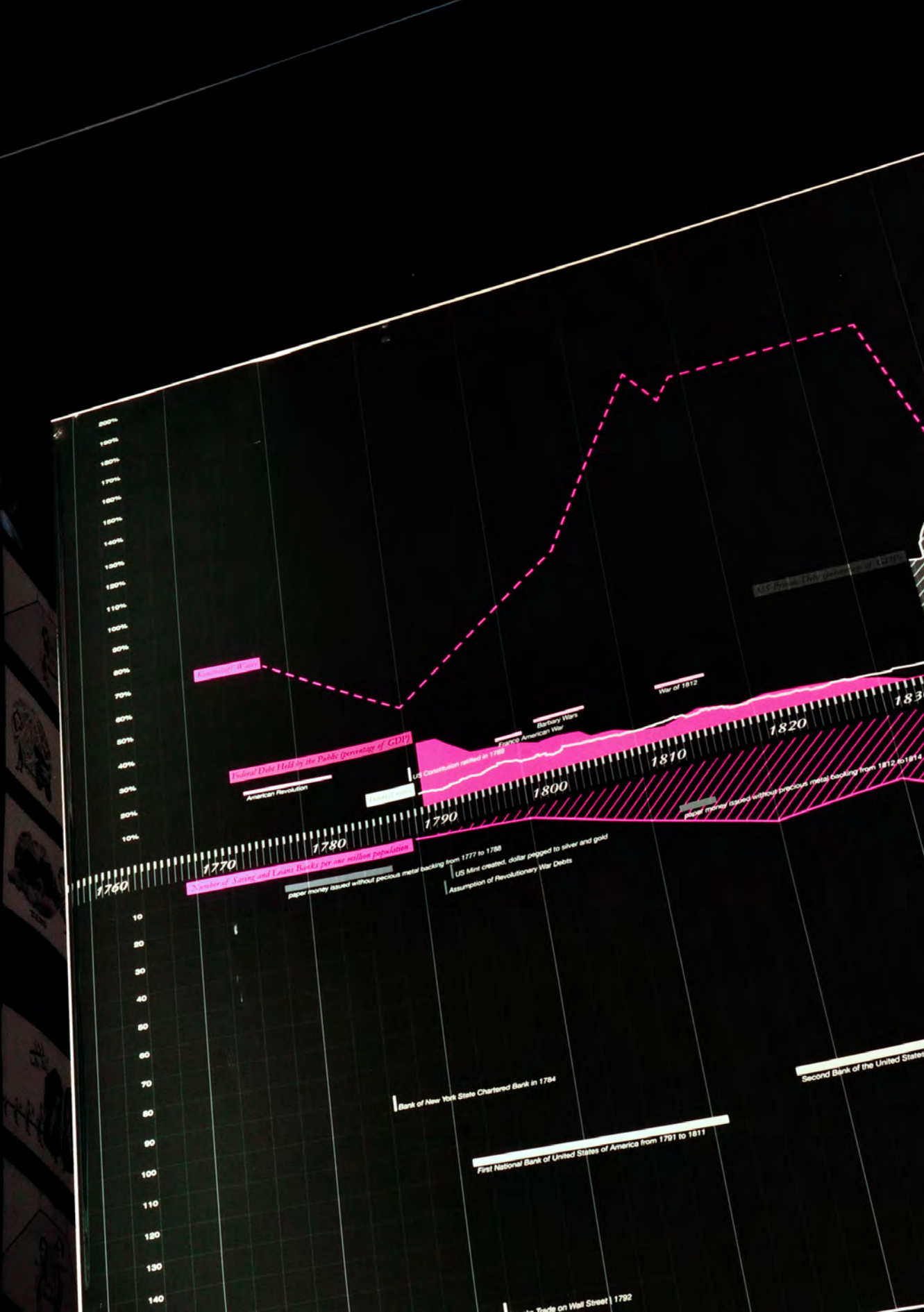


"It is well that the people of the nation do not understand our banking and monetary system, for if they did, I believe there would be a revolution by tomorrow morning."

1922
Henry Ford

EPISODE ONE / 1806-1915

EPISODE TWO / 1835-1845


Federal Debt Held by the Public (percentage of GDP)
Number of Saving and Loans Banks per one million population
American Revolution
US Constitution ratified in 1788
Barbary Wars
Franco American War
War of 1812
1760
1770
1780
1790
1800
1810
1820
paper money issued without pecious metal backing from 1777 to 1788
US Mint created, dollar pegged to silver and gold
Assumption of Revolutionary War Debts
Bank of New York State Chartered Bank in 1784
First National Bank of United States of America from 1791 to 1811
Second Bank of the United States
1792


Moonlights, Sunspots,
& Frontier Finance
On the Nexus between Money, Credit, and Urban Form
Legal Boundary
vs. Urban Fringe
EPISODE ONE | 1800-1919
EPISODE TWO | 1920-1949
EPISODE THREE | 1950
EPISODE FOUR | PRESENT-DA


Spatial Evolution of Luminosity
Total Value of Mortage Originations Intended for Home Purchase
Number of Residential Mortgage Denials
Model of Metropolitan Development Patterns
HENRI LEFEBVRE
ANNA SCHWARTZ
Speculative Diagramming
Next Steps

Introduction

This research examines the historical process of urbanization under capitalism on the one hand and the evolutionary process of the financial system on the other hand. Paying particular attention to the spatial consequences of these processes, we argue that a general theory of urban rise and decline must establish explicit linkages between money, credit and banking and urban spatial structure. In particular, this research develops the argument that money is spatially non-neutral, principally because the institutional arrangements of finance matter for how the built environment evolves. We explore the historical trajectory of the land-capital nexus against the theoretical backdrop of a broad range of schools of economic thought. At the same time, we situate our argument within a larger historiographical recognition that various representations of the economy as a "system of circular flows" are influenced by the evolution of social imaginary. Against the backdrop of the rise and fall of Detroit and Michigan's unique role in the financial and monetary history of the United States, this research develops the following main hypotheses:

Hypotheses

1. The evolution of urban spatial structure is the result of the historical urbanization of capital ("Moonlights") and recurring financial crises ("Sunspots"), alternatingly emanating from the real sector or the financial sector.

2. These interrelated processes govern new financial regulation and government intervention, leading to financial innovation, opening up new financial frontiers ("Frontier Finance").

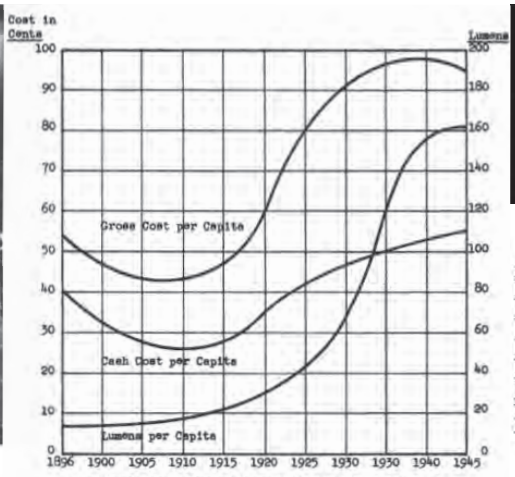
3. In turn, this creates alternative avenues for the (sub)-urbanization of capital, giving rise to new dynamics for the evolution of urban form.

Ontologies

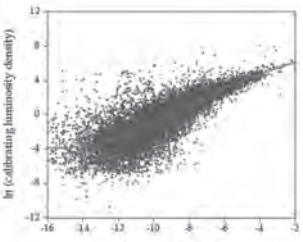
Moonlights

Moonlight towers are lighting structures designed to illuminate areas of a city at night, popular in the late 19th century in cities across the United States and Europe. Representing the progress of the rapid urban economic development, moonlights symbolise the sphere of production, distribution and consumption. Detroit had a particularly extensive system of towers from 1882 into the 1910s, with 122 towers illuminating 21 square miles of the city. The lighting infrastructure in Detroit was regarded as the future of street lighting, and stood as an ex ample for the rest of the US. Detroit was the only large city in the US (and in the world) lighted wholly and exclusively by the tower system. Increasingly, luminosity (measures of night-time lights visible from space) is entering economic analysis as method of approximating the spatial development of economic activity, providing high-resolution proxies of measures of output (gross domestic product).

Cass Avenue. Controlled Lighting with 15,000-Lumen Lamps



Street Lighting Cost per Capita and Lumens per Capita for Years ended June 30



Woodward Avenue and Cadillac Square in 1885. Central Market Building at left, removed in 1894, and the Russell House, forerunner of the Hotel Pontchartrain, which was built on this site in 1907 and replaced in 1920 by the present National Bank Building. The street lighting towers in the foreground were 150 feet in height and carried six 2,000-candlepower arc lamps

STREETS LIT BY TOWERS

THE DETROIT ELECTRIC LIGHTING SYSTEM.

THE FIGHT WITH AND FINAL VICTORY OVER THE GAS COMPANIES THERE—THE CONVENTION OF ELECTRICIANS.

The convention of the National Electric Light Association reassembled at 10 o'clock yesterday morning in the Union-Square Hotel, President Morrison in the chair. An amendment to the constitution prepared by a special committee appointed on the day previous limiting the active membership of the association to persons, firms, or corporations making a business of renting or selling electric lights was adopted without discussion. The effect of this amendment is to restrict to associate membership manufacturers of electric light machinery, wire, carbons, and supplies. A resolution providing for the appointment of a committee by the President, to consist of one representative of each of the different systems of electric lighting, to see if a uniform price for electric light machinery can be established and also a uniform price for lights, was adopted.

Sunspots

It is curious to reflect that if these speculations should prove to have any validity, we get back to something which might be mistaken for the astrology of the middle ages. Professor Balfour Stewart has shown much reason for believing that the sun-spot period is connected with the configuration of the planets.*

Now, if the planets govern the sun, and the sun governs the vintages and harvests, and thus the prices of food and raw materials and the state of the money market, it follows that the configurations of the planets may prove to be the remote causes of the greatest commercial disasters.

It is a curious fact, not sufficiently known, that the electric telegraph was a favourite dream of the physicists and romancists of the sixteenth and seventeenth centuries.† It would be equally curious if the pseudo-science of astrology should, in like manner, foreshadow the triumphs which precise and methodical investigations may yet disclose, as to the obscure periodic causes affecting our welfare when we are least aware of it.

Commercial Crises and Sun-Spots.*

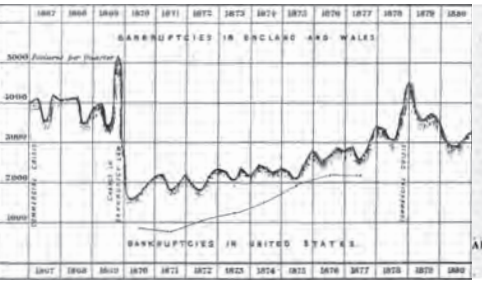
Part II.

I have been repeatedly told by men who have good opportunity of hearing current opinions, that they who theorise about the relations of sun-spots, rainfall, famines, and commercial crises are supposed to be jesting, or at the best romancing. I am, of course, responsible only for a small part of what has been put forth on this subject, but so far as I am concerned in the matter, I beg leave to affirm that I never was more in earnest, and that after some further careful inquiry, I am perfectly convinced that these decennial crises do depend upon meteoro-

logical variations of like period, which again depend, in all probability, upon cosmical variations of which we have evidence in the frequency of sun-spots, auroras, and magnetic perturbations. I believe that I have, in fact, found the missing link required to complete the first outline of the evidence.

Jevons, W Stanley. 1884. Investigations in Currency and Finance

In the orthodoxy of modern economics, the term sunspots refers to an event that does not directly affect economic fundamentals (such as endowments, preferences, or technology) but that can affect economic outcomes. In business cycle theory, sunspot equilibria are instances of "excess volatility".



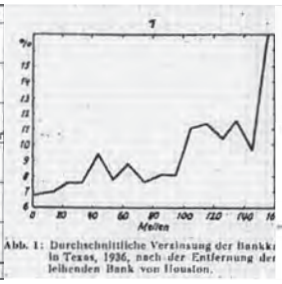
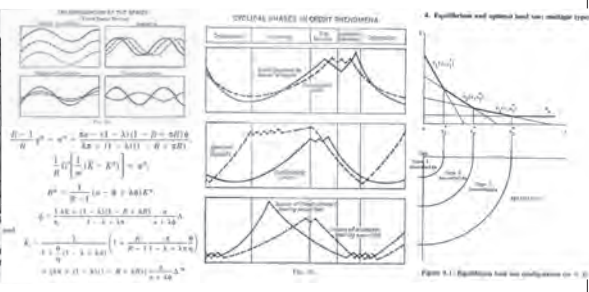


Abb. 1: Durchschnittliche Verzinsung der Bankk
in Texas, 1936, nach der Entfernung der
leihenden Bank von Houston.



Frontier Finance

From the "Free Banking" period of the 1830s to the recent subprime crisis, Michigan has been the theatre where a pivotal act in the dramatic unfolding of the history of U.S. financial innovation and credit intermediation has taken center stage. At various key moments over the last three centuries, institutional finance has continually opened up new frontiers in Michigan, both literally and figuratively speaking, creating a unique set of spatial conditions in its process. In focusing on the spatial linkages between mortgage credit flows and urban spatial structure, this research traces how the institutional transformation of the market-based financial system since the mid-1830s has continuously changed the nature of financial intermediation. Most recently, we highlight that "shadow banks" – financial intermediaries that conduct maturity, credit, and liquidity transformation without explicit access to central bank liquidity or public sector credit guarantees – have served a critical role in the process of risk allocation, both spatially and financially.

FIGURE 6-9 Panel C: Maximum Bid Rent of Employers

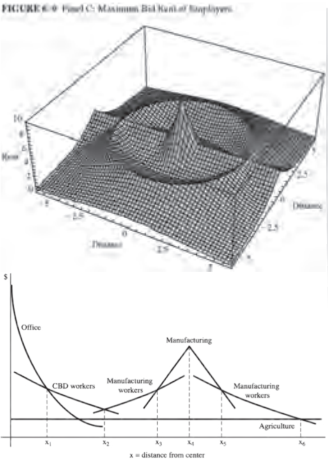


Figure 3.3
Proportion of White Workers Choosing
Single-Family Units, Classified by Workplace Ring

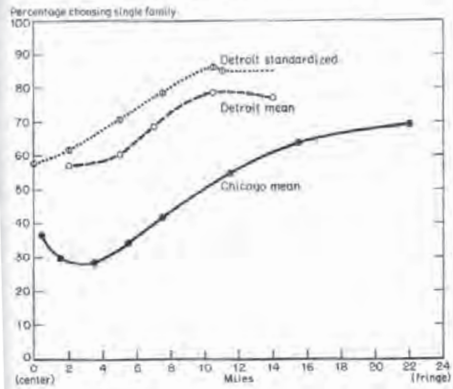


Fig. 29 Linien gleicher Bevölkerungsdichte im Großraum Detroit (wiedergegeben aus The Professional Geographer of the Association of American Geographers Bd. XIX, 1967, und mit freundlicher Genehmigung von D. R. Deskins Jr. und R. S. Yuill). Verlauf und Scharung der Isolinien veranschaulichen das Bevölkerungsdichtemaximum im citynahen Bereich und den Abfall der Werte nach außen sowie die sekundären Maxima im Bereich der Satellitenstädte. Der sich aus der Dichte der Isolinien ergebende Gradient ist schwächer als der bei den kompakter gebauten Städten der Alten Welt.

A Brief Financial History of Detroit in Three Acts

Episode One 1806-1915

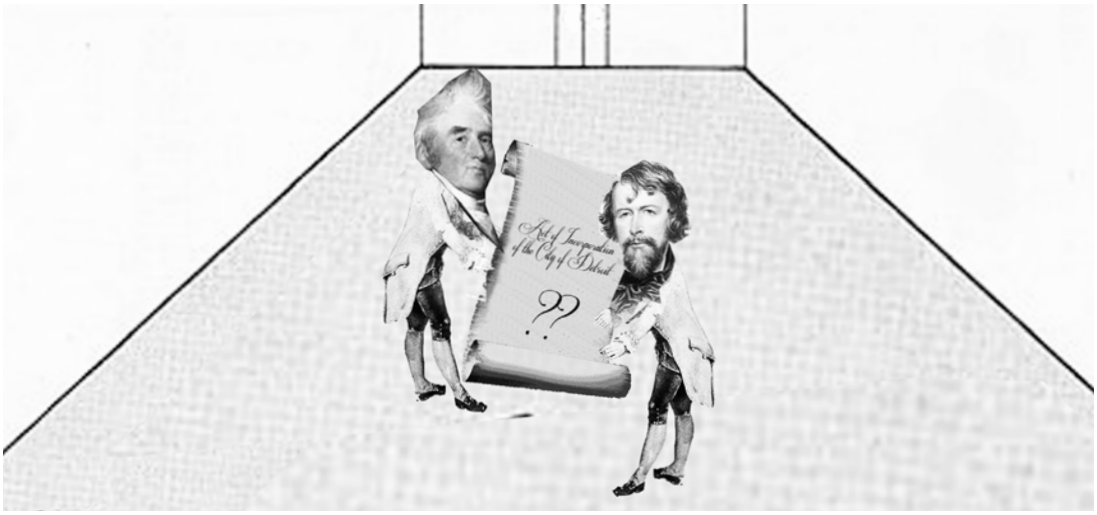
Act 1, Scene 1

After 1805 most homes were destroyed by fire. The land and was owned by the US. There was no law authorizing its division. In 1805, the bank of Detroit began and lasted until 1808 without congressional approval. It was closed by a law passed that prohibited unauthorized banking.

Act 1, Scene 2

Russell Sturgis, Nathaniel Parker, Dudley S. Bradstreet, and Henry Bass, Jr. craft a fake fault letter stating that they are businesmen that have been working in the fur trade having a difficult time moving specie. They lobby for an "Act of Incorporation of a Bank" with a capital of notless than $80,000 nor more than $400,000. None of them ever had interest in the fur trade.


Anne Street, Detroit, now Jefferson Avenue,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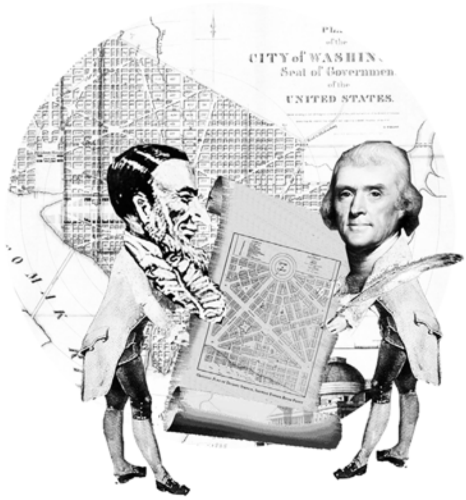
Episode One
1806-1915

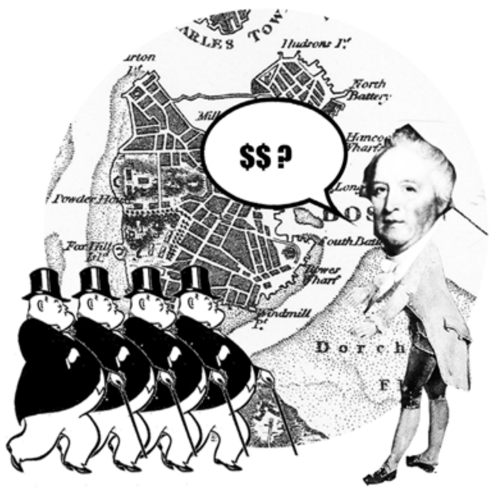
Act 2, Scene 1

Hull and Woodward leave for Washington on Oct 11, 1805 for December meeting of Congress in order to craft the legislation to incorporate the City and the Woodward Plan. Governor Hull goes to Boston to obtain funding from Capitalists.

