

# Lecture 1

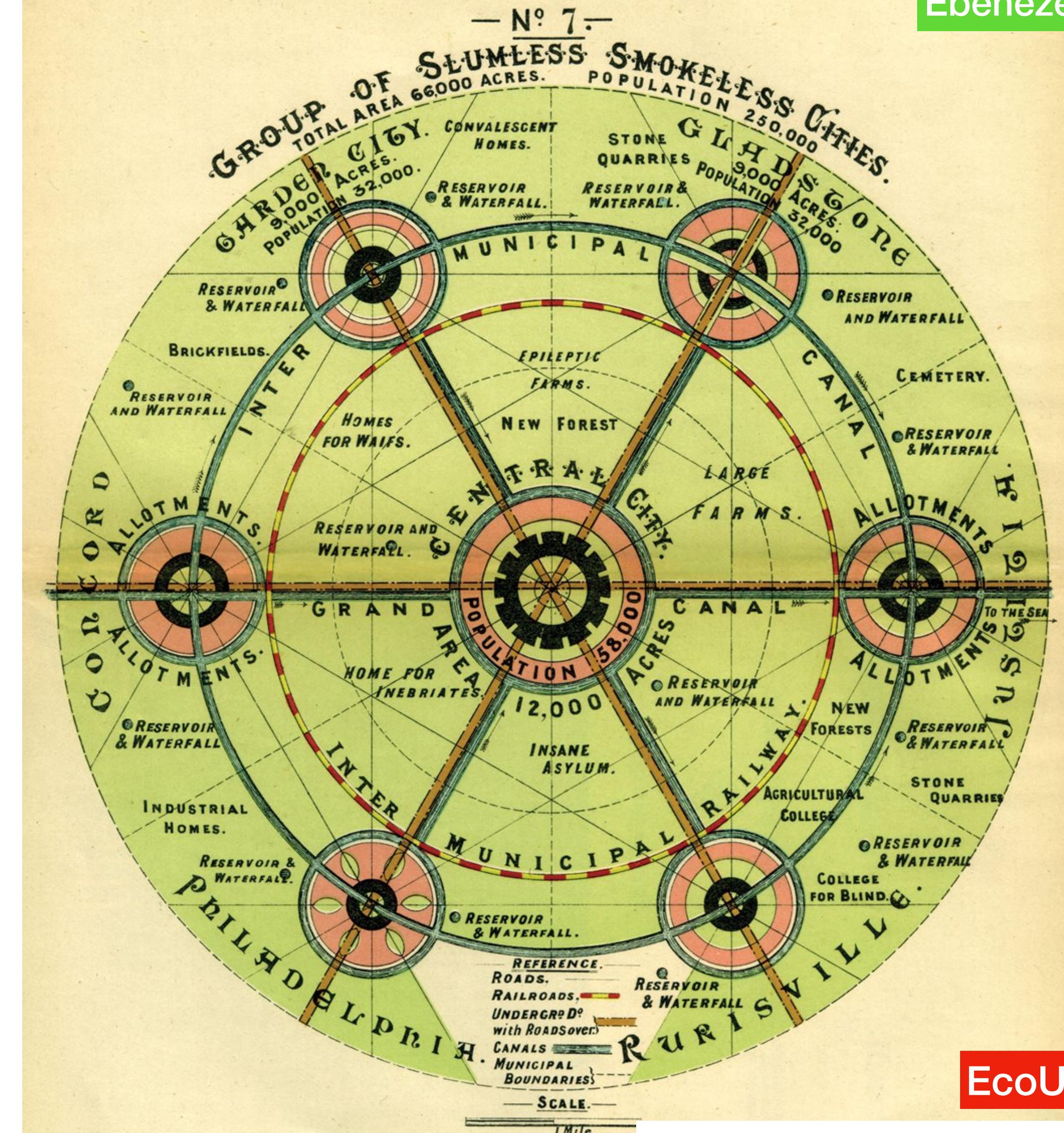
## 1.1 Why Urban Science? What is Urban Science?

