

CCGL9065: Our Response to Climate Change: HK2100

Architecture and Cities

Feb. 21st, 2024

Topic Overview

Architecture and Cities in the Context of Climate Change

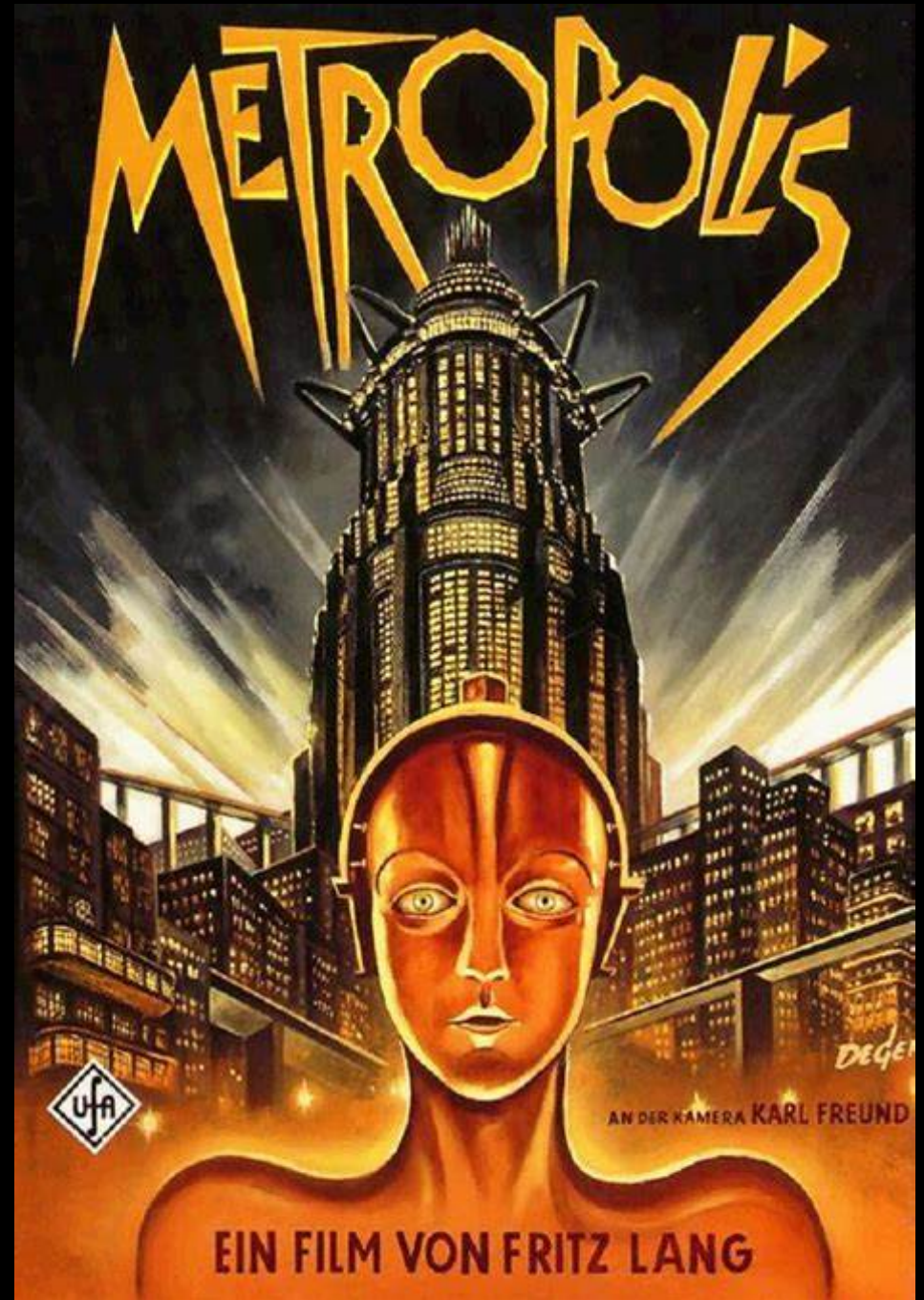
- **Urbanization**
- **Metropolis**
- Sustainable Urban Planning
- Green Buildings
- Urban Resilience
- Public Spaces & Community Engagement
- Mobility and Transportation

Anthropogenic Behavior

:of, relating to, or resulting from the influence of human beings on nature

Metropolis (1927) 2026

is a large city or urban area that serves as a center of commerce, industry, and culture.



1927, Fritz Lang's *Metropolis*

On Metropolis

What it is, why it is relevant, and what challenges they need to solve.