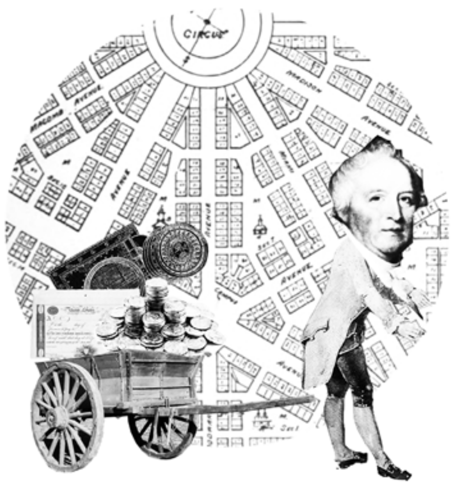
Act 2, Scene 2

1806 Gov. Hull returns to Detroit with prospective cashier from Hull family, bringing with him his bond as cashier in the sum of $15,000, signed by all the petitioners, except Russell Sturgis and a safe door and bar iron for use in the construction of the vault of the new bank building.


CITY of WASHIN
Seat of Governmen
UNITED STATES


$$?
Hudsons Pt
North Battery
Powder House
Fox Hill
Windmill
Dorch


Hudsons Pt
North Battery
Mill Pond
Hancocks Wharf
Long Wharf
BOSTON
Powder House
Fox Hill
Windmill
Request for Incorporation of Bank -xx- Capitalists



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Episode One
1806-1915

Act 3, Scene 1

The Bank is set up, and is a true pioneer. It has no competitor West of the Alleganies. Sold at $2 stocks. The bank is set up, and people show up to deposit gold coin. Meanwhile, paper money is sent back East.

Act 3, Scene 2

Andrew Dexter leads to demise of bank because of paper currency (specie vs. current) because of his paper currency swindling scheme of owning far away banks and dispersing their paper currency at a far distance from the bank. First bank of Detroit is one of them.
Source: Jencks (1916)

FRONTIER BANKS

EAST COAST BANKS

DEMISE OF THE DETROIT BANK

Episode Two
1835-1845

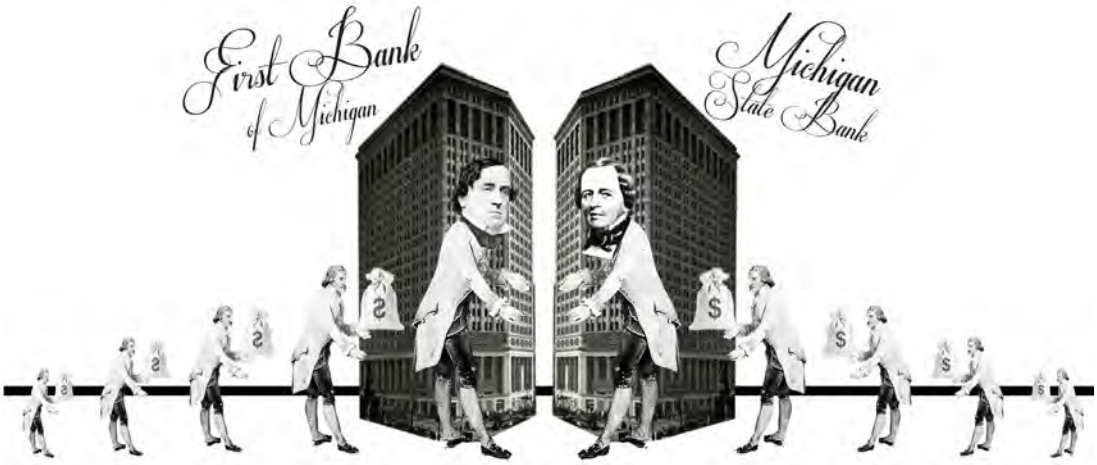
Act 1, Scene 1

Federal Survey opens up the western frontier to development $1.5 per acre creating a huge influx of population and land speculation. Creates a capital shortage. Michigan is deemed to become the wealthiest state in the Union.

Act 1, Scene 2

Bank of Michigan chartered in 1817 with primarily East coast whig money but majority with General Lewis Cass money., Michigan State Bank founded in 1835 by John R. Williams with the help of Albany capitalists.


CHEAP LAND FOR SALE
WE NEED BANKS TO BUILD


First Bank of Michigan
Michigan State Bank

Episode Two
1835-1845

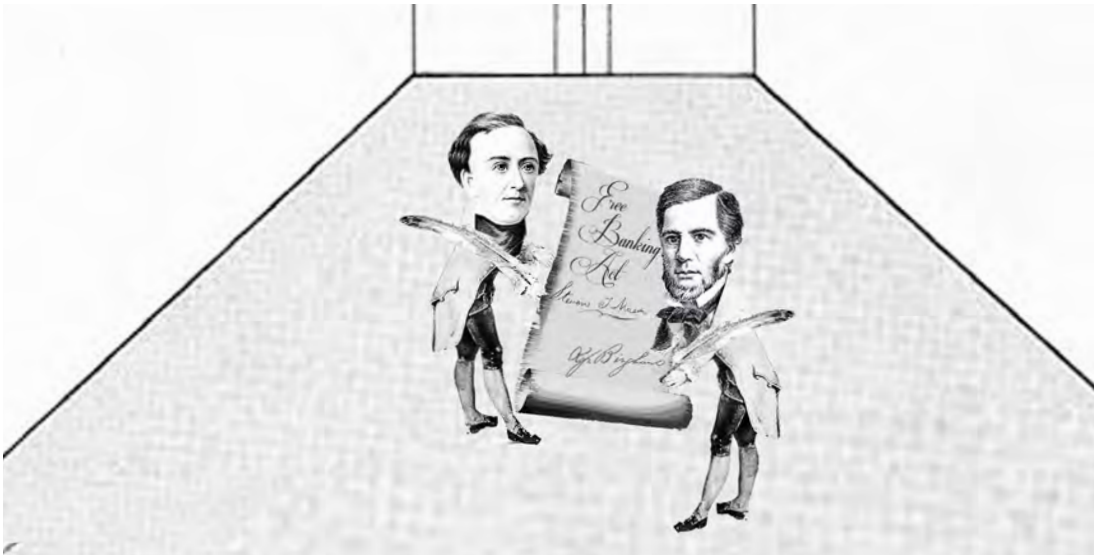
Act 2, Scene 1

Constitution written in 1835, Michigan Democratic party from 1835 to 1839 was controlled by "the poor and radical element" that was "hostile to monopolies and vested interests that wished to break down the power of monied men in politics."

Act 2, Scene 2

Law passed by Mason March 15, 1837 was a forerunner of fully fledged "Free banking" which Fritz Redlich has aptly termed a "sort of land bank open to all." Any twelve freeholders in any county might organize a bank with a minimum capital of $50,000, 30% of which had to be paid in specie (gold coin) before commencement of operations.


Michigan
State
Constitution


Free
Banking
Act

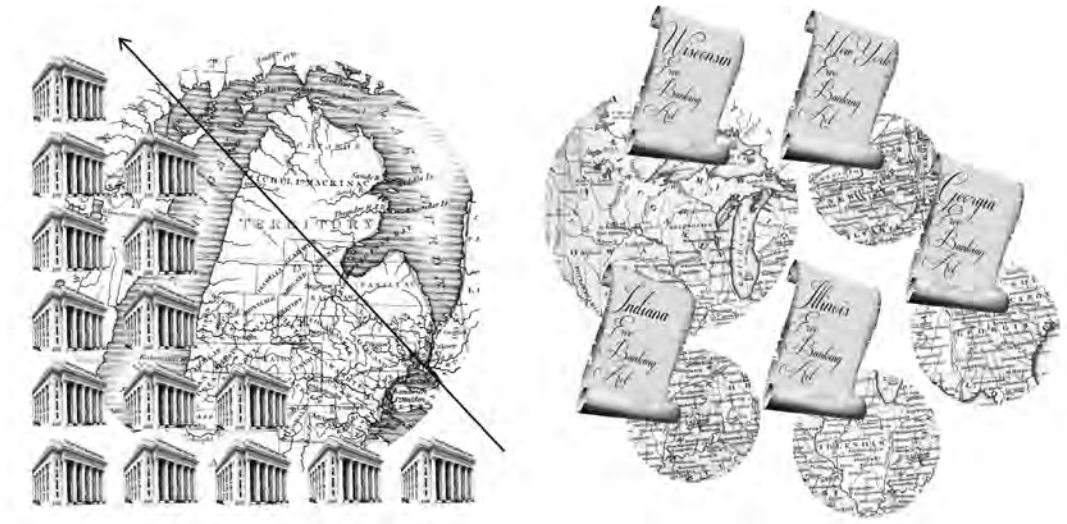
Episode Two
1835-1845

Act 3, Scene 1

Number of Michigan banks jumps dramatically. Other states follow and adopt Free Banking Acts

Act 3, Scene 2

... meanwhile Federal policies under the Jackson Administration are attempting to control banks require specie that creates a run on the banks.


Wisconsin
New York
Georgia
Indiana
Illinois


BIG BANKS
FRINGE BANKS

Episode Three
1933

Act 1, Scene 1

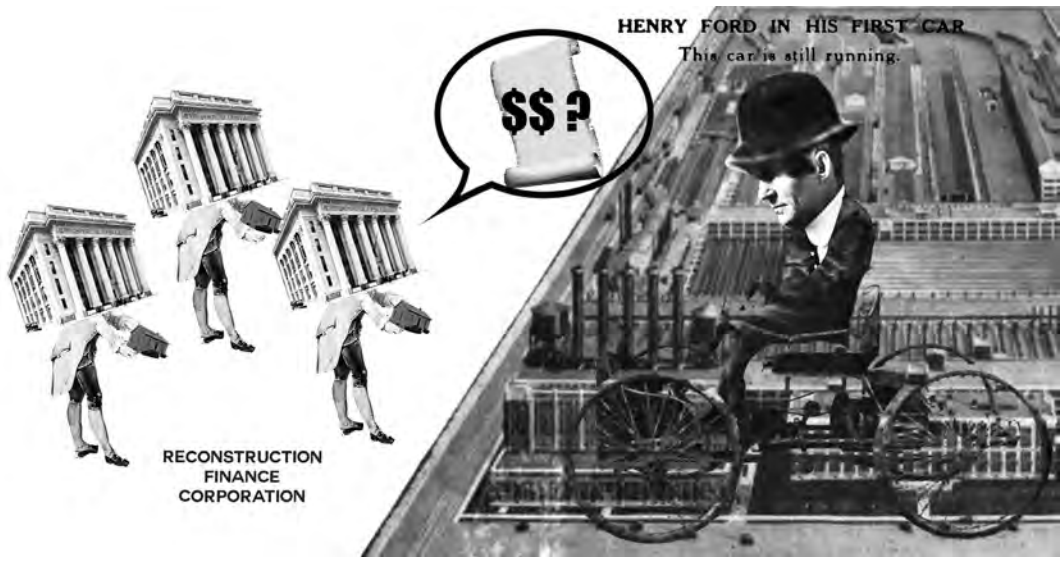
After the stock market crash and ensuing economic hardship, many banks are closing. Detroit banks are losing millions each week. The deepest banking crisis of the Great Depression was touched off by the pending failure of two Detroit banks in early 1933 (The failure of Guardian National Bank of Commerce and the First National Bank in Detroit is among the five largest national bank casualties of that period).

Act 1, Scene 2

Major Detroit banks were on the verge of failure so they asked Ford to subordinate some of his owed amount for a new loan from the Reconstruction Finance Corporation.


BLACK
TUESDAY
THE STOCK MARKET CRASH OF 1929


CLOSED
CLOSED
CLOSED
MICHIGAN
ONTARIO
RIVER


HENRY FORD IN HIS FIRST CAR
This car is still running.
$$?
RECONSTRUCTION
FINANCE
CORPORATION

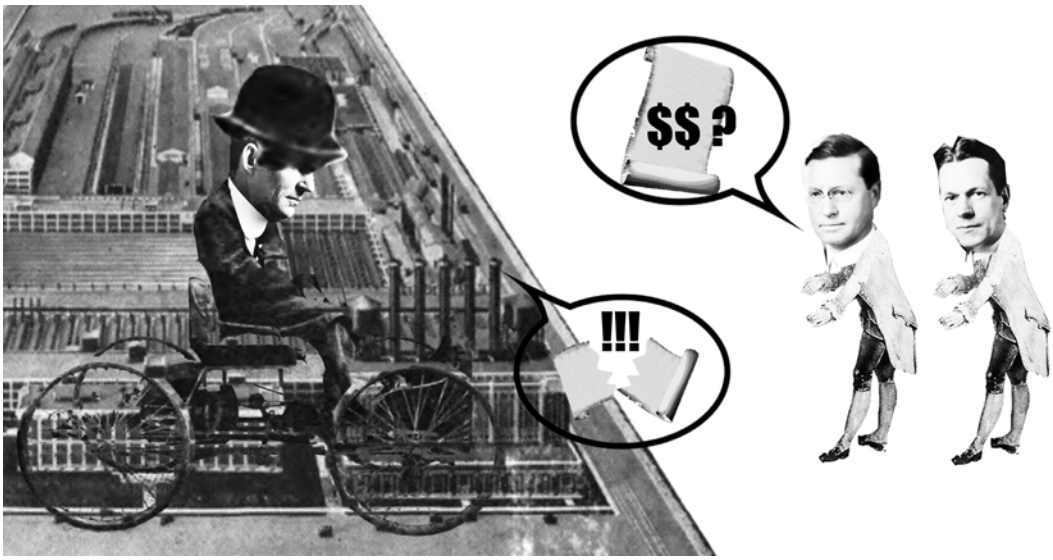
Episode Three
1933

Act 2, Scene 1

Ford refuses so Herbert sends Aurthur A Ballantin and Roy D Chapin (Detroit Car Capitalist, Hudson Motors). Ford threatens to take out his assets which would be worse than the bank failure.

Act 2, Scene 2

Bank holiday gets called in Michigan to keep Ford from taking funds out.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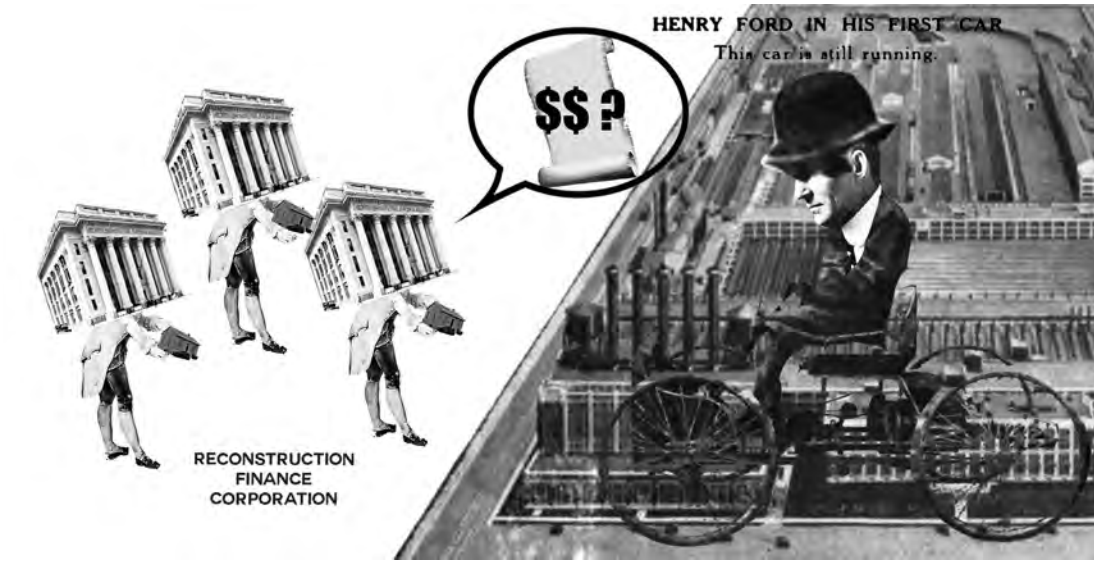

HENRY FORD IN HIS FIRST CAR
This car is still running.
$$?
RECONSTRUCTION
FINANCE
CORPORATION

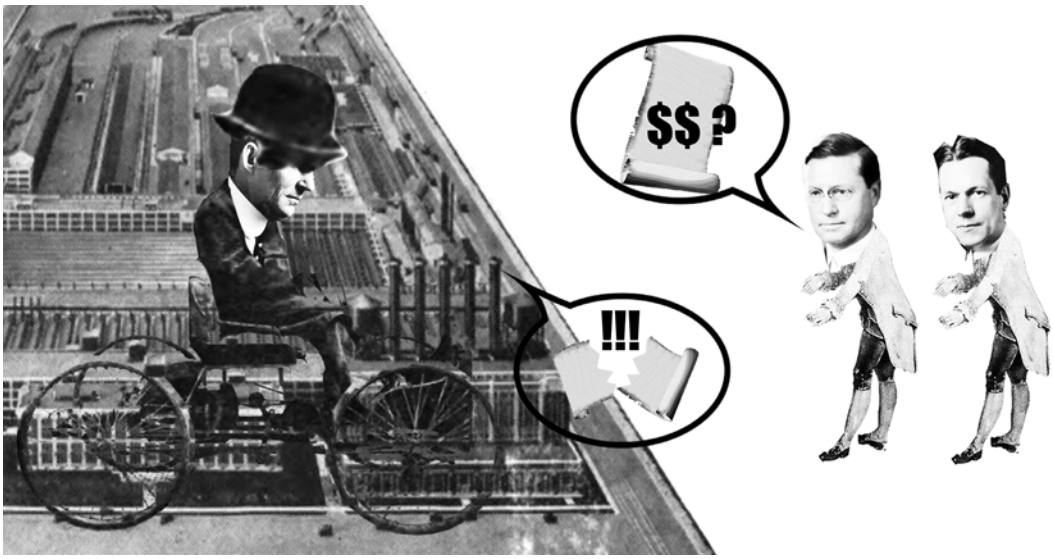
Episode Three
1933

Act 3, Scene 1

Federal Reserve Bank of New York at the end of the Day lost over $200,000,000 in gold through wire transfers, gold earmarking, and exports and $150,000,000 in currency. Decided they needed drastic measure of calling National Bank Holiday. Drafting of the Emergency Banking Act of 1933.

