

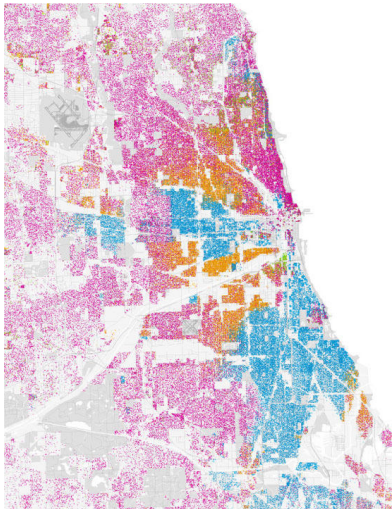
Segregation and Economic Outcomes A Network Perspective

Larry Blume

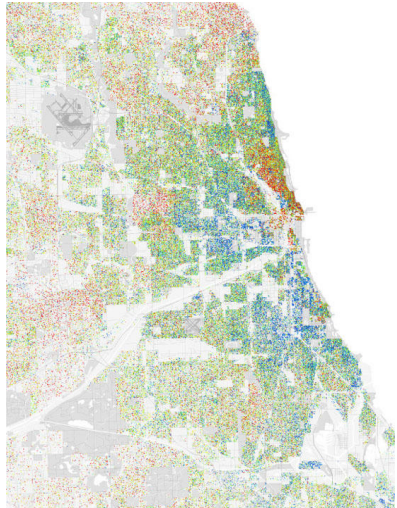
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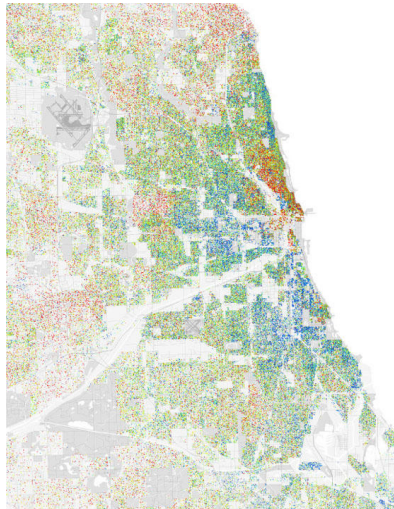
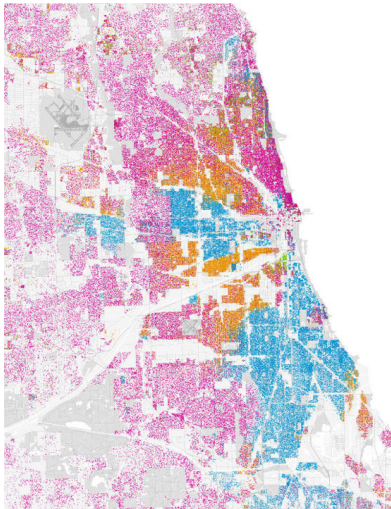
Spatial Heterogeneity



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Spatial Heterogeneity

Los Angeles



The Problem

The productive or income-getting power of any community at any time consists of its land, its people, its capital equipment and its organisation.

A. C. Pigou, *Industrial Fluctuations*

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“Social-economic” causes of poverty:

- ▶ Social capital
- ▶ Cross-group explanations

A Debate about Causes

Upper class people in all countries are accustomed to look down upon people of the laboring class as inherently inferior. But in the case of Negroes the deprecation is fortified by the elaborate system of racial beliefs, and the discriminations are organized in the social institution of rigid caste and not only of flexible social class.”

Myrdal, *An American Dilemma*, 1944.

A Debate about Causes

... , the social structure of today's inner city has been radically altered by the mass exodus of jobs and working families and by the rapid deterioration of housing, schools, businesses, recreational facilities and other community organizations, further exacerbated by government policies of industrial and urban laissez-faire. . . The economic and social buffer provided by a stable black working class and a visible, if small, black middle class that cushioned the impact of downswings in the economy and tied ghetto residents to the world of work has all but disappeared. Moreover, the social networks of parents, friends, and associates, as well as the nexus of local institutions, have seen their resources for economic stability progressively depleted. In sum, today's ghetto residents face a closed opportunity structure."

Waquant and Wilson, "The Cost of Racial and Class Exclusion in the Inner City", *AAAPS* 501, 1989.

A Debate about Causes

Thus, although we share William Julius Wilson's view that the structural transformation of the economy played a crucial role in creating the urban underclass during the 1970's, we argue that what made it disproportionately a black underclass was racial segregation. The decline of manufacturing and the rise of a two-tiered service economy harmed many racial and ethnic groups, but only black Americans were highly segregated, so only among them was the resulting income loss confined to a small set of spatially contiguous and racially homogenous neighborhoods."

Massey and Denton, *American Apartheid: Segregation and the Making of the Underclass*, 1993. p. 137.

1. One's social affiliations determine (to some degree) one's economic outcomes.
2. One's economic outcomes determine (to some degree) one's social affiliations.
3. Untangling this is important for determining the effectiveness of various policies.