IUS Chapter1

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IUS 1.1 What is Urban Science?

What should cities be like?



EcoUtopia

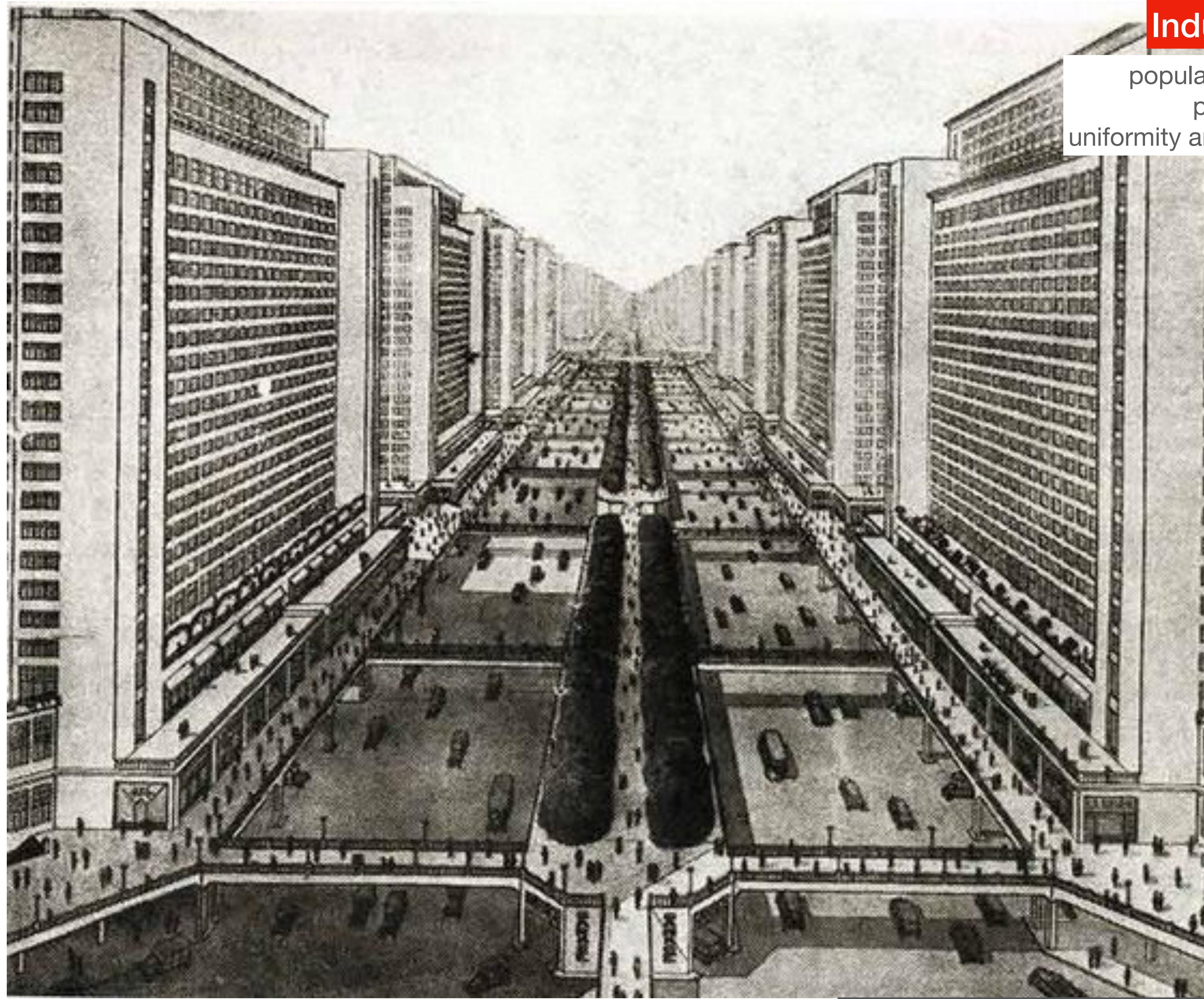
where are the people?  
mostly utopian, moralistic land use scheme  
with strong prescriptive “zoning”, including segregated space for the “inebriates”