Act 3, Scene 2

Reconstruction Finance Corporation worked with Alfred Sloan, President of General Motors, to create the National Bank of Detroit. This bank received federal funding and assumed the assets of the two failing banks -- First National Bank of Detroit and the Guardian National Bank of Commerce.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Banking
Holiday
Michigan

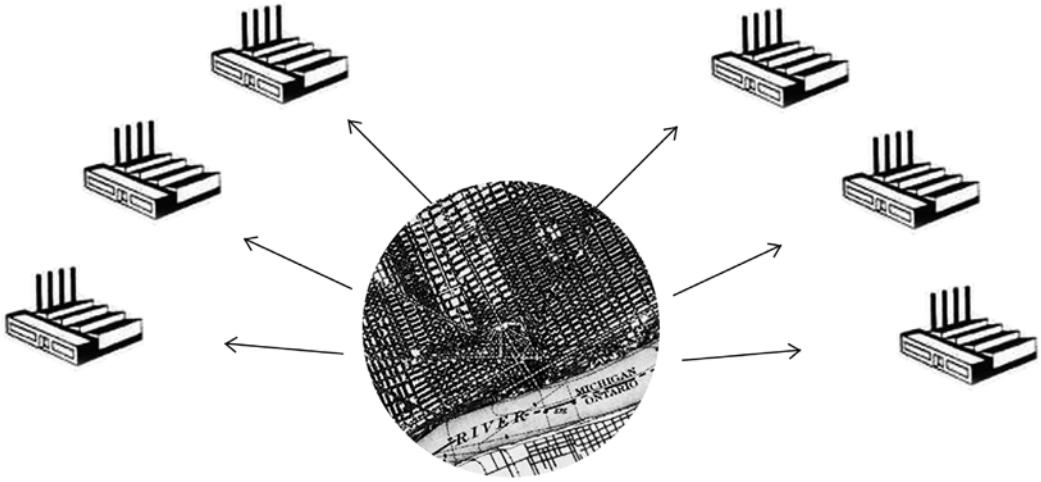
Episode Four
Present Day

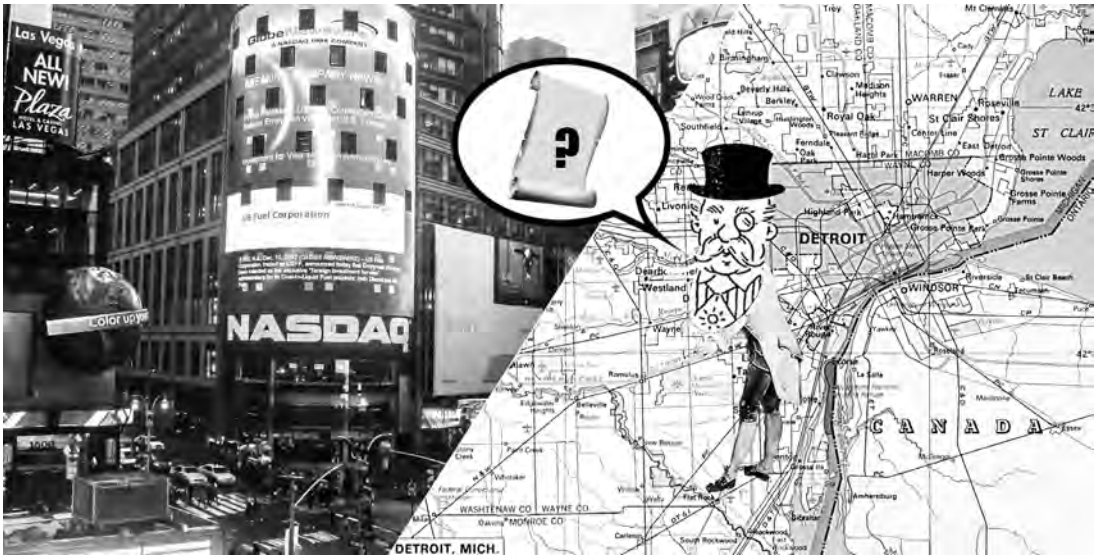
Act 1, Scene 1

Starting with the rise of automation and post-Fordist production, manufacturing jobs are relocated outside of the city of Detroit; racial tensions and white-flight induced suburbanization continually put downward pressure on population density.

Act 1, Scene 2

With Wall Street's help, Detroit under the Kilpatrick Administration borroweds $1.44 billion in a flashy high-finance deal to restructure pension fund debt. That deal, which could cost $2.8 billion over the next 22 years, now represents nearly one-fifth of the city's debt.


RIVER
MICHIGAN
ONTARIO


Las Vegas
ALL NEW
Plaza
LAS VEGAS
NASDAQ
?
DETROIT
WINDSOR
CANADA
DETROIT, MICH.

Episode Four
Present Day

Act 2, Scene 1

Kresge Foundation and other industrio-philantropic interests emerge as key players in shaping the in pre-crash Detroit Real Estate Market, looking to invest in Downtown (waterfront) and Midtown areas, the City puts out a plan to shrink the city. Dan Gilbert's Quicken Loan emerges as one of the largest non-depository mortgage credit intermediaries of the Great Housing Boom, with large presence in the US subprime markets.

Act 2, Scene 2

The Real Estate crash occurs, Kresges pull funding from smaller projects and invest in Detroit Future City Plan. Dan Gilbert, chairman and founder of Rock Ventures and Quicken Loans, beings to emerge as a key figure and with a visionary (financial) committment to downtown and Midtown.


Adelaide St
Winder St
E Montcalm St
Ford Field
Comerica Park
Fox Theatre
Grand Circus Park
Bleachers
Clifford St
State St
Washington Blvd
W Lafayette Blvd
Fort St W
Congress St W
Hotel Pontchartrain
Cobo Hall
Joe Louis Arena
Abwaine


DETROIT
CITY OF THE FUTURE..

Episode Four
Present Day

Act 3, Scene 1

Quicken Loans moves its headquarters and 1,700 of its team members to downtown. Gilbert-owned businesses employ 11,500 people in the city. Rock Ventures' downtown Detroit real estate investments include more than 30 properties, totaling 7.6 million square feet.

Act 3, Scene 2

One of the country's largest-ever urban farming projects gets green light from Detroit and state officials. Both Governor Snyder and Detroit Emergency Manager Kevyn Orr signed off on a development agreement that lets Hantz Farms acquire about 140 acres of land on Detroit's east side. Hantz Farms is owned by Hantz Group, primarily a financial services company. Developmers propose to buy Belle Isle.


Adelaide St
Winder St
Sibley St
E Montcalm St
Ford Field
Comerica Park
Fox Theatre
W Montcalm St
Fisher Fwy W
St Antoine St
Madison St
Grand Circus Park
Adams Ave W
Clifford St
Broadway St
Gratiot Ave
Clinton St
Macomb St
Monroe St
W Elizabeth St
Beech St
Plaza Dr
Bagley St
Cass Ave
State St
Griswold St
Campus Martius
Blue Cross Blue Shield
Michigan Ave
Detroit
3rd St
1st St
Howard St
Washington Blvd
Shelby St
Randolph St
E Larned St
Mgm Grand Casino
W Lafayette Blvd
One Detroit Center
Fort St W
Congress St W
Hotel Pontchartrain
Cobo Hall
Joe Louis Arena


New Urban Agriculture Zoning Ordinance


$$?

Circular Flows

Beginning with the early physiocrats, the circuit-flow analysis of the macroeconomy is one of the key innovations in the works of Cantillon (1680-1734), Turogt (1727-1781), culminating in Quesnay's (1758) Tableau économique. While Quesnay can be credited with the representation of the macroeconomy as a system of two circuits (goods and money flows), it was Adam Smith (1723-1790) who introduced a systematic distinction between the analysis of problems of allocation and distribution versus the analysis of monetary matters. From the beginning of modern economic inquiry, the representation of the economy as system of circular flows has been deeply influenced by the historical evolution of social imaginary. Indeed, there is a common dichotomy across different economic paradigms:

"Real sector": Production and consumption;
"Monetary sector": Money, credit and banking.

However, the precise nature of the relationship between these main sectors marks a key distinction between schools of economic thought. Importantly for our research project, existing economic paradigms do not analyse the spatial consequences of the interaction between real and monetary phenomena.

Economic Paradigm	*Origins of Economic Cycles*	*Real-Monetary Sector Relationship*	*Nature of Crises*	*Spatial Consequences*
Classics	Real sector	Neutral	Resources	Not modeled
Marxism *Lefebvre*	**Real sector**	**Neutral**	**Over-accumulation**	**Urbanization**
Keynesianism *Minsky*	**Both sectors**	**Non-neutral**	**Financial Instability**	**Not modeled**
Monetarism	Monetary sector	Neutral	Inflation	Not modeled
"New" urban economics	Real sector	Neutral	None	Agglomeration

The concept of the economic circuit in the phenomenology of economic analysis plays a central role in the extensive work of Schumpeter (1911, 1934). Indeed, Schumpeter constructs the "circular flow of economic life" ("Wirtschaftskreislauf") as the focal point of his analytical lens, elements of which would later evolve into his theories of business cycle analysis. In contrast to mainstream economics, which primarily dealt with market equilibrium, Schumpeter sees capitalist markets as principally being in a state of imbalance and, like Marx, he explains the dynamics of capitalist development from within itself. While Schumpeter is best known for his theory of "creative destruction", few of his monetary insights have survived in theories of contemporary mainstream economic analysis. Modern regional science, and, perhaps more surprisingly, the literature of the "New Urban Economics" remain steeped in the neoclassical tradition where the analytics of monetary phenomena are largely treated in an aspatial manner.

In contrast to the orthodox mainstream, spatial aspects of the circuitry of economic flows are well developed in Marxian urban theory. According to Harvey's (1974, 1985) analysis of the dynamics of capitalist urbanization, capital flows through at least three circuits:

Primary Circuit: Investment in basic commodity production.

Secondary Circuit: Investment in fixed capital and the consumption fund. This includes the built environment for both production and consumption.

Tertiary Circuit: Overaccumulation in the primary and secondary circuits, lead to funds being channelled into the tertiary circuit as investments into science and technology and social expenditures that enhance labour productivity and ensure cooperation from labour. Because this is difficult for individual capitalists to do, this is the role of the state.

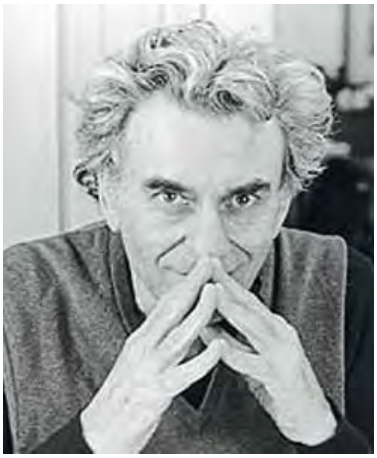
Overaccumulation can occur in any of the three circuits and is the source of the inherent instability of capitalism. Overinvestment in any of the circuits of capital leads to a sudden devaluation of the built environment and the "consumption fund". The resulting crisis in the circuits of capital resolves the contradictory tendencies of overaccumulation. In the theoretical system of the radical political economy, crises are a result of switches between circuits that are a central challenge of the system. There are three types of crises associated with switching of investments:

Partial Crisis: Specific sector or region is affected. Can be resolved with institutional or organizational reform.

Switching Crisis: Redirection of investment from one sphere to another.

Global Crisis: Upheavals that affect all sectors and regions.

But urbanists working in the Marxist tradition, and Harvey in particular, do not contextualise the image of the circuitry of capitalism within a broader tradition of circuit flow analytics in the history of economic thought. Instead, Marxian urban theory views the city, above all, as the spatial locus of the accumulation of fixed capital as built environment and infrastructure. As such, this school of thought offers no explicit framework to analyze the spatial consequences of finance. By contrast, our research endeavours to fill precisely these theoretical lacunae in urban theory. The work presented in this book is thus the first attempt to spatialize the analysis of finance in the tradition of Schumpeter (1934, 1939) and Keynes (1930), emphasizing the importance of linkages between the institutional evolution of money, credit and banking and urban spatial structure.



Financial Instability Hypothesis

"Once we have a vision, then our control of theory, our command of institutional detail, and our knowledge of history are to be marshaled to support the vision."
1992

"To analyze how financial commitments affect the economy it is necessary to look at economic units in terms of their cash flows. The cash flow approach looks at all units – be they households, corporations, state and municipal governments, or even national governments – as if they were banks."
2008

Hyman Minsky

Social Production of Space

"Space is a social morphology: it is to lived experience what form itself is to the living organism, and just as intimately bound up with function and structure … what we are concerned with, then, is the long history of space, even though space is neither a 'subject' or an 'object' but rather a social reality – that is to say, a set of relations and forms."
1974

Henri Lefebvre

Monetary Stability

"How did we get into this mess in the first place? As in the 1920s, the current "disturbance" started with a "mania." But manias always have a cause. If you investigate individually the manias that the market has so dubbed over the years, in every case, it was expansive monetary policy that generated the boom in an asset."
2008

Anna Schwartz

The Circular Flows in the History of Economic Thought

Circular Flows of Economic Activity and Money

Beginning with the early physiocrats, the circuit-flow analysis of the macroeconomy is one of the key innovations in the works of Cantillon (1680-1734) and Turogt (1727-1781), culminating in Quesnay's (1758) *Tableau économique*. The modern representation of the macroeconomy as system of two circuits (goods and money flows) has its origin with Adam Smith's *Wealth of Nations* (1776).

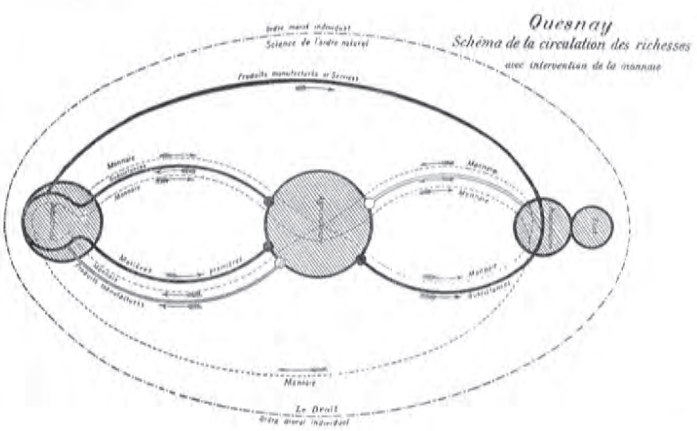


Figure 19
Schéma de la circulation des richesses (marchandises et argent).
H. Denis, op. cit., annexes.

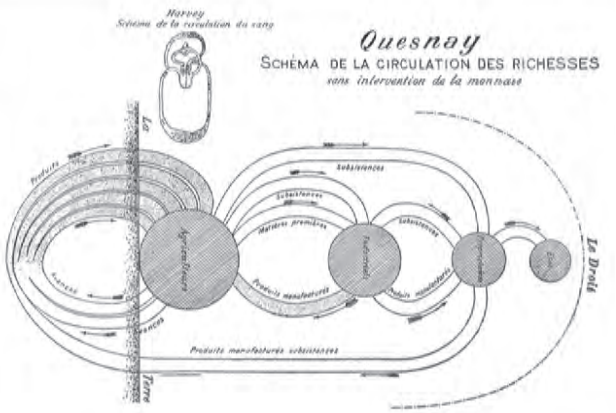


Figure 18
Schéma de la circulation des richesses (marchandises seules).
H. Denis, op. cit., annexes.

Denis (1904)

The Circular Flows in the History of Economic Thought

The Imaginary of National Income and Product Accounts

The conceptual innovation of the formation, distribution and disposition of "national income and product" (NIPA) lays the representational foundations for modern macroeconomics. This framework usually excludes monetary phenomena, such as the influences of credit expansion and contraction and hoarding. Operationally, the NIPA form the backbone for the tabulation of such metrics as GDP, personal consumption expenditure and net exports of goods and services. While they were originally conceived to include all elements that can "be brought directly or indirectly into relation with the measuring rod of money" (Pigou 1920), operationalizing the NIPA has led to market-based measures of economic performance that track private consumption rather than social welfare.

Simplified Illustrations of the Formation, Distribution, and Disposition of the National Income or Product

(*omitting influences of credit expansion and contraction, hoarding, etc.*)

Diagram 11-1. The Two Circular Monetary and Physical Flows

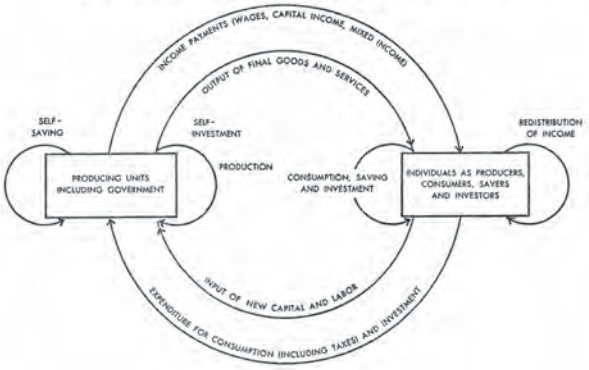
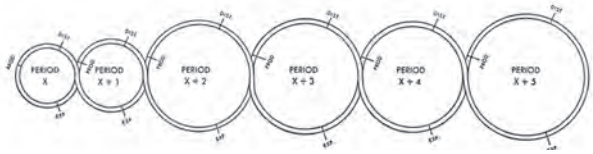


Diagram 11-3. The Economic Process Viewed Across Time: the Successive Rounds of Production, Income Distribution, and Final Expenditure (Consumption and Investment)



Studenski (1958)

The Circular Flows in the History of Economic Thought

The Origins of Business Cycle Analysis

As early as 1837 the British banker and politician Samuel Jones-Loyd, later Lord Overstone, pointed out that "the state of trade revolves apparently in an established cycle. First we find it in a state of quiescence, next, improvement, growing confidence, prosperity, excitement, overtrading, convulsion, pressure, stagnation, distress, ending again in quiescence" (Overstone cited in Eltis, 2001). The monetary system is present in the picture represented by "scrip", "stocks" and "shares", and a bank that seems to be offering loans at 2 percent, but at its centre are eager crowds, presumably of would-be investors, gathered outside the offices of the "South Pole Warming Company" over which an exotic flying machine seems to be hovering. It is only when the foolishness of these undertakings has been revealed and "convulsion" (i.e. "panic") has set in, that the monetary system comes to dominate the scene as the premises of the "Royal Bubble Bank" explode. Cf. parallels in these two panels with the market exuberance of a few years ago.

Trade Cycle cartoon, from a print

Laidler (2010)

The Circular Flows in the History of Economic Thought

Economic Rhythms and the Circular Flow

The pioneering work of Joseph Schumpeter and Ernst Wageman, both working in the tradition of the German Historical School, constructs the "circular flow of economic life" ("Wirtschaftskreislauf") as the focal point of the analytical lens, elements of which would evolve into mainstream business cycle analysis. In contrast to mainstream economics, which primarily deals with market equilibrium, however, the inductive work of Schumpeter and Wageman sees capitalist markets as principally being in a state of imbalance. Like Marx, they explain the dynamics of capitalist development from within itself. The repertoire of modern economic statistics for the German economy had its foundations in Weimar Republic's statistical establishment, and its program of data gathering that was constructed around an innovative framework of (what now would be considered "heterodox") macroeconomic theory (Tooze 2007).

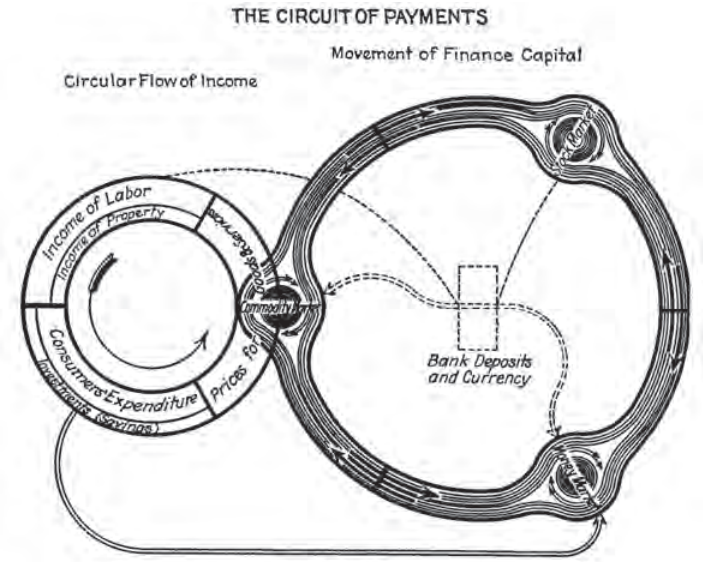
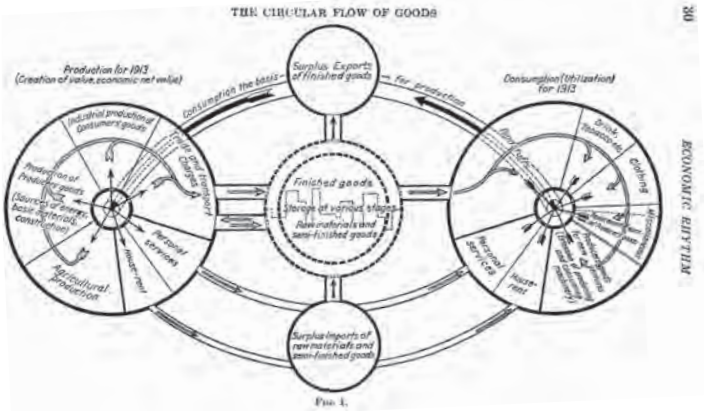
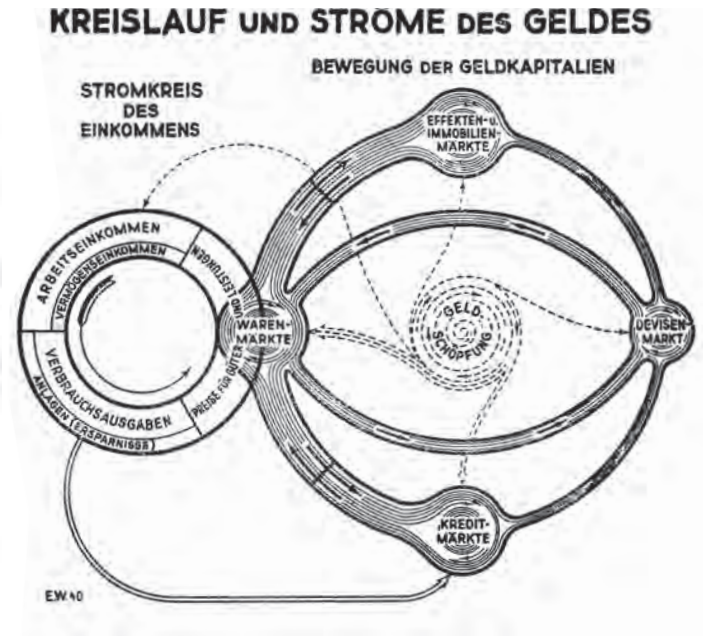


FIG. 2.