- **Characteristics:**

- High population density
- Diverse cultural and economic activities
- Complex infrastructure system
- Unique blend of modern and traditional architecture
- Hub for innovation, entrepreneurship, and creativity
- Center for education, healthcare, and entertainment

- **Challenges:**

- Traffic congestion and air pollution
- Inadequate housing and overcrowding
- Strain on public services and infrastructure
- Affordability challenges

- **Reverse Urbanization: Suburban**

On Metropolis (Continued)

Why does ANYBODY want to stay in larger cities.

- Economic Opportunities
 - Job opportunities & pay grade
 - Larger pool of skilled labor and talent
 - Stronger entrepreneurial ecosystem with more resources: startups, etc.
- Cultural Diversity & Entertainment: theatre & people
- Education & Research
- Infrastructure and Transportation
- Networking and Collaboration

Reverse Urbanization

Touching upon the crowdedness situation.

- Definition: process of metropolitan residents moving out
- Known causes:
 - Housing affordability
 - High Cost of living
 - Crowdedness
- Impact:
 - Shift in population dynamics,
 - Growth in smaller cities and towns
 - What does it mean for metropolis?



Case Study 1

New York City

- Population remained relatively steady;
- Diverse economy,
- world-class cultural offerings,
- continued investment in infrastructure and public services
- City connotes to attract people due to they unique combination of known and unknown status



Metropolis & Climate Change

How growing architecture affect climate - examples.

- Urban Heat Island
 - Metropolitan areas higher temperature level
 - Also casually referred to as anthropogenic heat
- Energy Consumption: **per capita**
- Transportation Emissions: Transportation hubs
- Waste Management:
 - larger or smaller amt? Compared to suburban? Burning & GHG?
- Water Scarcity: Large, concentrated demands.
 - Los Angeles: Water conservation measures.

Waste-to-Energy (WtE) as a Solution

Harvesting energy from anthropogenic activities

- Converts solid waste materials into usable energy
 - Involves combustion/thermal treatment of waste
 - Heat produced generate steam that drives turbines for electricity
- A Sustainable Waste Management Solution
- Worldwide WtE Market Size to reach USD 66.05 Billion by 2032*
- Environmental Benefits:
 - Recovers Resources, reduce landfill use (methane drop) & reduces reliance on fossil fuels

1960s building redesigned in 1980s.

The Spittelau Incinerator



Case Study 2

Municipal Incinerator Plant in Vienna

- Major landmark & architectural highlight
- Classic Hundertwasser façade
- Easily reached by public transit
- Annual Capacity:
 - 250,000 tons of waste
 - 60 GWh of electricity
 - 500 GWh of heat



Wien Energie Positionen. (n.d.). *Spittelau waste incineration plant* | Wien Energie Positionen. Positionen Wien Energie. Retrieved February 20, 2024, from <https://positionen.wienenergie.at/en/projects/spittelau-waste-incineration-plant/>

Case Study 3

LA Water Conservation tactics & tips

- TIP 1: Leverage to save water **while** using water
- TIP 2: Limit/stop using water under certain scenarios
- TIP 3: Free service from gov to investigate possible areas of improvement in private water system
- TIP 4: Rebate provided to change of landscaping grass to draught-tolerant (aka water-saving) ones.



**We worked on coming up with
concrete solution last session.**

Let's bring it back to HK.

General Public Opinions

What/how/why might you care about this topic?

- Livelihood planning:
 - Future plans of career path/family
 - Choosing between metropolis and countryside/suburbs
- Learn more about how to contribute beyond simple engagements that's environment-friendly:
 - Tree-planting campaigns
 - Local community-based sustainability efforts, e.g. community gardens
- Improved visibility to alternatives to city-life:
 - What does it mean to move to suburbs: economic/environment
 - Alternative non-metropolis cities tourism/lifestyle promotion? **HeGang**

Pro-CC Expert/KOLs Cheatsheet

Issues and Actions Proposed

- Compact Urban Design
- Renewables in Buildings
 - Rooftop solar and other alternatives
- Green Infrastructure
 - Eco-certified buildings in new developments (LEED, etc.)
- Sustainable Transit
 - MTR expanded and electric buses
- Actionable Solutions with HK2100 in mind:
 - Urban Greenery Expanded, vertical gardens and expanded parks
 - More efficient HVAC options

Anti-CC Expert/KOLs Cheatsheet

Issues and Actions Proposed

- Economic Prioritization:
 - Urbanization is major driver of HK economy
- Efficiency Overhaul
 - Existing building renovation/retrofit needs to happen and
 - **will result in more GHG emissions**
- Loosened Regulation via Public Policy to improve development
- Practical next steps:
 - Integrated Waste Management Facilities: Waste Incineration Plants Expansion (HK EPD)