## Industrial Utopia

population density in the wrong places

public spaces given to cars

uniformity and drabness in the name of efficiency



Le Corbusier: Ville Radieuse 1924-33



NEOM

ABOUT

REGIONS

SECTORS

NEWS

PARTNERS

INVEST

SUPPLIERS

CAREERS

EN ▾

# A REVOLUTION IN CIVILIZATION





Illustration by Ben Fearnley

LETTER FROM TORONTO

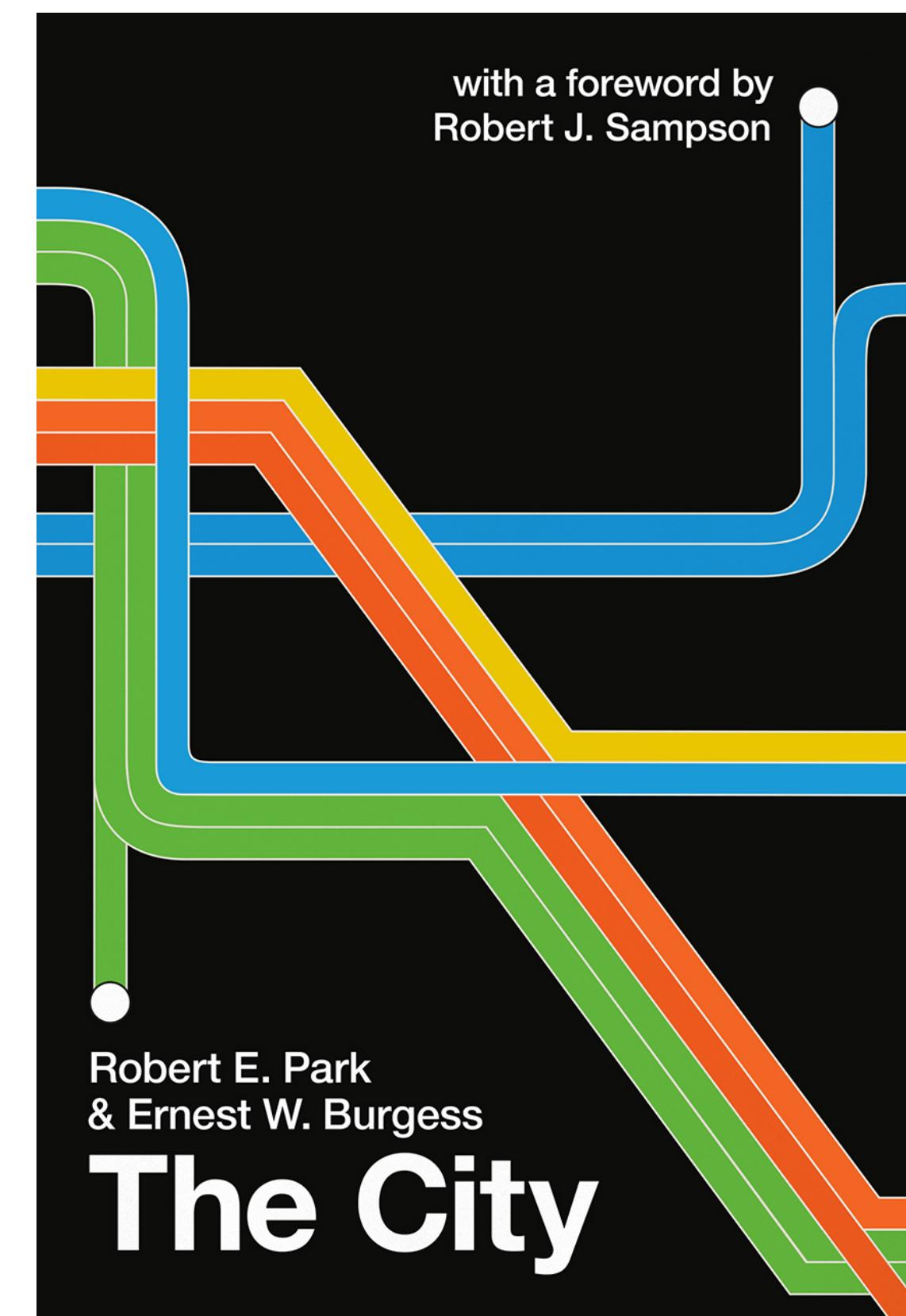
# Google Is Building a City of the Future in Toronto. Would Anyone Want to Live There?