TABLE 1—JOB-FINDING METHODS USED BY WORKERS

Source/data	Percentage of jobs found using each method					Sample size
	Friends/relatives	Gate application	Employment agency	Ads	Other	
Myers and Shultz (1951)/sample of displaced textile workers:						
First job	62	23	6	2	7	144
Mill job	56	37	3	2	2	144
Present job	36	14	4	0	46 ^a	144
Rees and Shultz (1970)/Chicago labor-market study, 12 occupations: ^b						
Typist	37.3	5.5	34.7	16.4	6.1	343
Keypunch operator	35.3	10.7	13.2	21.4	19.4	280
Accountant	23.5	6.4	25.9	26.4	17.8	170
Tab operator	37.9	3.2	22.2	22.2	14.5	126
Material handler	73.8	6.9	8.1	3.8	7.4	286
Janitor	65.5	13.1	7.3	4.8	9.3	246
Janitress	63.6	7.5	5.2	11.2	12.5	80
Fork-lift operator	66.7	7.9	4.7	7.5	13.2	175
Punch-press operator	65.4	5.9	7.7	15.0	6.0	133
Truck driver	56.8	14.9	1.5	1.5	25.3	67
Maintenance electrician	57.4	17.1	3.2	11.7	10.6	129
Tool and die maker	53.6	18.2	1.5	17.3	9.4	127
Granovetter (1974)/sample of residents of Newton, MA:						
Professional	56.1	18.2	15.9 ^c	— ^c	9.8	132
Technical	43.5	24.6	30.4	—	1.4	69
Managerial	65.4	14.8	13.6	—	6.2	81
Corcoran et al. (1980)/Panel Study of Income Dynamics, 11th wave:						
White males	52.0	— ^d	5.8	9.4	33.8 ^d	1,499
White females	47.1	—	5.8	14.2	33.1	988
Black males	58.5	—	7.0	6.9	37.6	667
Black females	43.0	—	15.2	11.0	30.8	605

^aMost of these workers were rehired at a previous mill job or hired at a new mill established in one of the vacated mills.

^bIn computing the percentages, workers rehired by previous employers and those not reporting the job-finding source are excluded from the denominator and subtracted from the sample size.

^cAgencies and ads are combined under the heading "formal means."

^dGate applications are included under "other."

Job Search

Table 24. Length of information chain, by average job tenure of respondent.

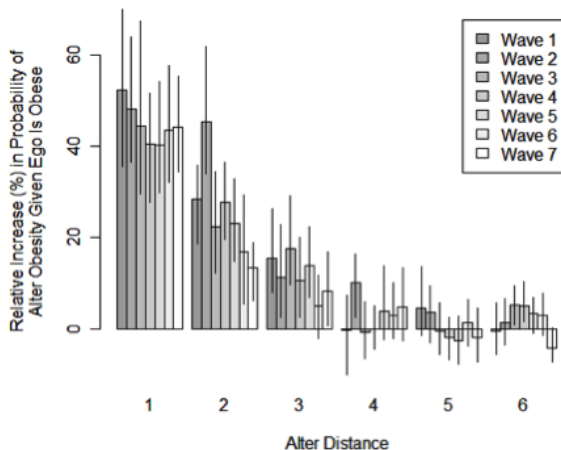
Chain length	Average job tenure			Total
	Less than 2 years	2-4.999 years	5 years or more	
Zero	25.0%	61.5%	31.2%	46.0%
One	37.5%	30.8%	56.2%	40.0%
Two or more	37.5%	7.7%	12.5%	14.0%
<i>N</i>	8	26	16	50

$p = 0.08$

Affect

Behaviors

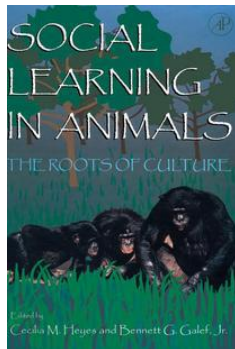
Information



Affect

Behaviors

Information



- ▶ Tastes — peer group effects
- ▶ Beliefs — social learning
- ▶ Constraints — contextual effects

- ▶ Each person chooses **choice** ω_i from Ω_i .
- ▶ Each person's **type** is $t_i = (x_i, \epsilon_i)$. x_i is observed by others, ϵ_i is not.
- ▶ Choice is influenced by local, **contextual variables**. y_i, \dots are observed, ϵ_i is not.
- ▶ Social influence is described by a **sociomatrix** or **weighted adjacency matrix** A .
- ▶ Individuals have some beliefs μ_{-i} about the average behavior of their peers, $\sum_j a_{ij}\omega_j$.

The **Payoff function** for individual i is

$$u(\omega_i, \omega_{-ig}, \tau_i) = \tau_i \omega_i - \frac{\omega_i^2}{2} - \frac{\beta}{2} E_{\mu_{-i}} \left\{ \left(\omega_i - \sum_j a_{ij} \omega_j \right)^2 \right\}$$

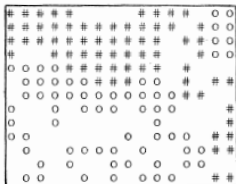
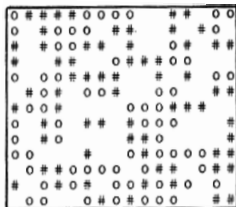
IR $\omega_i \in \operatorname{argmax} V(\omega_i; \mu_{-i}, t_i, \epsilon_i)$

Behavioral comes from utility maximization.