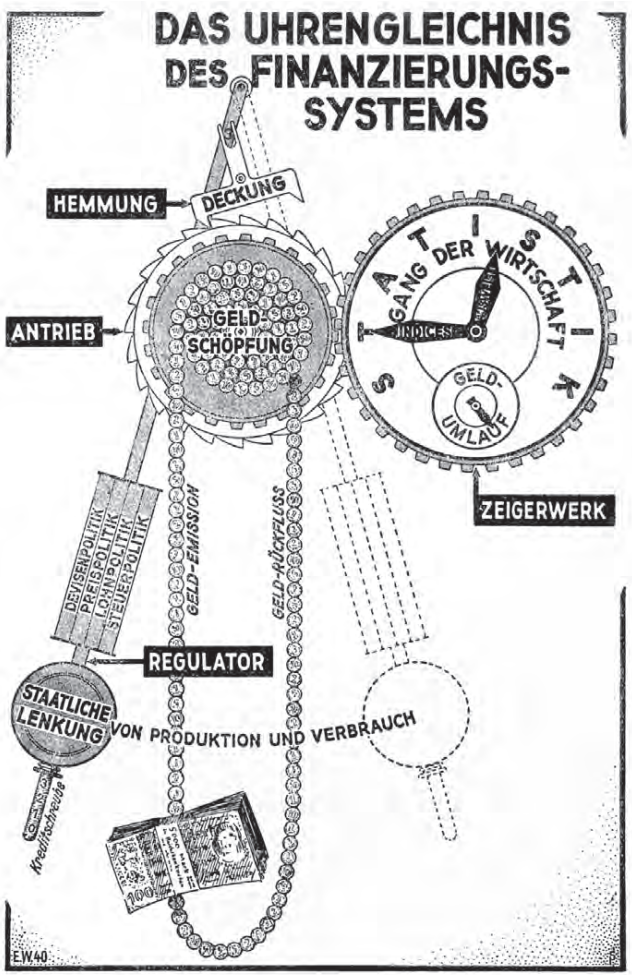


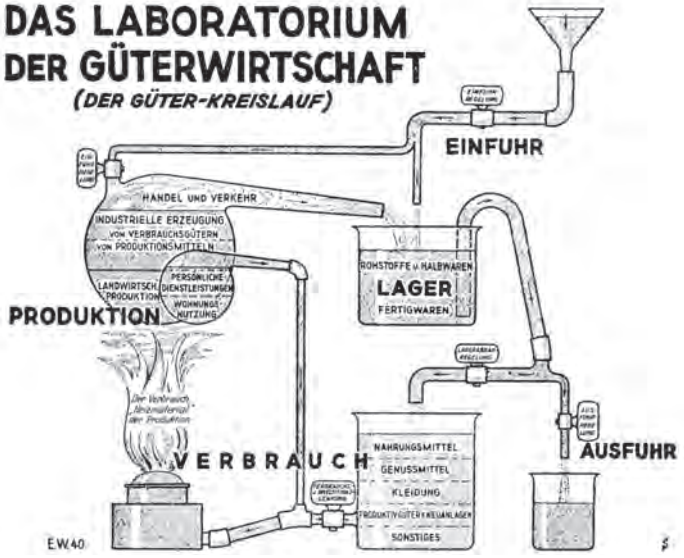


Wagemann (1930, 1932)

Dynamic Systems Analysis and Policy-Oriented Rsearch

The Weimar Republic sponsored efforts in empirical, policy-oriented economic research, on a scale that was unprecedented in German history and without parallel in contemporary Western Europe. At the heart of this research program was the Reich's Statistical Office and the creation, in 1925, of an Institute of Business-Cycle Research in Berlin with Ernst Wagemann as its founding director until his dismissal in 1933. While partly inspired by similar institutions in the US, in particular the National Bureau for Economic Research and the Bureau of Foreign and Domestic Commerce (a predecessor agency of the Bureau for Economic Analysis under the Hoover Administration), Wagemann's Institute was unique in that it engaged a broad spectrum of some of the Weimar Republic's least orthodox economists. Indeed, much in contrast to his North American counterparts, Wagemann's own work was a critical component of the Institute's systematic willingness to consider heterodox perspectives in the policy-making process.





Wagemann (1940)

The Circular Flows in the History of Economic Thought

"L'Air du Temps" and Proto-Keynesianism

Geldschöpfung und Wirtschaftskreislauf by Carl Föhl was published in Munich in the same year as Keynes' *The General Theory of Employment, Interest and Money* (1936). Produced independently of the work of Keynes, Föhl's contribution to economics remained largely unacknowledged in the Anglo-Saxon literature, even by economic historians. Thus, although the authors were working quite independently except for the general literary background, it is astonishing to what extent the two works in all essentials arrive at the same results. But it is equally astonishing that the fate of the two books has been just as different as the content is similar.

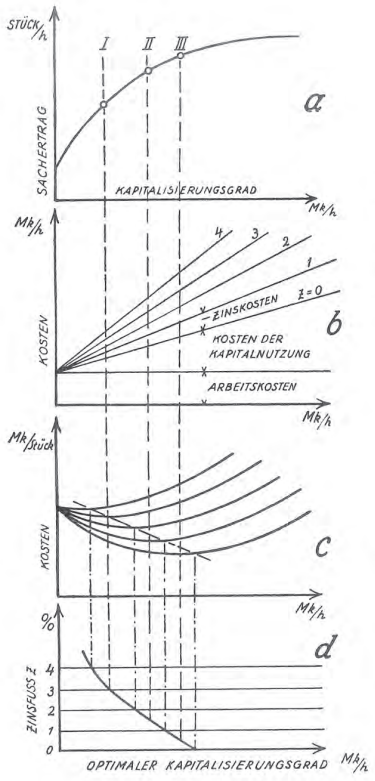


Abb. 35

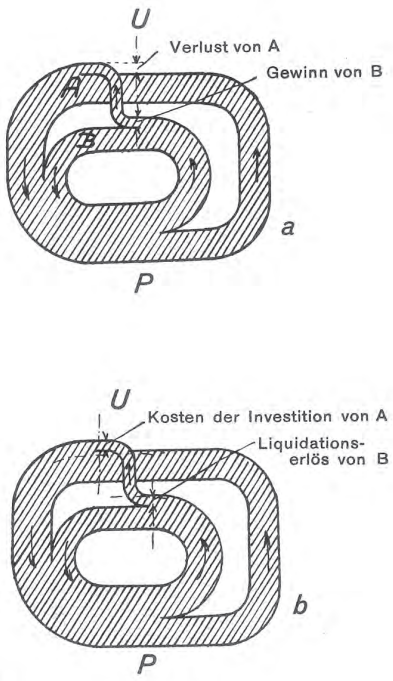


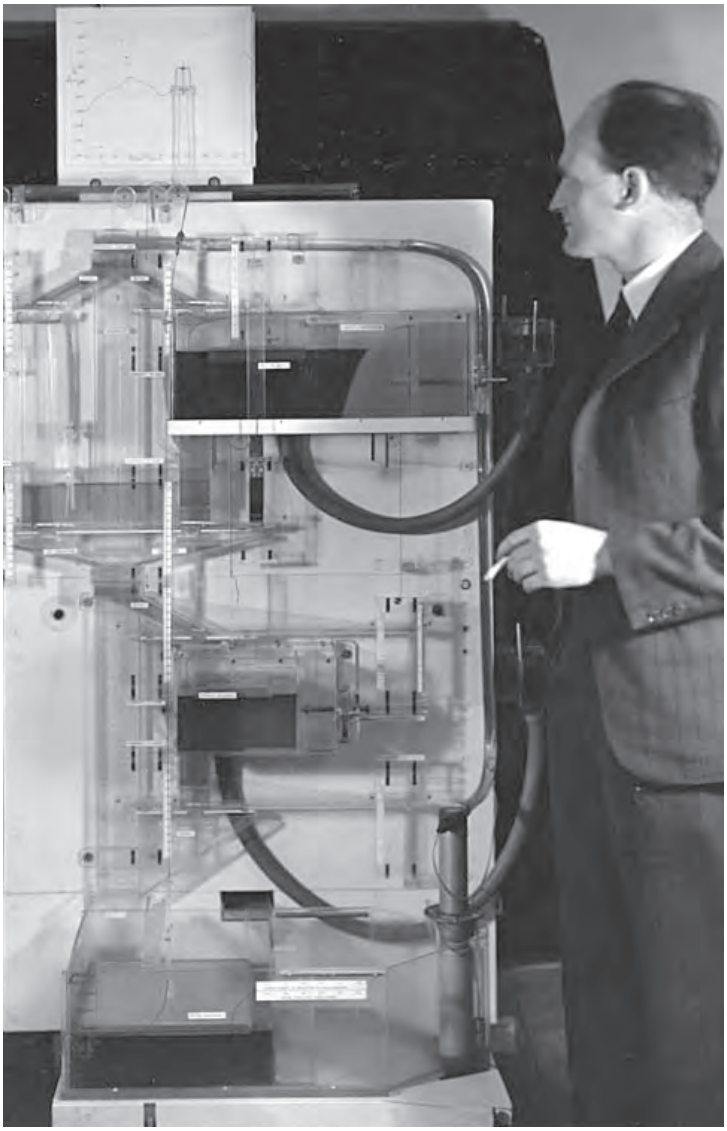
Abb. 36

Föhl (1937)

The Circular Flows in the History of Economic Thought

"Machine Dreams"

By the 1950 and the arrival of the Neoclassical Synthesis, notions of the economy as a machine dominate the mainstream of economic theorizing. Famously, William Phillips' (1914-1975) pioneering efforts to demonstrate the role of circuits of flows and their corresponding economic stocks culminated in the construction of a fully-working, mechanical model of the macroeconomy, the MONIAC (Monetary National Income Analogue Computer), assembled from the spare parts of WWII fighter airplanes.

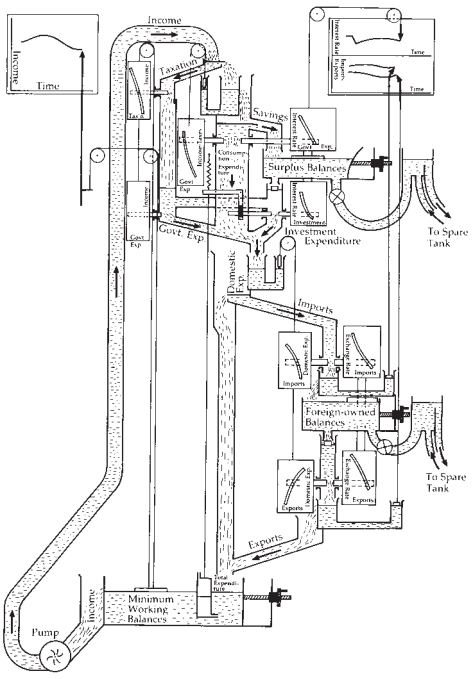


Ng and Wright (2007)

"Machine Dreams"

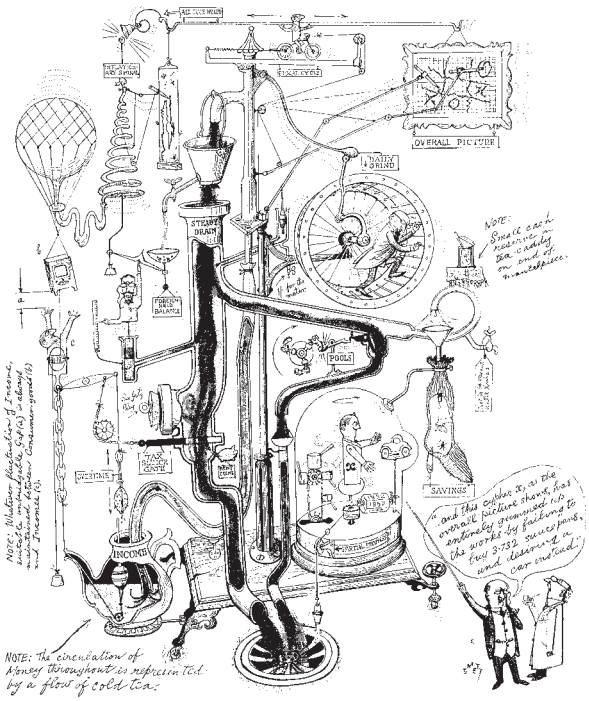
"The supposed relationship between money supply and inflation falls down because the variables are not constituted or linked in a mechanistic way. It would be better to conceive of the financial system not as a machine but as an organism, which includes automatic reflexes, processes of substitution and immune systems which frustrate intervention and control. Just as in the human body, remedial action is possible, but it is more complex and difficult as a mechanistic theory would suggest." (Hodgson 1993)

G. F. THOMPSON



'Phillips Machine' in more detail. Source: N.Barr 'The Phillips Machine' *LSE Quarterly*, Vol.2, No.2

ENCOUNTERING ECONOMICS AND ACCOUNTING



MACHINE DESIGNED TO SHOW THE WORKING OF THE ECONOMIC SYSTEM

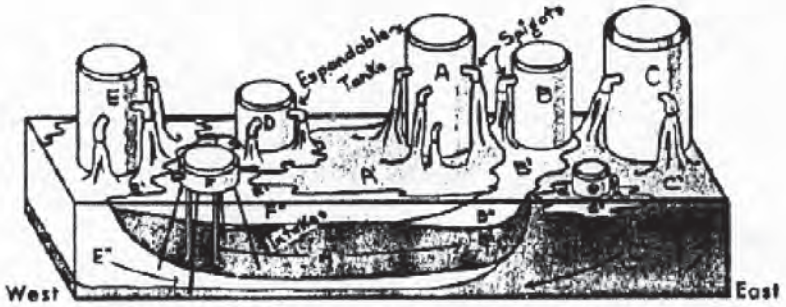
Barr (1988), Thompson (1998)

The Circular Flows in the History of Economic Thought

Regional Money and Finance

Financialisation is a process whereby financial markets and financial institutions gain greater influence over economic policy and economic outcomes. While financialisation transforms the functioning of economic systems at both the macro and micro levels, this topic has traditionally been deemed beyond the purview of regional economic analysis. The regional science literature has thus by and large neglected how developments in the financial system interact with the local and regional elements of the real economy, i.e. the part of the economy that is concerned with actually producing goods and services. According to the dominant economic paradigm, money and financial interrelations are not relevant to the determination of equilibrium conditions in the real economy. An implication of these constructs in mainstream economics is that money and finance are "neutral". This implies that there are no explicit monetary and financial linkages that are theorized as affecting the real economy. While conventional theory permits transitory effects such that money may not be neutral in the short run, the condition of monetary neutrality implies that money is simply a veil in the long run. Consequently, these dominant models imply that real and nominal variables can be analysed separately, a condition that economists refer to as the classical dichotomy.

The Financial Agglomeration - Spatial Impact



Basin - Spatial Financial Economy of the United States

Tanks - Metropolitan Areas

Liquid - Commercial Bank Deposits

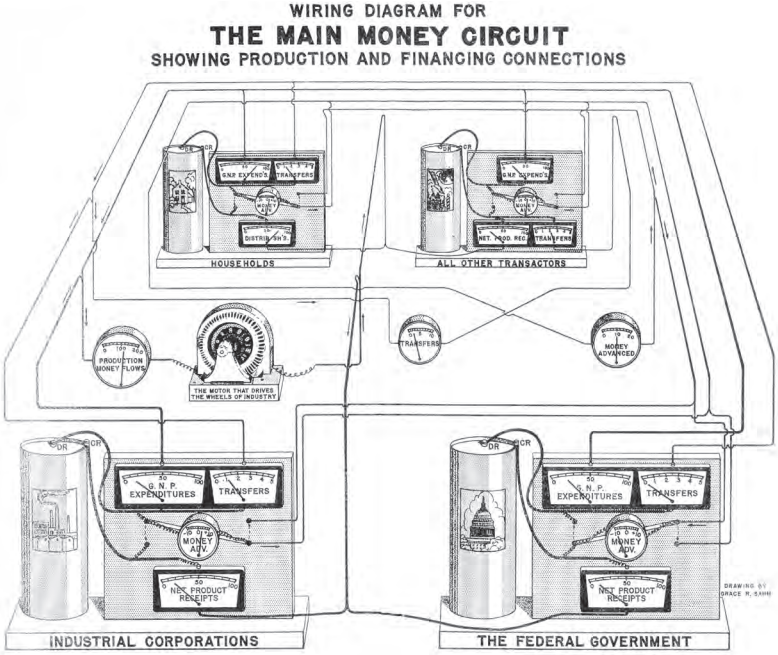
Fig. 28 -- This original model by the author depicts the theory proposed by this study that the spatial financial impact of a place is dependent upon the nearness and financial size of other places and the structure of the economies of the places. A detailed explanation of the figure is provided in the text. While no similar models have been found by the author, the idea of picturing a flow model developed from studies of theoretical diagrams by Zimmermann, Losch, and Isard. In explaining economic processes, flow diagrams, such as in Samuelson, are commonly used. Walter Isard, Location and Space-Economy, (New York, The Technology Press of Massachusetts Institute of Technology and John Wiley & Sons, Inc., 1956), see especially pp. 254-287. August Losch, The Economics of Location, (New Haven, Yale University Press, 1954). Paul A. Samuelson, Economics An Introductory Analysis, (New York, McGraw-Hill Book Company, Inc., 1958), see especially pp. 182,231. Erich W. Zimmermann, World Resources and Industries, (New York, Harper & Brothers Publishers, 1951).

Kircher (1962)

The Circular Flows in the History of Economic Thought

The "Flow-of-Funds" Approach to Social Accounting

After World War II, money-flows accounting was expected to be as popular with the next generation of economists as the GNP accounts were with the current one. The accounting framework, in its barest essentials, is illustrated by a two-sector model of the economy constrained by two sector and two transaction identities. Capital expenditures of the two sectors equal saving and total increases in financial assets equal increases in financial liabilities. In the United States, the flow of funds accounts are prepared by the Board of Governors of the Federal Reserve System, and published quarterly in a publication called the "Z.1 Statistical Release". The flow of funds accounts follow naturally from double-entry bookkeeping whereby every financial asset is also a liability of some domestic or foreign human entity. A fundamental fact about any economic sector is its balance sheet, a breakdown of its physical and financial assets, and of its liabilities. The only physical assets noted in the flow of funds accounts are those of private nonfinancial sectors.



Copeland (1952)

The Circular Flows in the History of Economic Thought

Heterodox Approaches

According to Marxian analysis of the dynamics of capitalist urbanization, capital flows through at least three circuits (investment in basic commodity production, investment in fixed capital and the consumption fund, and social expenditures that enhance labour productivity). A different typology of circuits is developed in Bieri (2010), where the first circuit explores the role of market-based regional linkages, with a particular focus on the mechanics of regional specialisation and local economic development. The second circuit is dedicated to the study of nonmarket interactions, in particular the growing importance of nonmarket goods as a driver of economic activity. The linkage between sustainability and urban quality of life constitutes a central component of this research. The third circuit deals with financial or monetary linkages and their impacts on local economic activity. This research examines the role of the capital-land nexus and of financial flows in regional development, specifically focussing on the spatial non-neutrality of money.