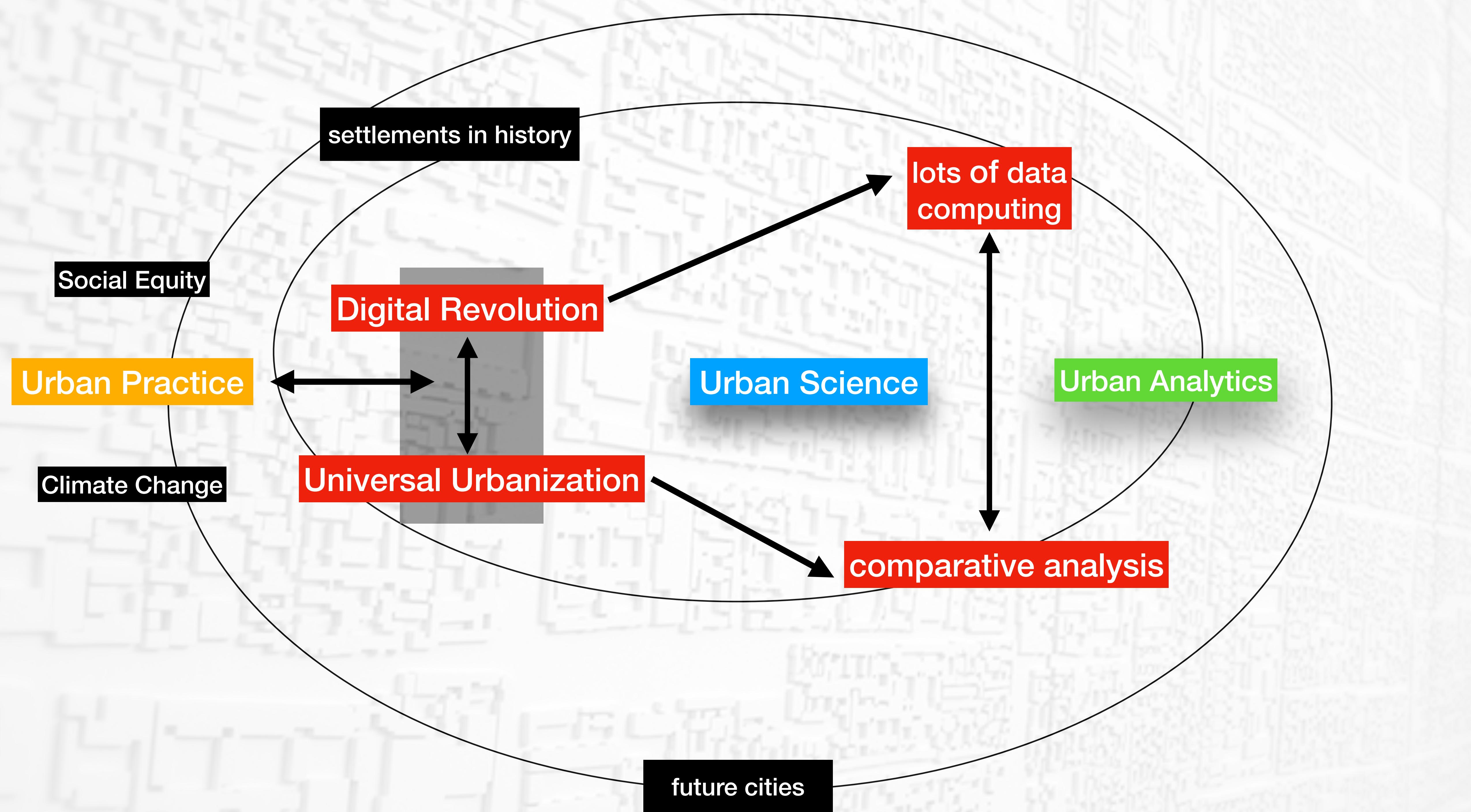
What are cities really like?