EQ $\mu_{-i} = E\{\omega_{-i} | X_i, \epsilon_i\}$, etc.

Beliefs are correct.

- ▶ Erdős-Rényi random graph
- ▶ Preferential Attachment
- ▶ Exponential Random Graphs
 - ▶ Chandrasekhar & Jackson, “Tractable and Consistent Random Graph Models”
- ▶ Small-World Graphs

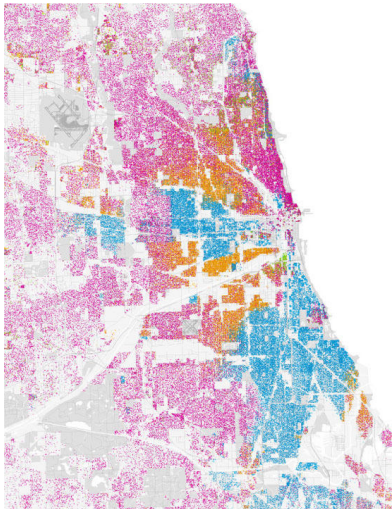


- ▶ Individuals are one of two types.
- ▶ Individuals are distributed on a lattice.
- ▶ Individuals are happy if at least τ of their neighbors are of their type.
- ▶ Otherwise, they move to an empty spot, or swap spots.

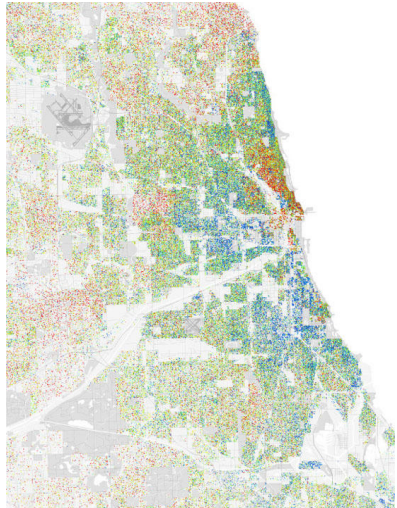
One-dimensional analysis. Individuals live on a ring.

- ▶ Young, *Individual Strategy and Social Structure*
 - ▶ N Individuals have neighborhoods of radius 1. Individuals trade places with high probability if they both improve and smaller probabilities if one or more is hurt.
 - ▶ Result: The unique stochastically stable state is 100% segregation.
- ▶ Brandt, Immorlica, Kamath and Kleinberg, "An Analysis of One-Dimensional Schelling Segregation"
 - ▶ N Individuals have neighborhoods of fixed size w . They never make unimproving moves.
 - ▶ Result: The probability of reaching a frozen configuration converges to 1 with N . There is a constant $c < 1$ such that for all N , the probability that a randomly selected individual in a frozen configuration is in a homogeneous group of size greater than λw^2 is bounded by c^λ .

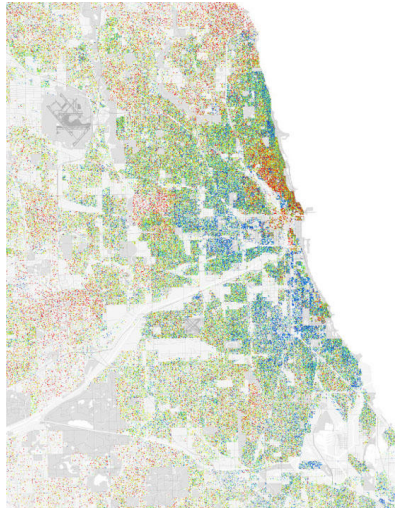
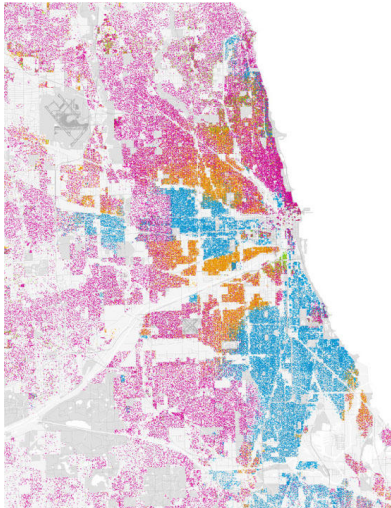
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- ▶ Gale and Shapley, “College Admissions and the Stability of Marriage”, *American Mathematical Monthly* 69, 1962.
- ▶ Jackson and Wolinsky, “A Strategic Model of Social and Economic Networks”, *JET* 71, 1996.
- ▶ Myerson, “Graphs and Cooperation in Games”, *MOR* 2, 1977.

- ▶ Let $U_n(A, x_n, \varepsilon_n)$ denote the expected payoff to an individual of playing the LIM game.
- ▶ Imagine a first stage where individuals play a Myerson formation game.
- ▶ Add a term to utility so that utility of a link is increased the nearer the two individuals are in characteristics.

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G. Myrdal, *An American Dilemma*, 1944.

Thank You