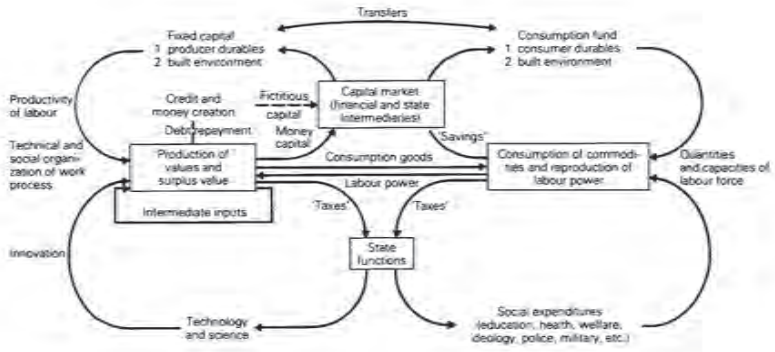
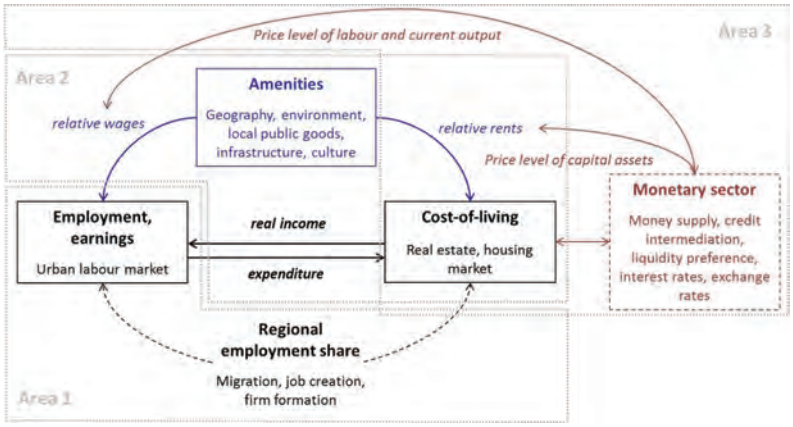


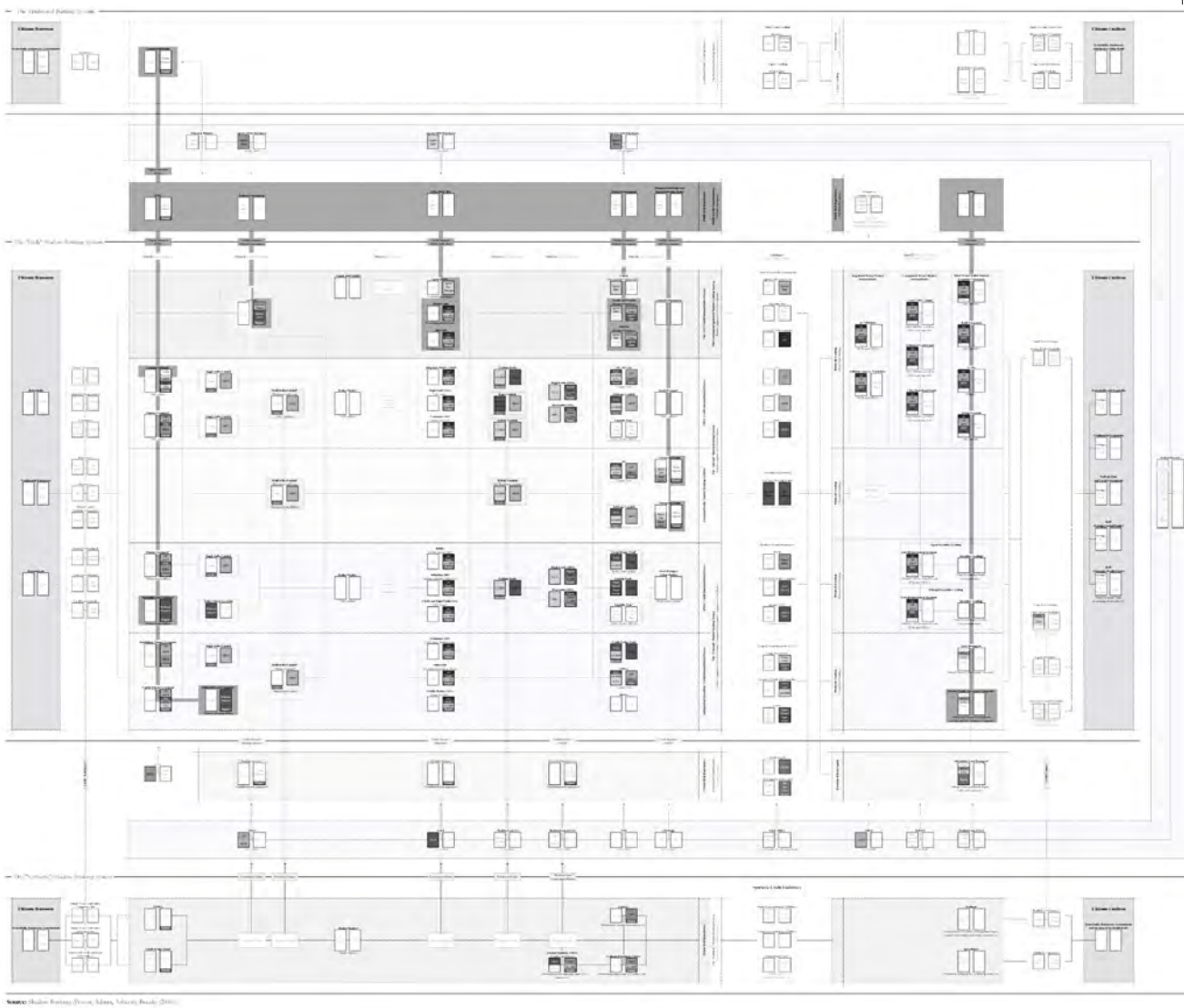
Fig. 3. The structure of relations between the primary, secondary, and tertiary circuits of capital



Harvey (1982), Bieri (2010)

Rise of the "Shadow Banking" System

Shadow banking activities consist of credit, maturity, and liquidity transformation that take place without direct and explicit access to public sources of liquidity or credit backstops. These activities are conducted by specialized financial intermediaries called "shadow banks", which are bound together along an intermediation chain known as the shadow banking system. In the shadow banking system, credit is intermediated through a wide range of securitization and secured funding techniques, including asset-backed commercial paper (CP), asset-backed securities (ABS), collateralized debt obligations (CDOs), and repurchase agreements (repos). Prior to the 2007-09 financial crisis, the shadow banking system provided credit by issuing liquid, short-term liabilities against risky, long-term, and often opaque assets.



Pozsar et al. (2013)

Money, Credit, and Urban Form

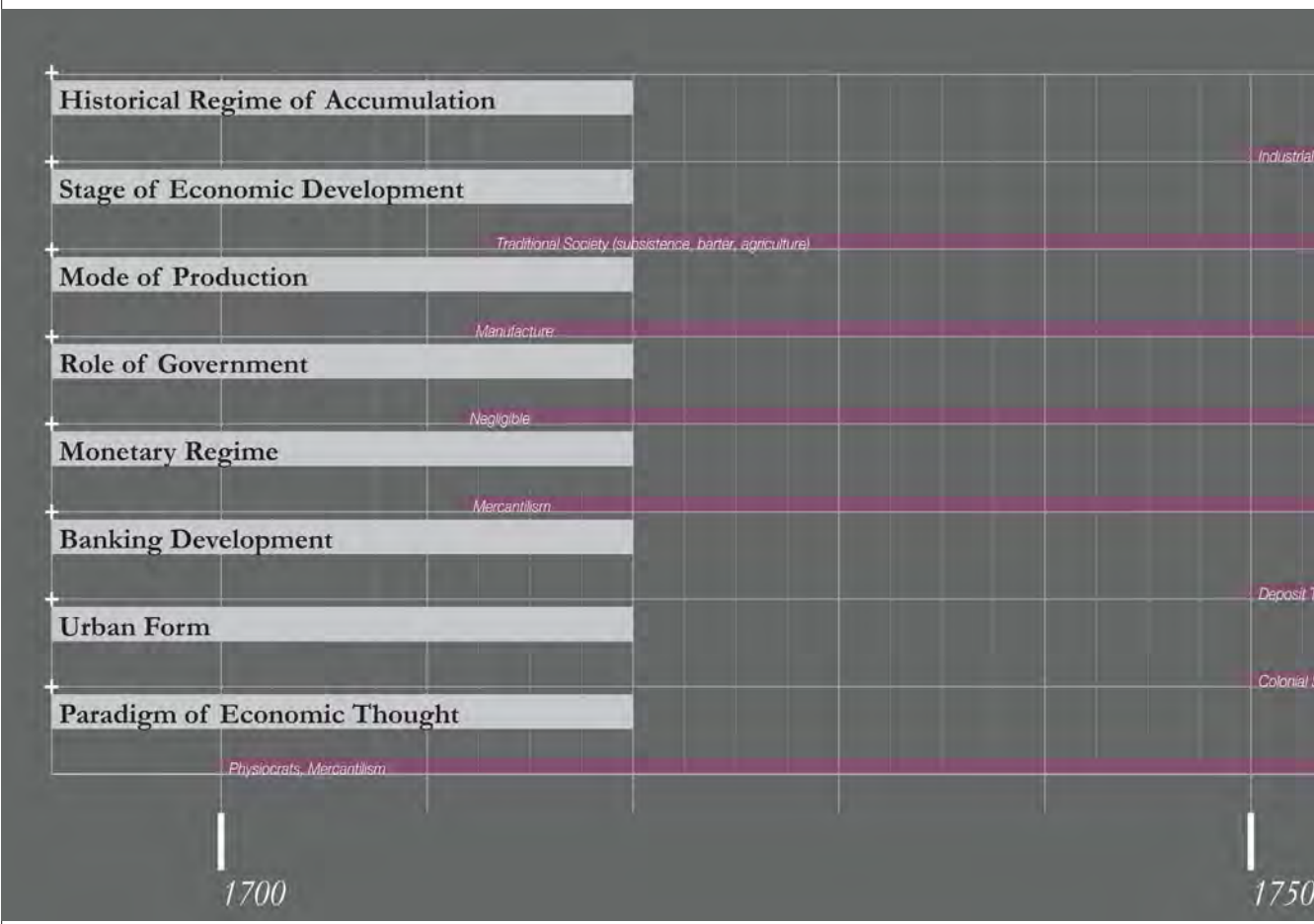
A central vision of this research is to establish a linkage between two related, but hitherto disconnected social science imaginaries of "circular flows" – the circuitry of the macroeconomy on the one hand, and the spatial circles of urban development on the other.

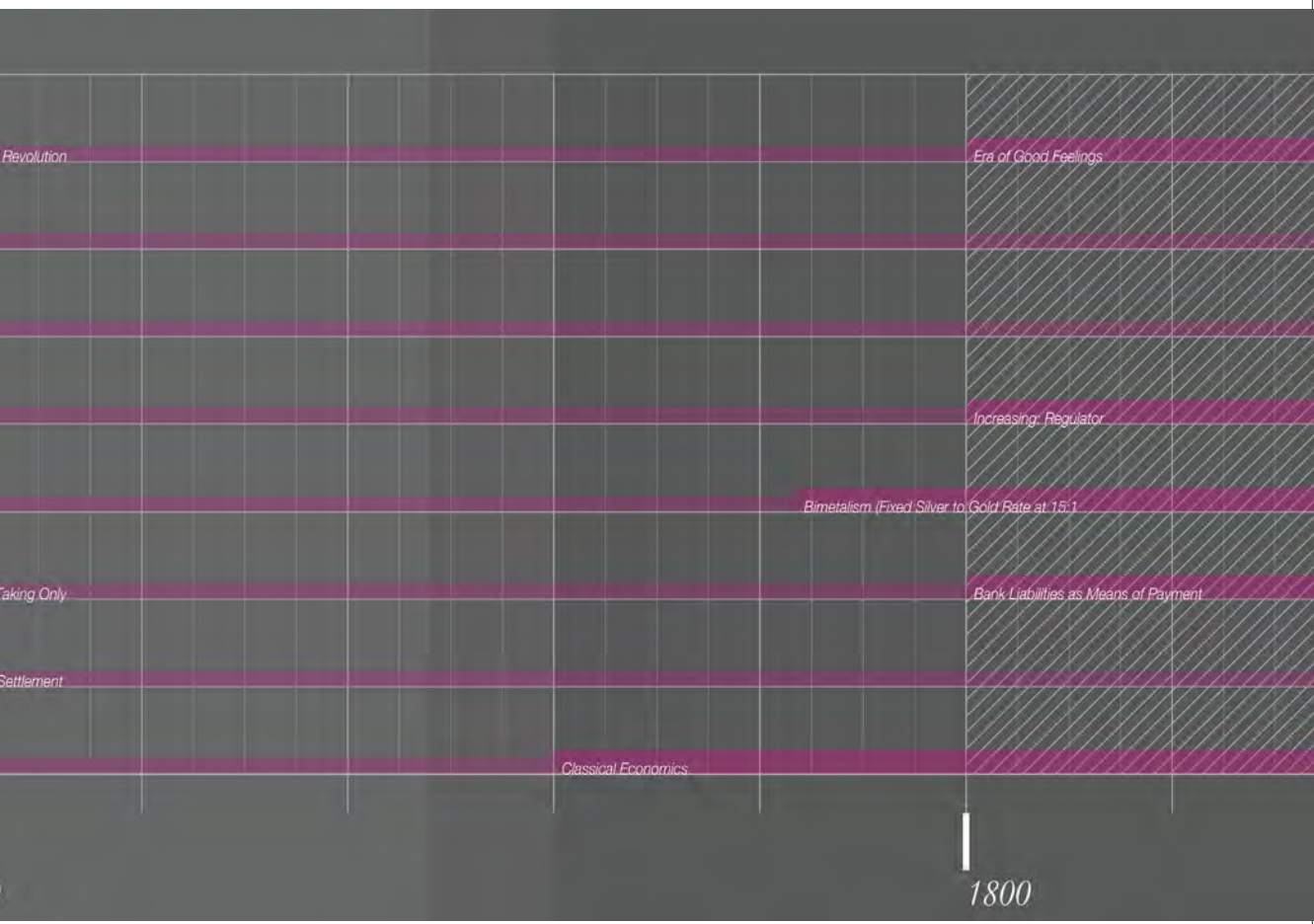
With regard to the former, our research stresses that the distinction between the sphere of production, distribution and consumption (the "real sector") and the sphere of money, credit and banking (the "monetary sector") forms a unifying element to a broad spectrum of schools of economic thought. Throughout the history of economic thought, ideological differences between different economic paradigms have hinged on the precise nature of the dichotomous relationship between the real and monetary sectors. Most prominently, perhaps, the orthodox canon of neoclassical economics treats the spheres of money and production as analytically distinct, and thus the spatial consequences of money are generally not considered. In the language of the economic mainstream, money is neutral – also with respect to space (Friedman and Schwartz 1963).

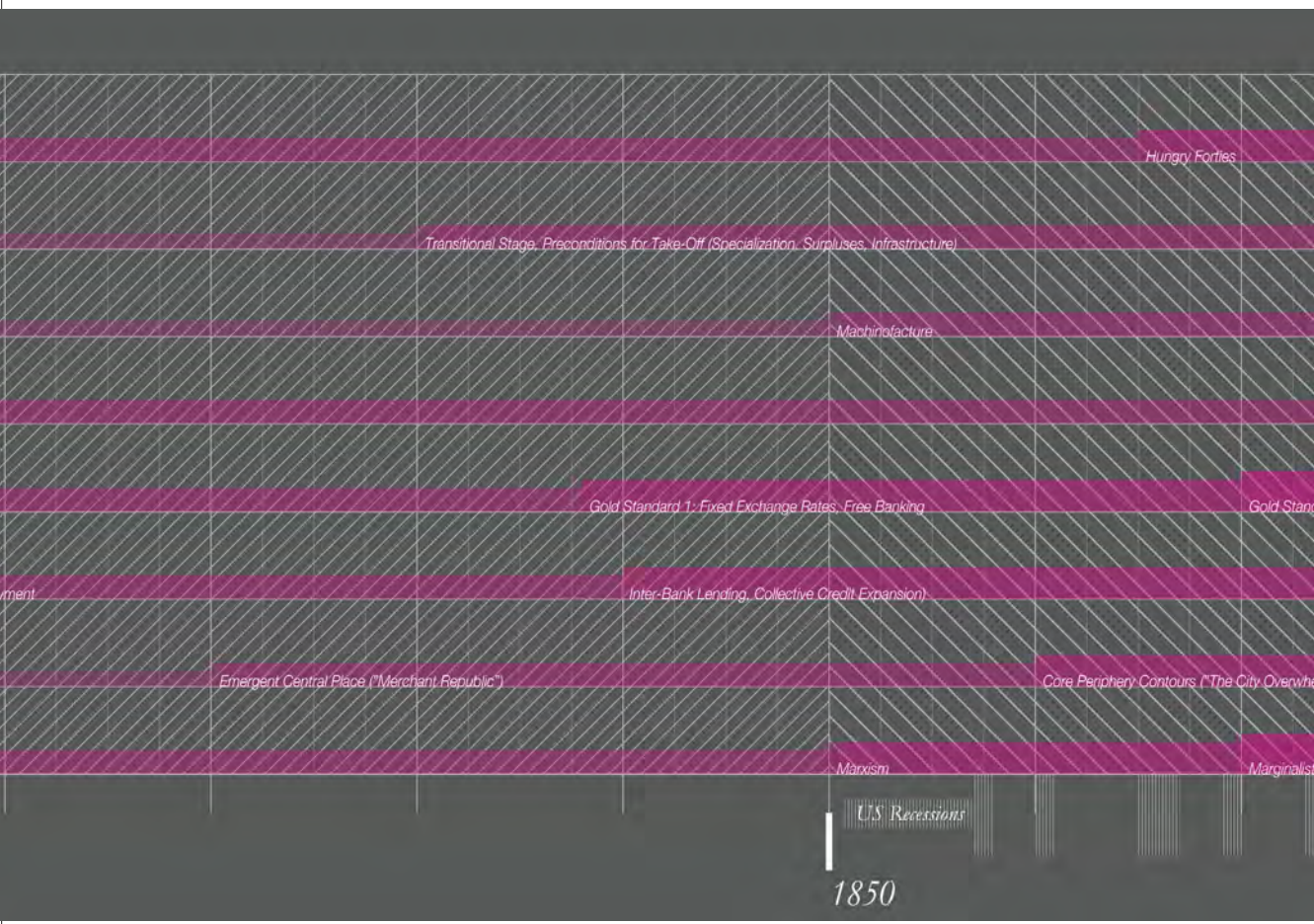
On the opposing end of the ideological spectrum, Marxist theories of urban development recognize that capitalism has to urbanize to reproduce itself, thus suggesting a link between capital accumulation and space (Lefebvre 1970; Harvey 1985). Heterodox monetary theories, on the other hand – from the German Historical School to Post-Keynesianism, most prominently perhaps in the work of Joseph Schumpeter (1939) and in the work of his student Hyman Minsky (1977; 1993) – emphasizes the importance of the financial sector as

