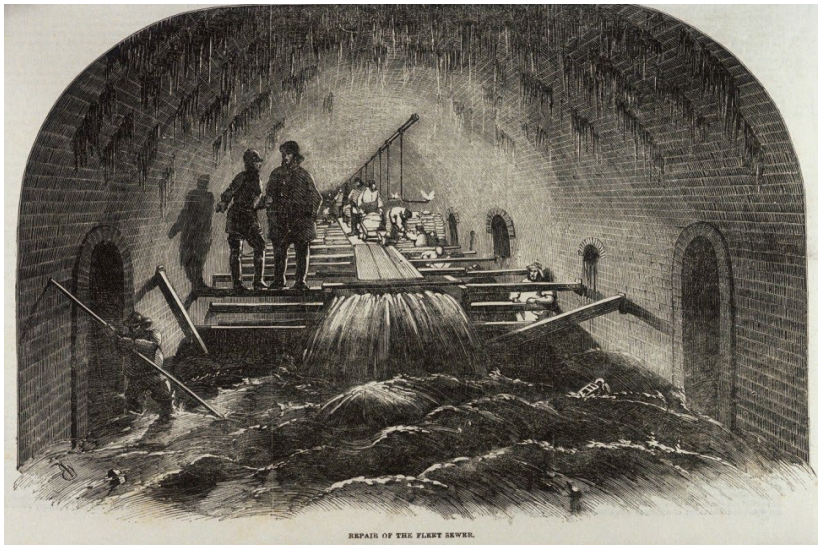
Infrastructure as landscape/ Infrastructural urbanism

The Paris Sewers



Wadi Siah, Haifa

Urban landscape infrastructures

Designing operative landscape structures for the built environment

STEFFEN NIJHUIS, DANIEL JAUSLIN (2015)

The hybridisation of the two concepts, landscape and infrastructure, seeks to redefine infrastructure beyond its strictly utilitarian definition, while allowing design disciplines to gain operative force in territorial transformation processes.

Nijhuis, S., & Jauslin, D. (2015). Urban landscape infrastructures. Designing operative landscape structures for the built environment. *Research In Urbanism Series*, 3(1), 13-34.