The city is not merely a physical mechanism and an artificial construction.

It is involved in the vital processes of the people who compose it;  
it is a product of nature, and particularly of human nature.

- R. E. Park, The City 1925





The best way to know a thing is in the context of another discipline.

- Leonard Bernstein, Norton Lectures (1976).

## About this course:

- This is a course about **Urban Science**, about what we can know about cities that is *generalizable*.

observable processes or signals that we can experience or measure across history and throughout the world despite different geographies, cultures, levels of development and so on.

- This is also a course about *bringing together different ways of thinking*.

To create a body of knowledge - concepts, theory and a set of mathematical models- that can explain and generate the complexity and open-endedness of cities

# Three Objections to *Scientific* Approaches to Cities

**1. Complexity:** Cities are made of so many decisions, accidents, they are so rich in history  
“There can be no theory”, no set of mathematical models that does Cities justice.  
- **Not true.** Example: Biology is a science of structure, systems and natural histories.

## 2. Science and Data lead to Oppressive Social Policy:

- **Not true:** These are misuses of science and data in value laden policy:
- Recall that *data does not give you solutions*: “the past is not the right answer”.
- Science is not authority: it is critical thinking with facts; it stands in opposition to dogma.

## 3. Math and Science entail a loss of freedom and humanity:

- **Not true:** science has given us new freedoms: going to the moon, health, longer lives...
- Math in cities expresses mundane constraints: Space, Time, Energy, Money.
- Urban Science leaves freedom for everything else: free will, agency, preferences, accident

This means we will have to construct a *Statistical Theory of Cities*:

away from classical Social Sciences based on either simplistic “rationality” or structural determinism

# Uniqueness and Generality Both!

*A Person is Unique; A City is Unique*

Being special is always a *relative* state

Any sense of uniqueness requires a background pattern of general mechanisms and facts against which it can be appreciated.

This background pattern is set by averages: over populations and time. We can average more or less.

Such average pattern is not a description of – or a model for – individual behavior!

We will use this *analytical device* of zooming in and out via averaging in different ways to show how each city and every one of its people is the result of the aggregation of many choices, accidents and influences from their compounded joint history.

Interestingly, the resulting statistical properties of cities will be more than the sum of these parts.

# Why Urban Science?

- Science as a process is uniquely good at creating insights that vastly *transcend our daily experience and intuitions*.
- This allows us ultimately to escape the mental and institutional traps we live in today, especially in practice and policy, and helps us imagine – but does not determine! – how we may build a better tomorrow.
- This approach is more important in the context of *urban science* because cities feel so familiar to us all.
- Science is not a substitute for other practices of scholarship, especially in the humanities, but it does have its unique and powerful role to play in a fast urbanizing world, where many similar challenges recur.

# Features of Urban Science

Three main ingredients:

- i) Interdisciplinary integration and synthesis,
- ii) A rich and expanding empirical basis (data) and methods across scales,
- iii) Reflecting and honoring diverse human experiences in different contexts.

This creates a scientific culture for *urban science* that holds a special new place compared to more traditional disciplines.

The integration of these ingredients also enables urban science as a unique *platform*, welcoming of diverse knowledge and experiences and uniquely situated for scientific co-production with people, civic organizations, governments, businesses, as well as with other researchers