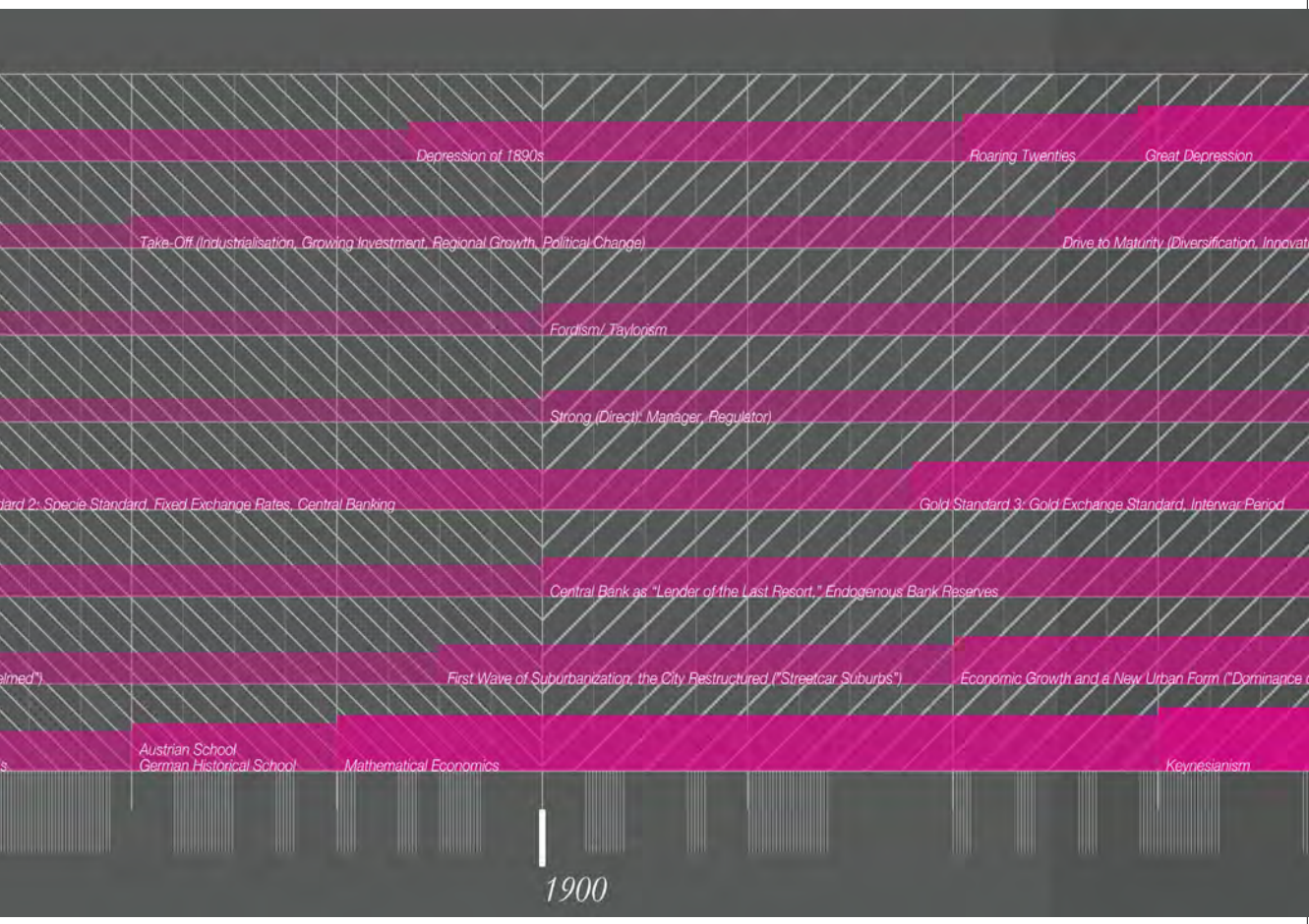
a source of fluctuations in the real sector, thus opening up a pathway for the non-neutrality of money. At the same time, however, these schools of thought remain largely aspatial, thus without immediate significance for understanding the process of urbanization under capitalism.

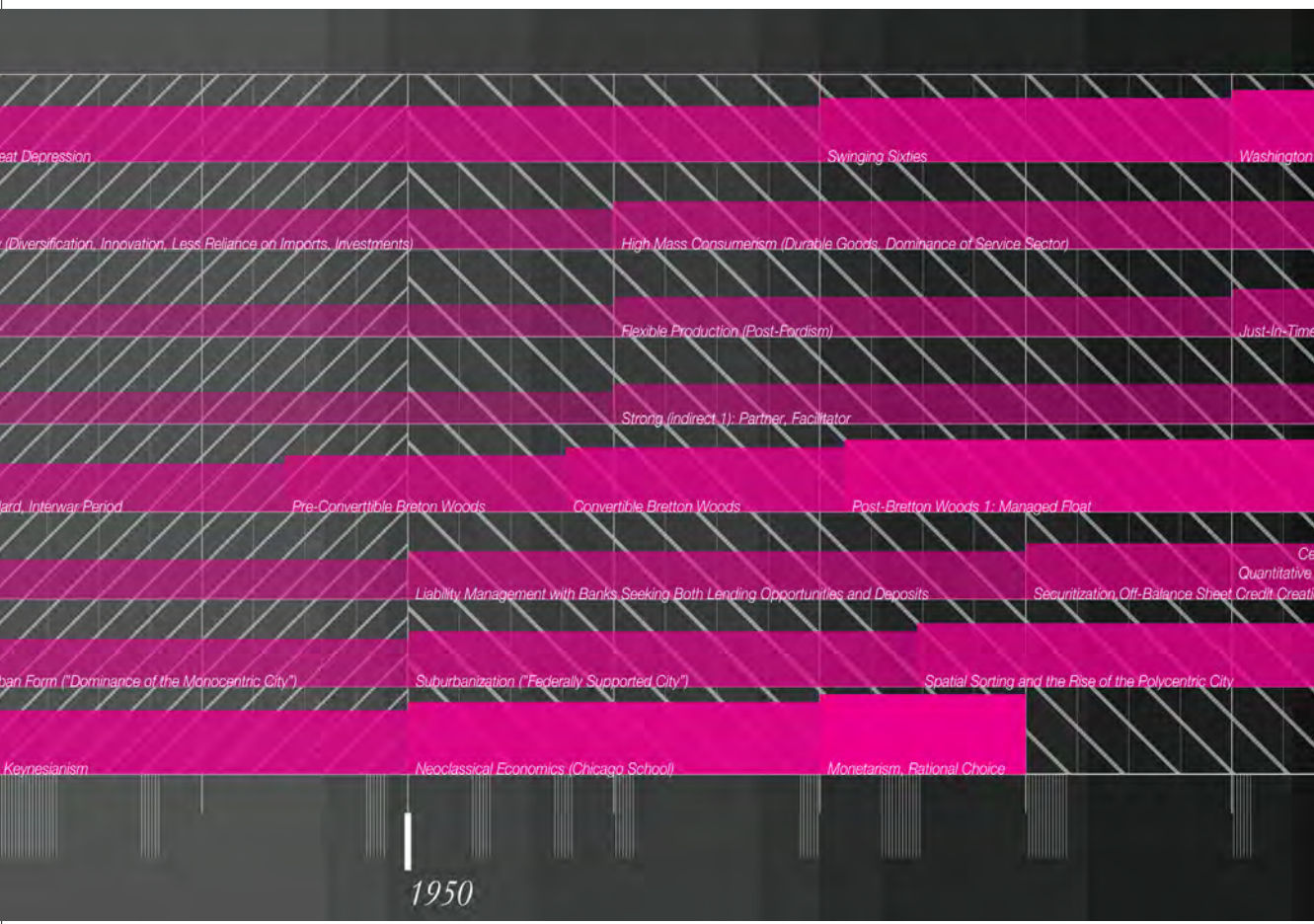
The central premise for our research is to examine the trajectory of urbanization under capitalism and the evolutionary development of the financial system as a joint historical process. Paying particular attention to the spatial consequences of these developments in the United States since the 1830s, I argue that a general theory of urban rise and decline must establish explicit linkages between money, credit and banking and urban spatial structure. In particular, this research develops the argument that money and finance are non-neutral with regard to space, principally because the institutional arrangements of finance matter for how the built environment evolves.

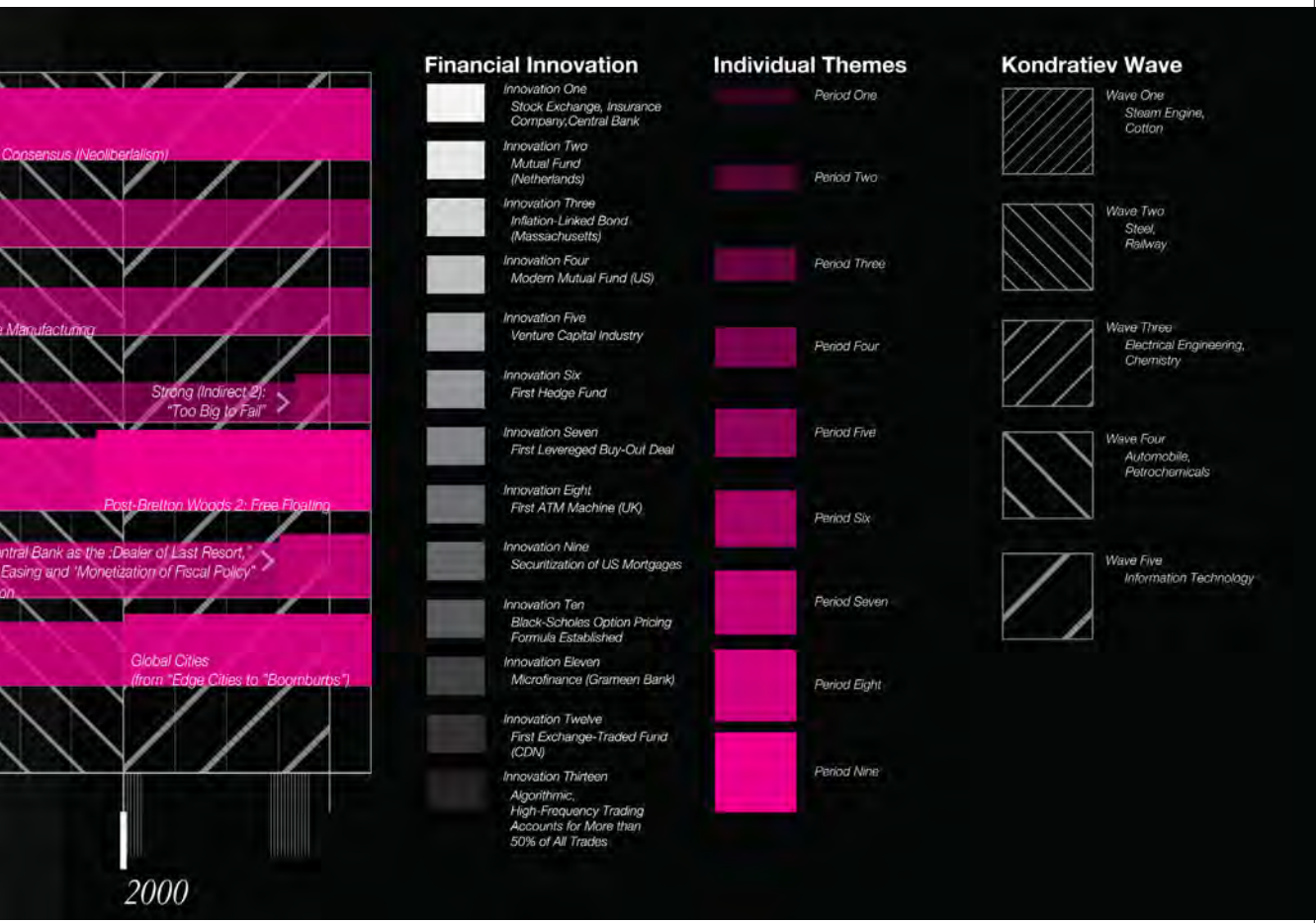

Historical Regime of Accumulation
Stage of Economic Development
Traditional Society (subsistence, barter, agriculture)
Industrial
Mode of Production
Manufacture
Role of Government
Negligible
Monetary Regime
Mercantilism
Banking Development
Deposit
Urban Form
Colonial
Paradigm of Economic Thought
Physiocrats, Mercantilism
1700
1750


Revolution
Era of Good Feelings
Increasing: Regulator
Bimetalism (Fixed Silver to Gold Rate at 15:1
Taking Only
Bank Liabilities as Means of Payment
Settlement
Classical Economics
1800


Hungry Forties
Transitional Stage. Preconditions for Take-Off (Specialization. Surpluses. Infrastructure)
Machinofacture
Gold Standard 1: Fixed Exchange Rates. Free Banking
Inter-Bank Lending. Collective Credit Expansion)
Emergent Central Place ("Merchant Republic")
Marxism
U.S. Recessions
1850

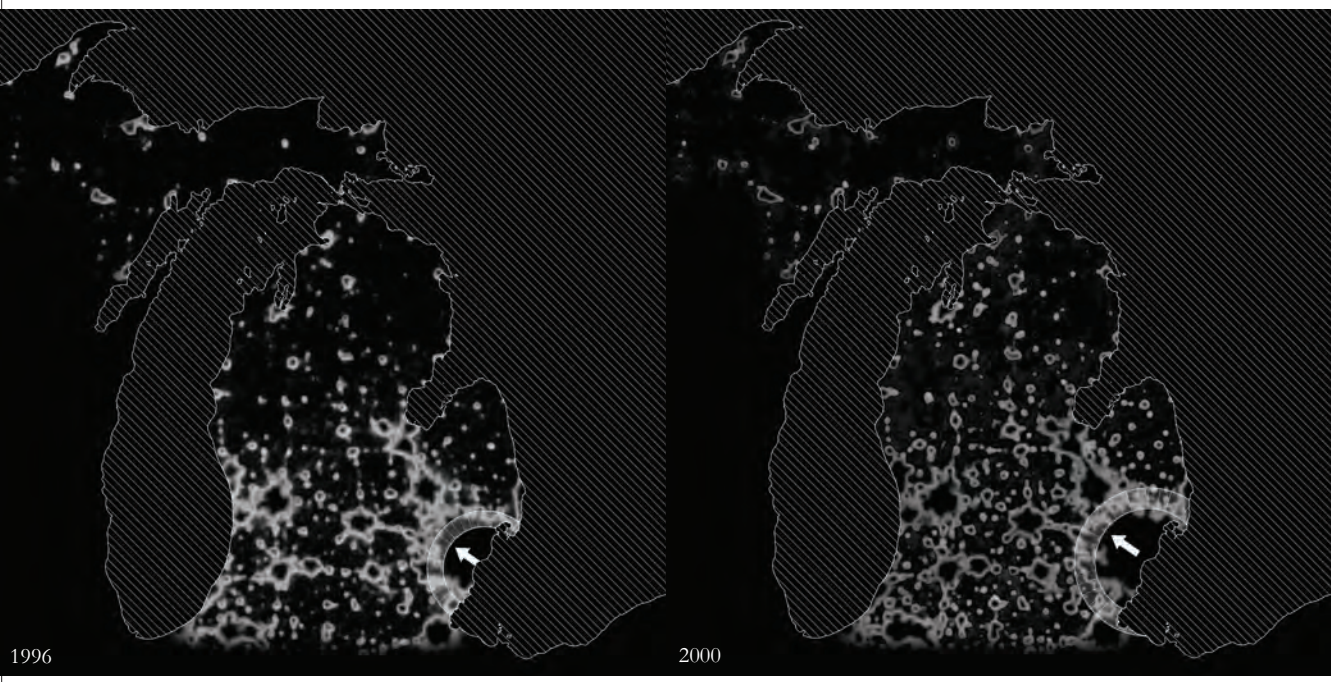

Depression of 1890s
Roaring Twenties
Great Depression
Take-Off (Industrialisation, Growing Investment, Regional Growth, Political Change)
Drive to Maturity (Diversification, Innovat
Fordism/ Taylorism
Strong (Direct): Manager, Regulator
dard 2: Specie Standard, Fixed Exchange Rates, Central Banking
Gold Standard 3: Gold Exchange Standard, Interwar Period
Central Bank as "Lender of the Last Resort," Endogenous Bank Reserves
elmed")
First Wave of Suburbanization; the City Restructured ("Streetcar Suburbs")
Economic Growth and a New Urban Form ("Dominance
Austrian School
German Historical School
Mathematical Economics
Keynesianism
1900


eat Depression
Swinging Sixties
Washington
(Diversification, Innovation, Less Reliance on Imports, Investments)
High Mass Consumerism (Durable Goods, Dominance of Service Sector)
Flexible Production (Post-Fordism)
Just-In-Time
Strong (indirect 1): Partner, Facilitator
lard, Interwar Period
Pre-Convertible Breton Woods
Convertible Bretton Woods
Post-Bretton Woods 1: Managed Float
Ce
Quantitative
Liability Management with Banks Seeking Both Lending Opportunities and Deposits
Securitization,Off-Balance Sheet Credit Creati
ban Form ("Dominance of the Monocentric City")
Suburbanization ("Federally Supported City")
Spatial Sorting and the Rise of the Polycentric City
Keynesianism
Neoclassical Economics (Chicago School)
Monetarism, Rational Choice
1950


Consensus (Neoliberlalism)
Manufacturing
Strong (Indirect 2):
"Too Big to Fail"
Post-Bretton Woods 2: Free Floating
ntral Bank as the :Dealer of Last Resort,"
Easing and "Monetization of Fiscal Policy"
on
Global Cities
(from "Edge Cities to "Boomburbs")
2000
Financial Innovation
Innovation One
Stock Exchange, Insurance Company;Central Bank
Innovation Two
Mutual Fund (Netherlands)
Innovation Three
Inflation-Linked Bond (Massachusetts)
Innovation Four
Modern Mutual Fund (US)
Innovation Five
Venture Capital Industry
Innovation Six
First Hedge Fund
Innovation Seven
First Levereged Buy-Out Deal
Innovation Eight
First ATM Machine (UK)
Innovation Nine
Securitization of US Mortgages
Innovation Ten
Black-Scholes Option Pricing Formula Established
Innovation Eleven
Microfinance (Grameen Bank)
Innovation Twelve
First Exchange-Traded Fund (CDN)
Innovation Thirteen
Algorithmic, High-Frequency Trading Accounts for More than 50% of All Trades
Individual Themes
Period One
Period Two
Period Three
Period Four
Period Five
Period Six
Period Seven
Period Eight
Period Nine
Kondratiev Wave
Wave One
Steam Engine, Cotton
Wave Two
Steel, Railway
Wave Three
Electrical Engineering, Chemistry
Wave Four
Automobile, Petrochemicals
Wave Five
Information Technology

Spaces of Speculation

Our project investigates how the evolution of finance and the process of urbanization concurrently give rise to different notions of cyclical risk that are coupled to metropolitan form. We illustrate the spatial consequences of the political economy of the U.S. housing finance system, paying particular attention to the historical process by which institutional risk allocation failures have shaped urban development in Detroit. The suburbs arose, in part, because building on the city's edge was deemed risk-free, cheap and, perhaps, a natural extension of the frontier mentality that is intellectually anchored by the convex bid-rent curves that emanate from the elegant shorthand of the monocentric city model. But the devastation wrought by on-going foreclosures across large swaths of suburbia are sore reminders that building on the edge is anything but risk-free. Our exploratory investigation illustrates how the increasing financialization of real estate gives rise to new forms of systemic risk, which in turn have little understood consequences for the spatial structure of cities. Rather than a state of exception, we argue that the recent upheavals in the housing market must be viewed as part of a macrohistory of crisis-based financial instability, the causes of which alternatingly emanate from the real economy or the financial system.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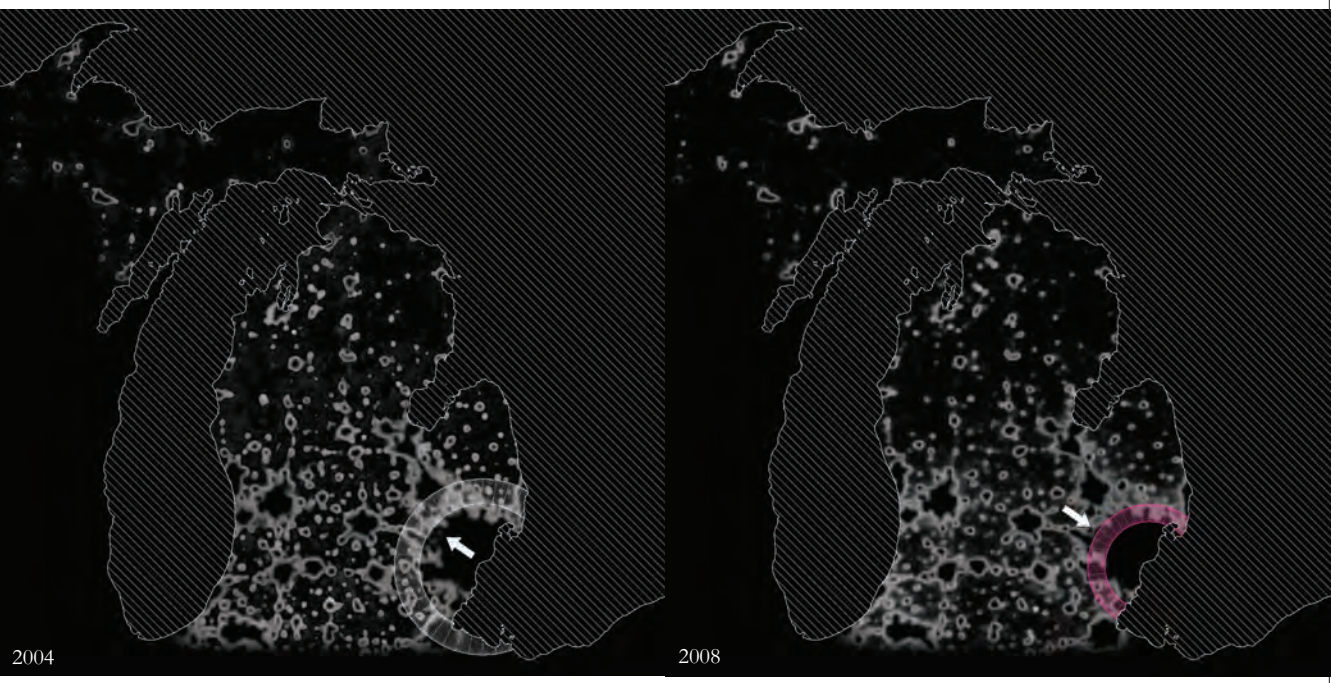
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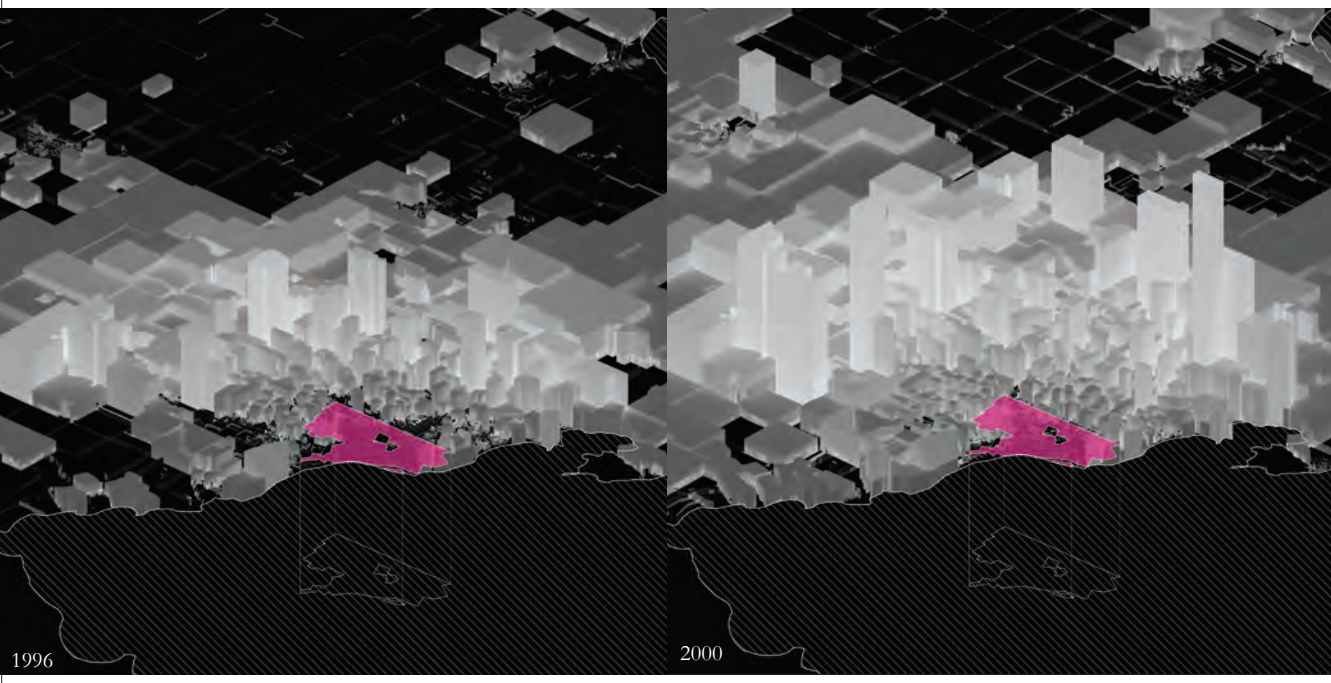
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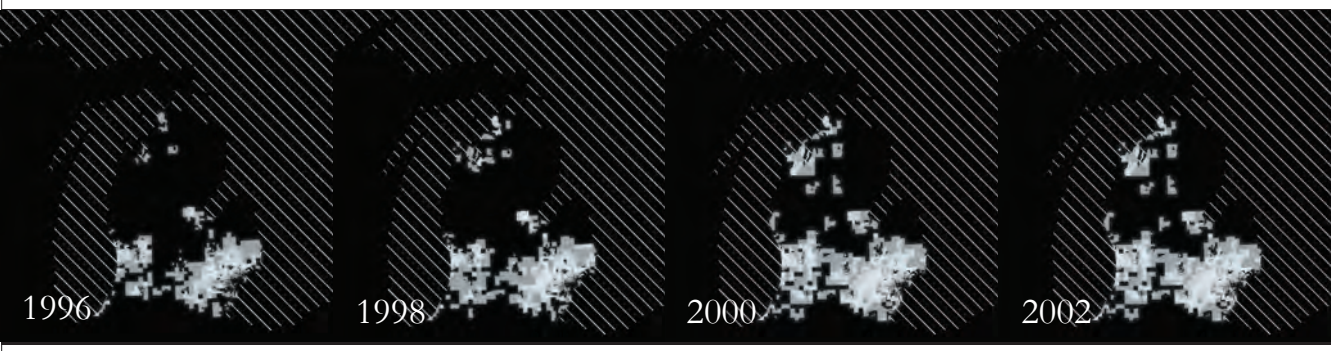
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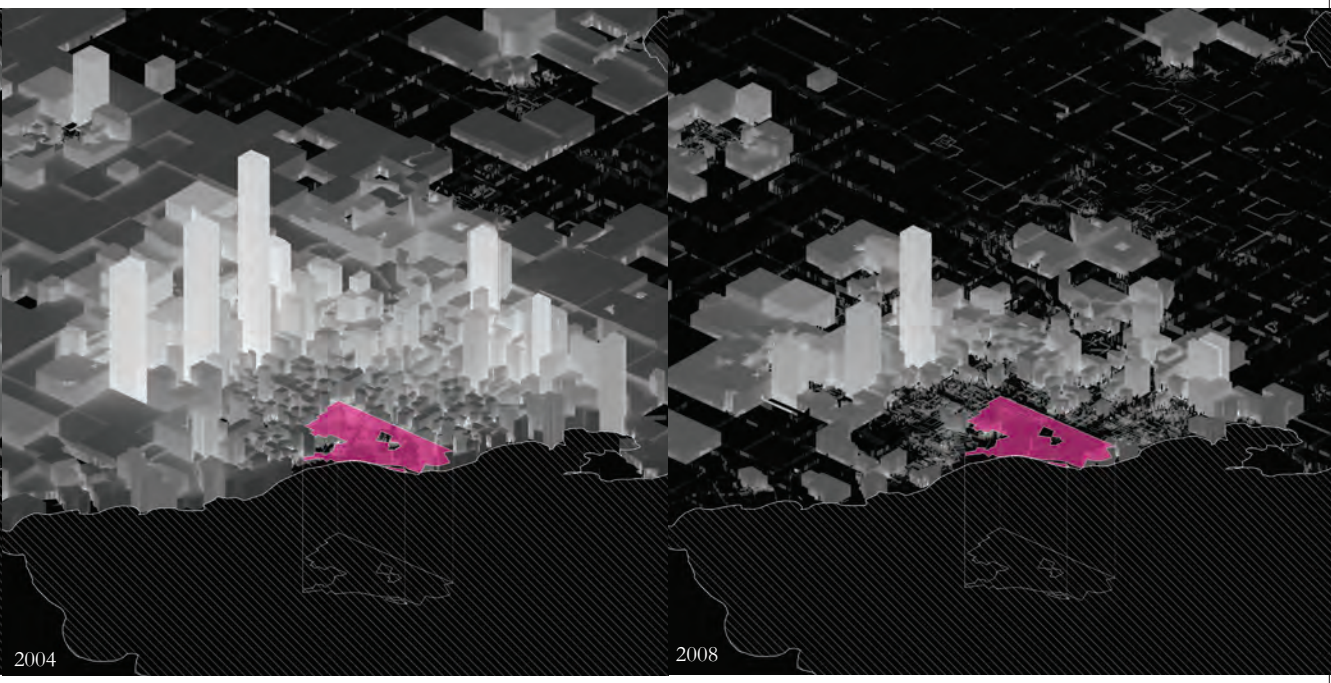
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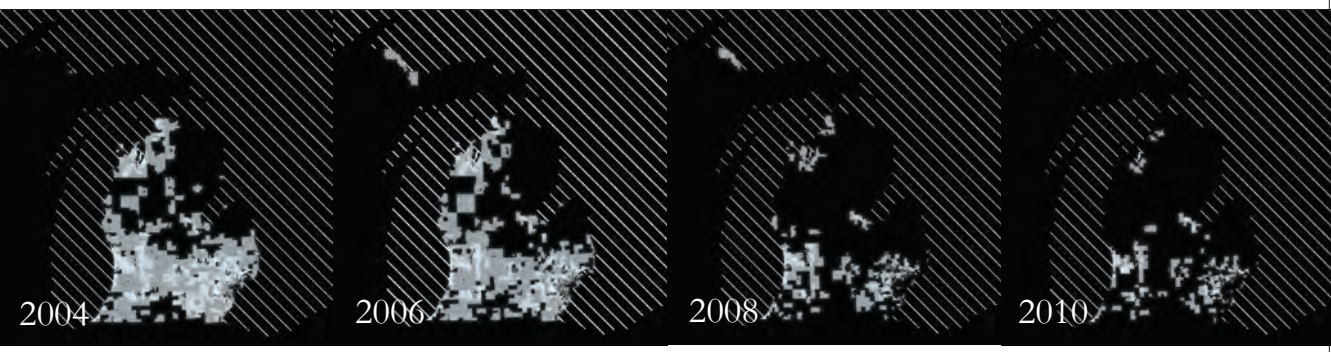
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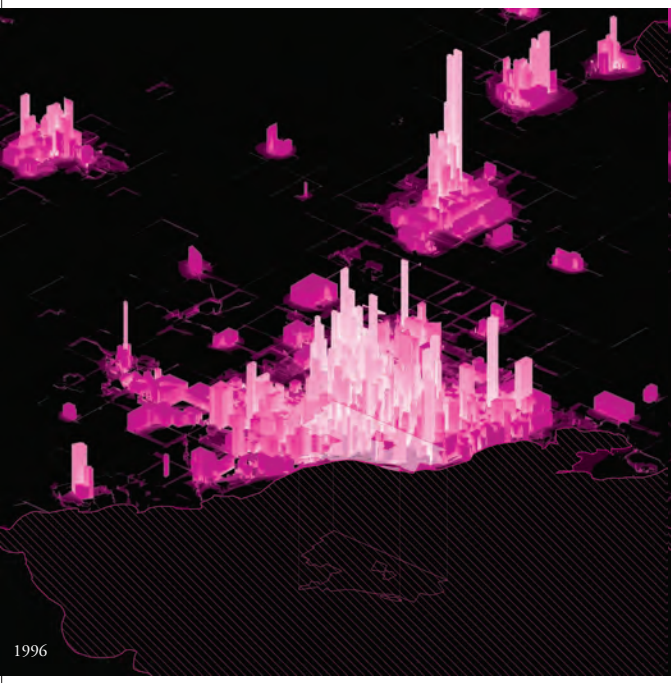
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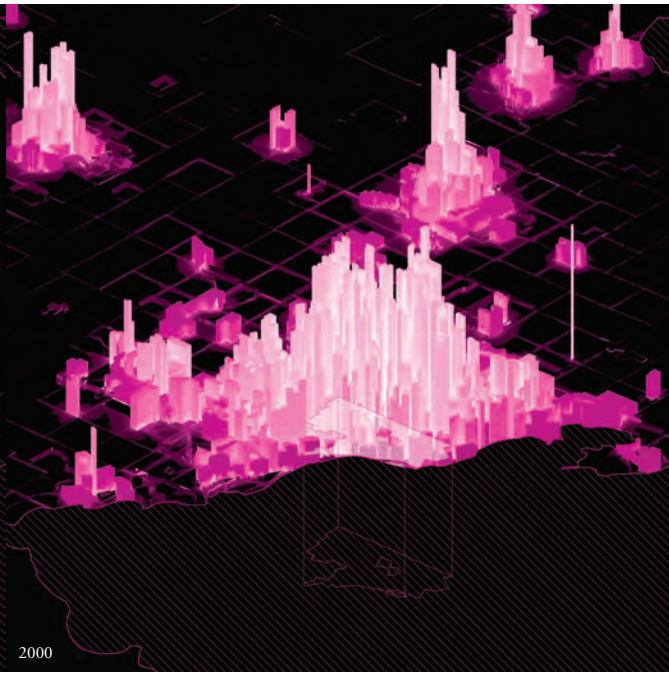
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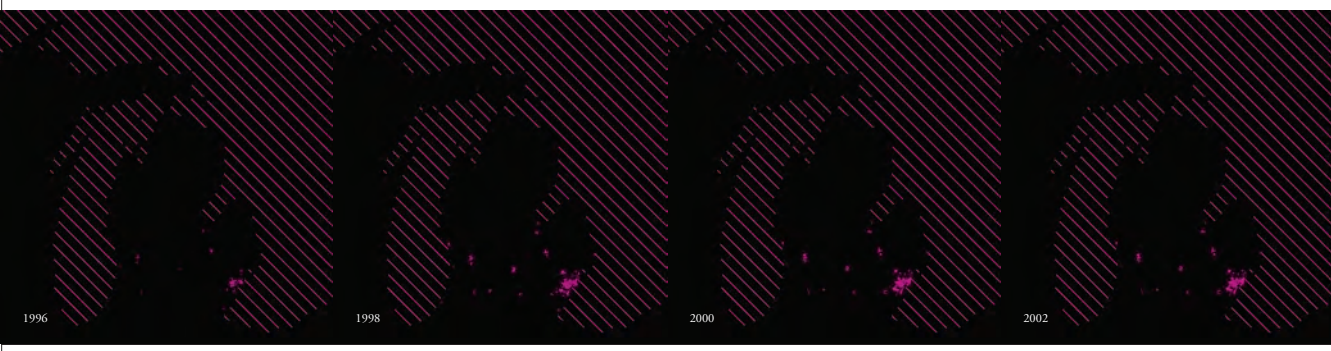
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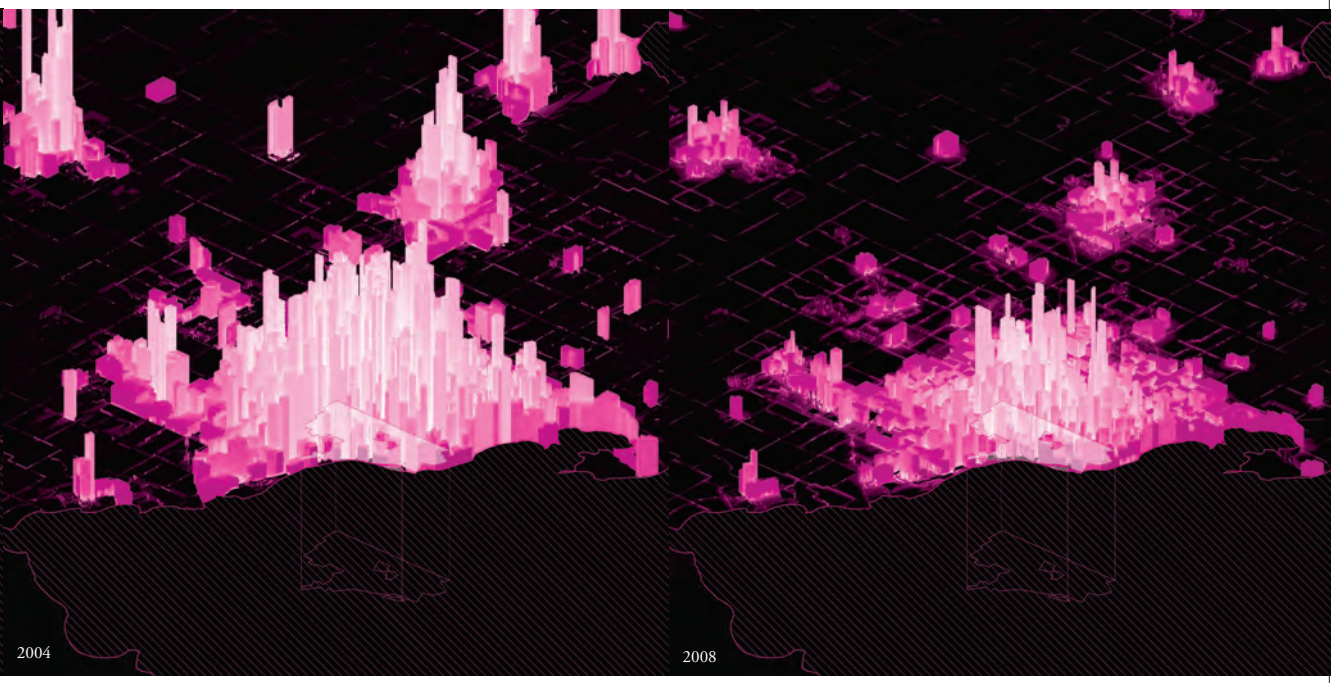
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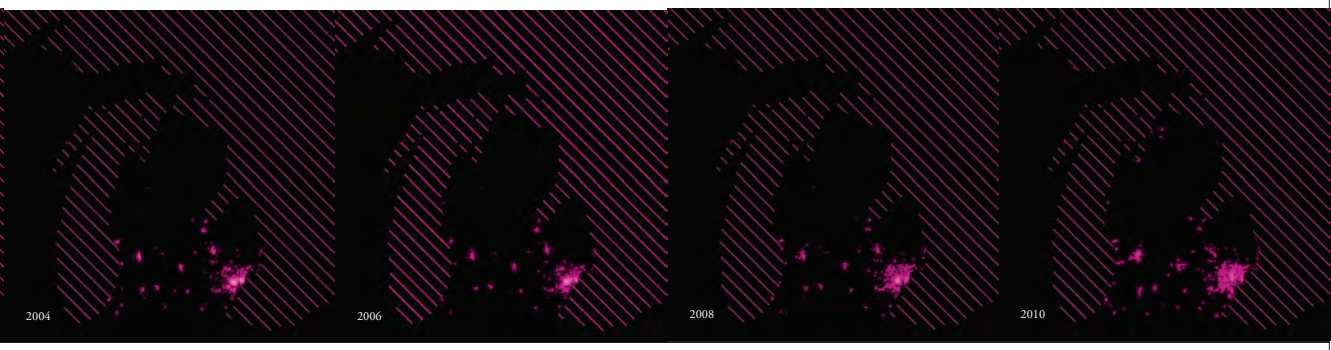
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Spaces of Speculation

The figures on the preceding pages show first the total value of mortgage originations intended for home purchase across the urban hierarchy for Detroit. Spanning the period from the beginning of the Great Housing Boom in 1996 to the Housing Bust in 2008, the flow of mortgage credit to the suburbs both intensifies, spreads and contracts across the economy cycle. The extruded columns are census tracts with height and shading corresponding to the total volume of credit per spatial unit. Detroit's city boundaries are highlighted in magenta. By contrast, the total number of residential mortgage denials are almost exclusively concentrated in the inner city areas of Detroit, Flint and Lansing, visualized by the extruded columns on pp. 79-80. Largely due to their unfavourable economic environments, the glut of residential mortgage credit bypassed many of Rustbelt cities of the Midwest.

Specifically, this research proposes a new financial-spatial narrative that links a historicized reading of the rise and decline of Detroit to Michigan's turbulent financial history in the following ways:

Stereotype of Land-Capital Dynamics:

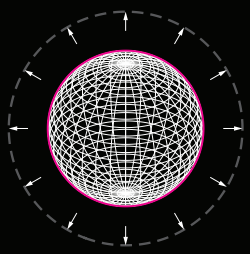
Detroit's rise and fall largely coincide with successive waves of speculative real estate finance. The evolution of Detroit's urban spatial structure is the result of the historical urbanization of capital and recurring financial crises, alternatingly emanating from the real sector or the financial sector.

Prototype of Financial Instability:

Institutional origins of financial instability and banking-led crises in Michigan begin in 1830s (Free Banking). Detroit is at the epicentre of 1933 banking crisis and sets a national municipal bankruptcy precedent in 2013. These interrelated processes govern new financial regulation and government intervention, leading to financial innovation, opening up new financial frontiers.

Archetype of Frontier Finance:

In turn, this creates alternative avenues for the (sub)-urbanization of capital, giving rise to new dynamics for the evolution of urban form. As the financial frontier moves across time and space, different ``zones of exclusion" emerge (mortgage speculation, large scale vacancies, financial illiteracy, underbanked sections of the population). Documenting the inextricable linkages between the process of securitization and urban sprawl, the empirical part of this project studies the flow of mortgage credit, land-use change and the morphological transformation of a selection of cities and suburbs in Michigan over the cycle of the Great Housing Boom and Housing Bust. In addition to research into the financing of exurban sprawl, our work also aims to investigate the targeting of homeowners in the city of Detroit at the height of the housing boom for refinancing at usurious rates of interest. This abuse has led to widespread foreclosure in struggling neighbourhoods and the undermining of the already-precarious solvency of Detroit's black middle class.



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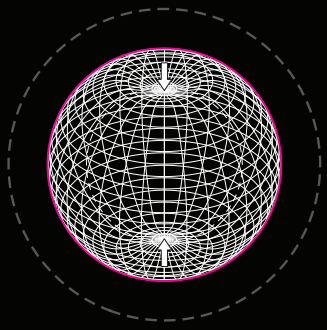

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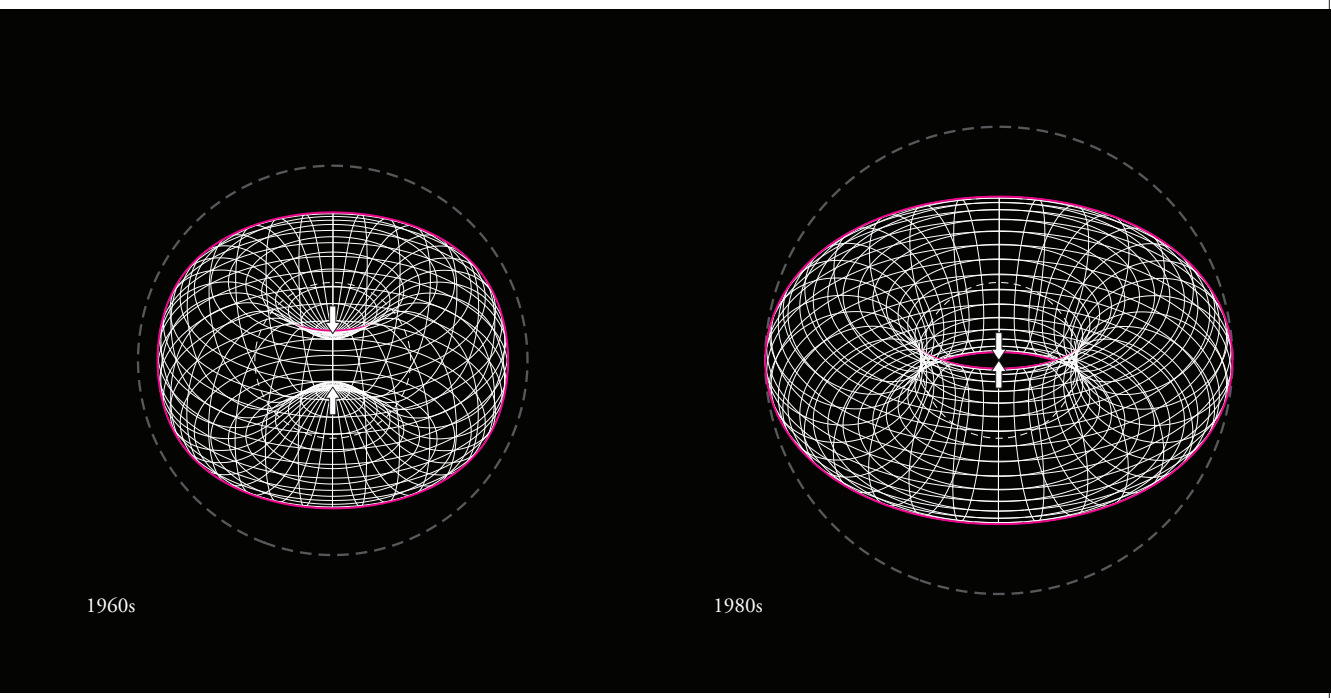
1960s
1980s

Form Follows Function:

On the Interaction between Real Estate Finance and Urban Spatial Structure

David Bieri

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 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 residential 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 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 non-codified 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 (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 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 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 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.

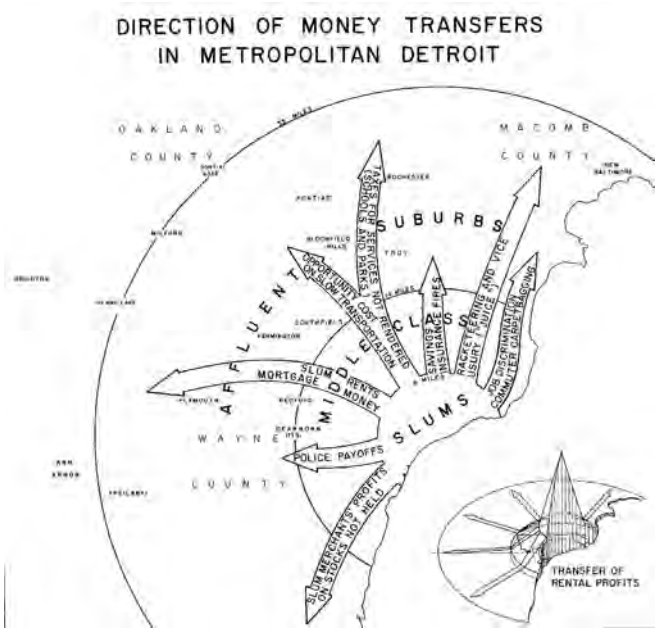

Figure 1: Decentralisation of Capital Flows in Detroit

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

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 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 post-bellum 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 multiagency 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 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 post-modern 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."

Endnotes

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.

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

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); Sklair (2006b) for good overviews.

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).

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).

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.

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).

Research Agenda

The research presented here is rapidly evolving into a larger research program on "money and the city" wherein we emphasizes the hitherto neglected linkages between the institutional evolution of money, credit and banking and urban spatial structure. This neglect of money and finance in urban planning is largely attributable to the historically dominant neoclassical roots of regional science which do not study spatial failures of the classical dichotomy. In narrowing this gap, another aspect of our work investigates how the interplay between finance, design and architectural production gives rise to different notions of risk that are coupled to metropolitan form. Specifically, our research examines the process of financialisation and its little-understood consequences for the spatial structure of cities, that is the process whereby financial markets and financial institutions gain greater influence over economic policy and economic outcomes for cities. As an extension of this work, we are developing a more formal framework for understanding the dynamics of urbanization under capitalism, paying special attention to the role of the financial sector as a source of fluctuations in the real sector and as a driver of the spatial structure of cities.

Overall, this book explores how developments in the financial system interact with the local and regional elements of the real economy. A key aspect of our research engages with alternative economic paradigms that do not accept the neutrality of money, particularly in connection with the phenomenon of financialisation. The role financialisation for urban economies marks another active element of our research agenda. In doing so, we are seeking to contribute to an emergent literature on the spatial dimensions of financialisation (e.g. French et al. 2011; Hall 2013).


The Limits to Capit
David Harvey
1982
Oxford
Basil Blackwell
1995
London & New York
Verso Books

As we have seen, one of the key insights that govern our research is the Post-Keynesian adage that "money is always and everywhere (also) a local phenomenon" (Minsky 1993). While some of Lösch's (1940) lesser-known work acknowledges financial aspects of the economic landscape, such as, for example the relationship between interest rates and distance from financial centres, the importance of capital flows throughout the urban hierarchy remains largely underexplored. Conzen's (1975, 1977) work on financial flows within the urban hierarchy in the U.S. during the 19th century is an important exception in this regard. In the previous chapter, I have shown that the relationship between capital, its regimes of accumulation and its unequal spatial distribution affect the urban fabric. I identify two separate economic processes and historical developments that have co-defined the nexus of real estate finance and urban systems. First, the process of financial globalization and deregulation has been instrumental to the financialisation of real estate, and, second, post-Fordist forces of organizational fragmentation have altered the formational principles of core aspects of real estate development processes.

In a more narrow sense, our work examines the spatial consequences of the political economy of the U.S. housing finance system, focusing on the historical process by which institutional risk allocation failures have shaped post-war urban development and the U.S. housing cycle. The suburbs arose, in part, because building on the city's edge was deemed risk-free and cheap. A natural extension of the frontier mentality, this belief of riskless land at the periphery was theoretically anchored by the elegant shorthand of the monocentric city model which maintains that rents decline toward the urban fringe. But the devastation wrought by on-going foreclosures across large swaths of suburbia is a sore reminder that building on the edge is anything but risk-free. Our exploratory investigations explain how the increasing financialisation of real estate gives rise to new forms of systemic risk. Against the backdrop of the foreclosure crisis, we extend recent research efforts by highlighting that the role of metropolitan form plays an important role in the process of geographic diversification and that urban spatial structure is fundamental to risk mitigation among investors and insurers of housing, mortgages, and mortgage-related derivatives.

It is frequently argued that the recent upheavals in the housing market represent a state of exception. In addition, the standard view that globalisation implies the "end of geography for finance" has entrenched notions of monetary neutrality (O'Brien 1992; O'Brien & Keith 2009). Instead, my research argues that these recent dislocations in the economy must be viewed as part of a macrohistory of crisis-based financial instability. Much of this instability has causes which alternatingly emanate from the real economy or from the financial system. In "Financial Stability, the Basel Process and the Geography of Regulation" (Bieri, 2009), I illustrate the international dimensions of these monetary disturbances and demonstrate that the impacts of financial globalization are in fact geographically highly concentrated, instead of becoming more evenly spread out across space. Indeed, the global financial system cannot be comprehensively understood without being aware of its local impacts and consequences and vice versa.

Our future research endeavours to explore local and regional issues in more detail, specifically focusing on the inextricable linkages between the process of securitization and urban spatial structure. The empirical part of this research studies the flow of mortgage credit, land-use change and the morphological transformation over the cycle of the Great Housing Boom and Housing Bust. Besides averting foreclosures of existing homeowners and the absorption of the excess housing stock, much of the post-crisis recovery depends on a systematic rethinking of conventional risk-return trade-offs with regard to the substitutability of land and capital. Our research focuses on how the increasing financialization of real estate gives rise to new forms of systemic risk, which in turn have little understood consequences for the spatial structure of cities. Linking Minsky's (1993) work on the non-neutrality of money to the role of metropolitan form, we examine how the process of urbanization is fundamental to the geographic production of risk by investors and insurers of housing, mortgages, and mortgage-related derivatives. Rather than a state of exception, I argue that the recent upheavals in the housing market must thus be viewed as part of a macrohistory of risk-based financial instability, the causes of which alternatingly emanate from the real economy or the financial system.


1770
1870
1820
1830
1840
1850
1860
National Currency Act in 1863
National Banks and State Banks
National Banking Act | 1863

Glossary

Archetype

The Platonic philosophical idea, referring to pure forms which embody the fundamental characteristics of a thing, Jungian psychology, archetypes refer to a collectively inherited unconscious idea, pattern of thought, image, etc., universally present in individual psyches.

Classical Dichotomy

According to the neoclassical paradigm, money and financial interrelations are not relevant to the determination of equilibrium conditions in the real economy. An implication of these constructs in mainstream economics is that money and finance are "neutral". This implies that there are no explicit monetary and financial linkages that are theorized to affect the real economy. Consequently, these dominant models imply that real and nominal variables can be analysed separately, a condition that is referred to as the classical dichotomy

Consumer Price Index (CPI)

The U.S. CPI is a time series measure of the price level of consumer goods and services calculated by the Bureau of Labor Statistics (BLS) on a monthly basis. The BLS routinely computes different versions of the CPI that are used for different purposes. For example, the Consumer Price Index for All Urban Consumers (CPI-U) is representative of the buying habits of approximately 80 percent of U.S. households that live in Metropolitan Statistical Areas (MSAs) and in urban places of 2,500 inhabitants or more.

Financial Stability

Unlike monetary stability, there is a much broader spectrum of definitions financial stability, and consensus only seems to exist in so far as financial stability is deemed a 'good thing' and that it is mostly noticed by its absence. Broadly speaking, one can distinguish between a systems approach—primarily linking financial stability to a well-functioning financial system—and a more narrow definition relating to the (excess) volatility of an observable financial variable, such as asset price volatility or interest rate smoothness. From a historic perspective, one can broadly distinguish between three types of financial instability. First, there is volatility-based instability, such as the crises of the European Exchange Rate Mechanism in the 1980s and 1990s, the 1987 stock market crash, the 1994 emerging market bond market instability, the 1998 Russian default, the Argentinean default in 2001 and most recently, the US subprime crisis that started in 2007. A second type of instability is stress-based instability, which is often triggered by the default of an individual institution. This type of instability commonly sees severe market disturbances where operational problems can trigger cross-border contagion. Instances of stress-based instability include the insolvency of the Austrian Credit-Anstalt in 1931, Guardian National Bank and First National Bank in Detroit in 1933, the collapse of the German Bankhaus Herstatt in 1974, the folding of the Bank of Credit and Commerce International in 1991, the Barings scandal in 1995, the failure of Long-Term Capital Management in 1998 and the most recent string of institutional failures, from Northern Rock to Bear Stearns, Lehman Brothers and the American International Group (AIG). Lastly, there are instances of crisis-based financial instability that are largely characterized by a triggering development that originates in the real economy or the financial system. Costly bank insolvencies and major adjustments in the level of asset prices tend to follow. During this type of financial instability, there is often a very strong (reinforcing) interaction between the financial sector and the real economy, with strong contagion effects both domestically and internationally. Aside from the Great Depression, the Scandinavian banking crisis in the late 1980s, the bursting of the Japanese asset bubble in the 1990s, the Mexican crisis (1994–95) and the Asian financial crisis all fall into this crisis. While no episode of financial upheaval neatly fits into any one of the three categories, a classification can be informative for policy purposes. The current global financial crisis is an important case in point; what started as distant volatility rumblings of market-based financial instability in the sub-prime market in mid-2007 has snowballed into a fully blown global crisis with major financial instability across several market and institutional segments.

Gross Democratic Product

Gross domestic product (GDP) is the most widely used measure of U.S. output. It is defined as the market value of the goods and services produced by labour and property located in the United States. Because the labour and property are located in the United States, the suppliers (that is, the workers and, for property, the owners) may be either U.S. residents or residents of the rest of the world.

Index number theory

Price index formulas can be evaluated based on their relation to economic concepts (like cost of living) or on their mathematical properties. Several different tests of such properties have been proposed in index number theory literature, which was pioneered by the American economist Irving Fisher (1867-1947).

Metropolitan Statistical Area (MSA)

Metropolitan Statistical Areas (metro areas) are geographic entities delineated by the Office of Management and Budget (OMB) for use by federal statistical agencies in collecting, tabulating, and publishing federal statistics. A metro area contains a core urban area with a population of 50,000 or more (an urban core of at least 10,000 but less than 50,000 is referred to as micropolitan statistical area). Each metro or micro area consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core.

Monetary Stability

Consensus with regard to the definition of monetary stability has emerged over the last 10 years and permits various notions ranging from stability of the (anticipated) value of money to price-level stability or even low levels of inflation. Indeed, there is also broad agreement that monetary stability is a vital ingredient for sustainable economic growth, that there is unique institutional responsibility for it (i.e. the central bank) and that the authorities need to be engaged in continuous efforts to achieve it.

National Income and Product Accounts (NIPA)

The national income and product accounts (NIPAs) are produced by the Bureau of Economic Analysis (BEA). Much like the balance sheet, the profit and loss account and cash flow statements that provide accounting summaries on the economic position of corporations, the NIPAs are a set of economic accounts that provide information on the value and composition of output produced in the United States during a given period and on the distribution and uses of the income generated by that production. A central feature of the NIPAs is gross domestic product (GDP), which measures the value

of the goods and services produced by the U.S. economy in a given time period.

Price Deflator — Among price indices, a price deflator is the ratio of the current-dollar value of a price index series to its corresponding chained-dollar, real value. For example, the GDP deflator measures the ratio of nominal (or current-price) GDP to the real (or chain volume) measure of GDP, i.e., it is defined as (Nominal GDP / Real GDP)*100.

Prototype — Original object or form which is a basis for other objects, forms, or for its models and generalizations; An early sample or model built to test a concept or process. In semantics, an instance of a category or a concept that combines its most representative attributes.

Securitization — Securitization is the financial practice of pooling various types of contractual debt, such as residential mortgages, commercial mortgages, auto loans, or credit card debt obligations, and selling the pooled debt as securities to investors. As part of the securitization process that is called "tranching", the credit rating of the collateralized assets is usually significantly higher that the credit quality of the underlying assets. Cash collected from the underlying debt, including interest and proceeds from the repayment of the debt, is paid to the investors in the securities. Securities backed by mortgage receivables are called mortgage-backed securities (MBS), while those backed by other types of receivables are called asset-backed securities (ABS).

Shadow Banking — Shadow banking activities consist of credit, maturity, and liquidity transformation that take place without direct and explicit access to central bank liquidity or public sector credit guarantees. These activities are conducted by specialized financial intermediaries called shadow banks, which are bound together along a highly complex and interdependent intermediation chain known as the shadow banking system.

Stereotype — A character, story, or object that is based on a known character, story, or object. In Jungian psychology, a universal pattern of thought, present in an individual's unconscious, inherited from the past collective experience of humanity.

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Soon Jae Kwon

Master of Architecture 2014
Taubman College of Architecture & Urban Planning
University of Michigan

Bachelor of Science, Civil Engineering
University of Calgary

William Martin

Master of Architecture 2015
Master of Science in Conservation
Taubman College of Architecture & Urban Planning
University of Michigan

Bachelor of Arts in Development Economics
Middlebury College

Eric Meyer

Master of Architecture 2014
Taubman College of Architecture & Urban Planning
University of Michigan

Bachelor of Arts in Architecture
University of New Mexico

Nicholas Ostezan

Bachelor in Business Administration
Stephen M. Ross School of Business
University of Michigan

CAR WASH

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rontier Finance

EPISODE ONE
EPISODE TWO | 1990-1992
EPISODE THREE | 1993
EPISODE FOUR | PRESENT-DAY

Cover image: The extruded columns are census tracts in the city of Detroit (front) and the city of Flint (back) with height and shading intensity corresponding to the total volume of residential mortgage credit denials.