Legibility, expressiveness and meaning

Everyday, lived dimensions of traditional infrastructure systems

Examples of vernacular irrigation systems in an arid climate

Cistern, Rosh Pina

Liman, Negev Desert, Israel

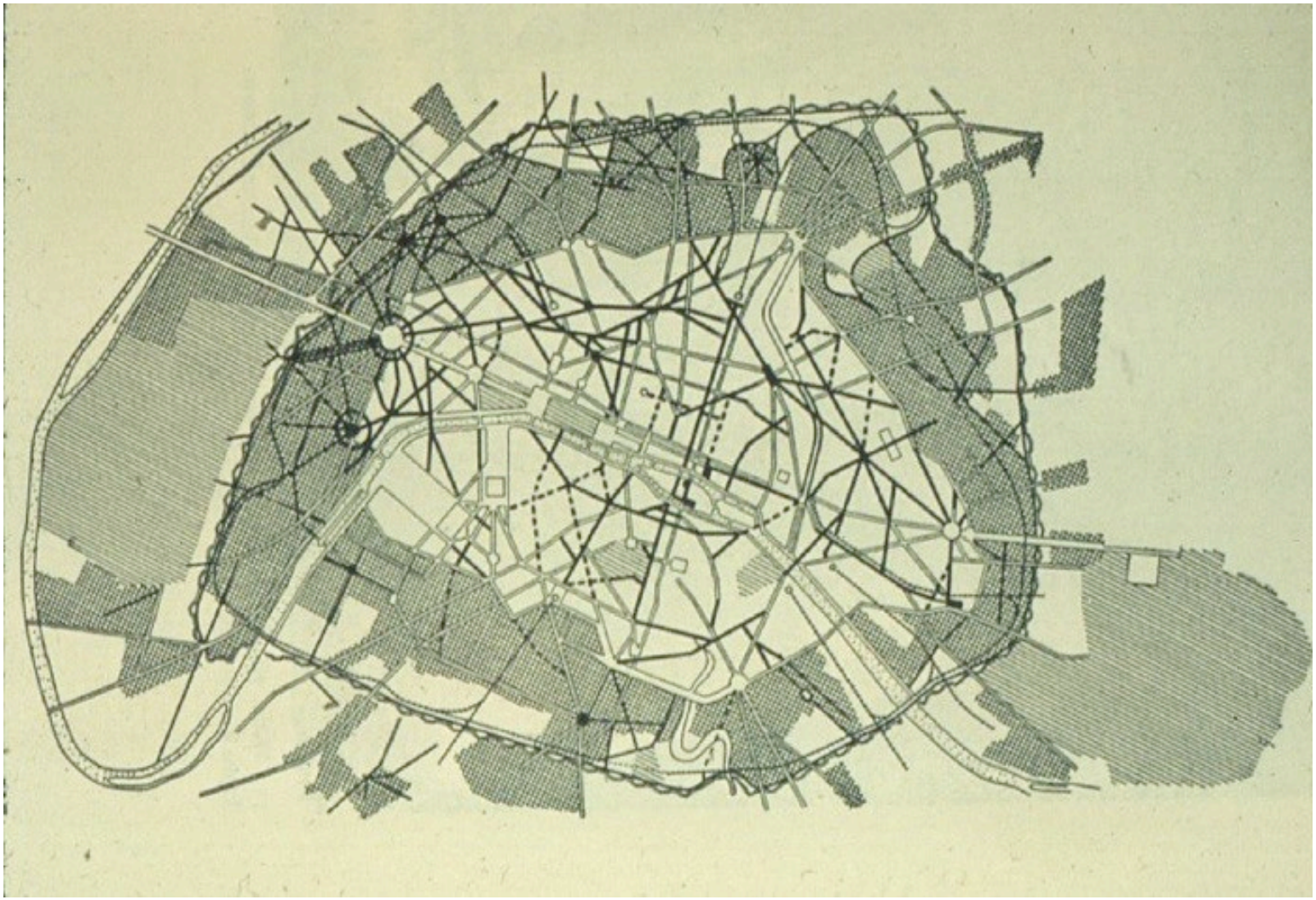
Oasis garden, Sinai, Egypt

The cultural meaning of infrastructure: the supply of water as a civic event

Celebrating the opening of the Croton Reservoir in New York, 1842

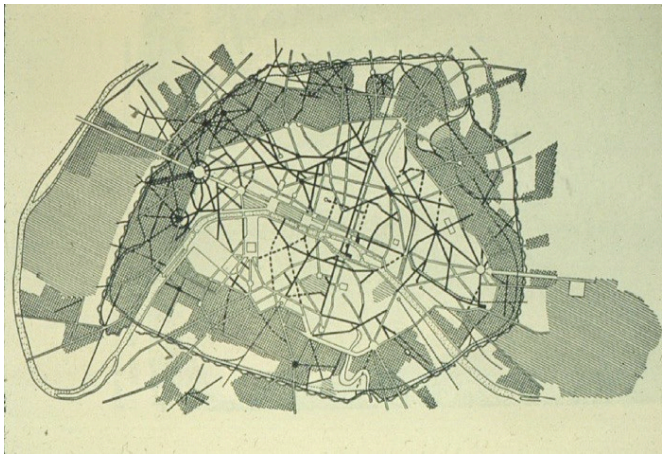
Comprehensive Planning

Haussman's Plan for Paris – 1853-1870



Comprehensive Planning

Haussman's Plan for Paris – 1853-1870

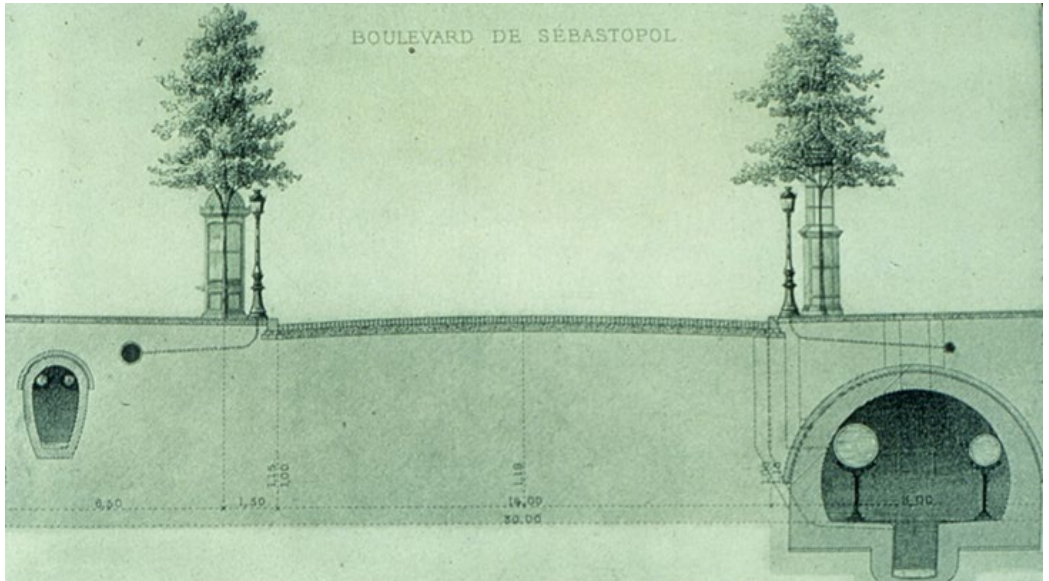


ABOVE

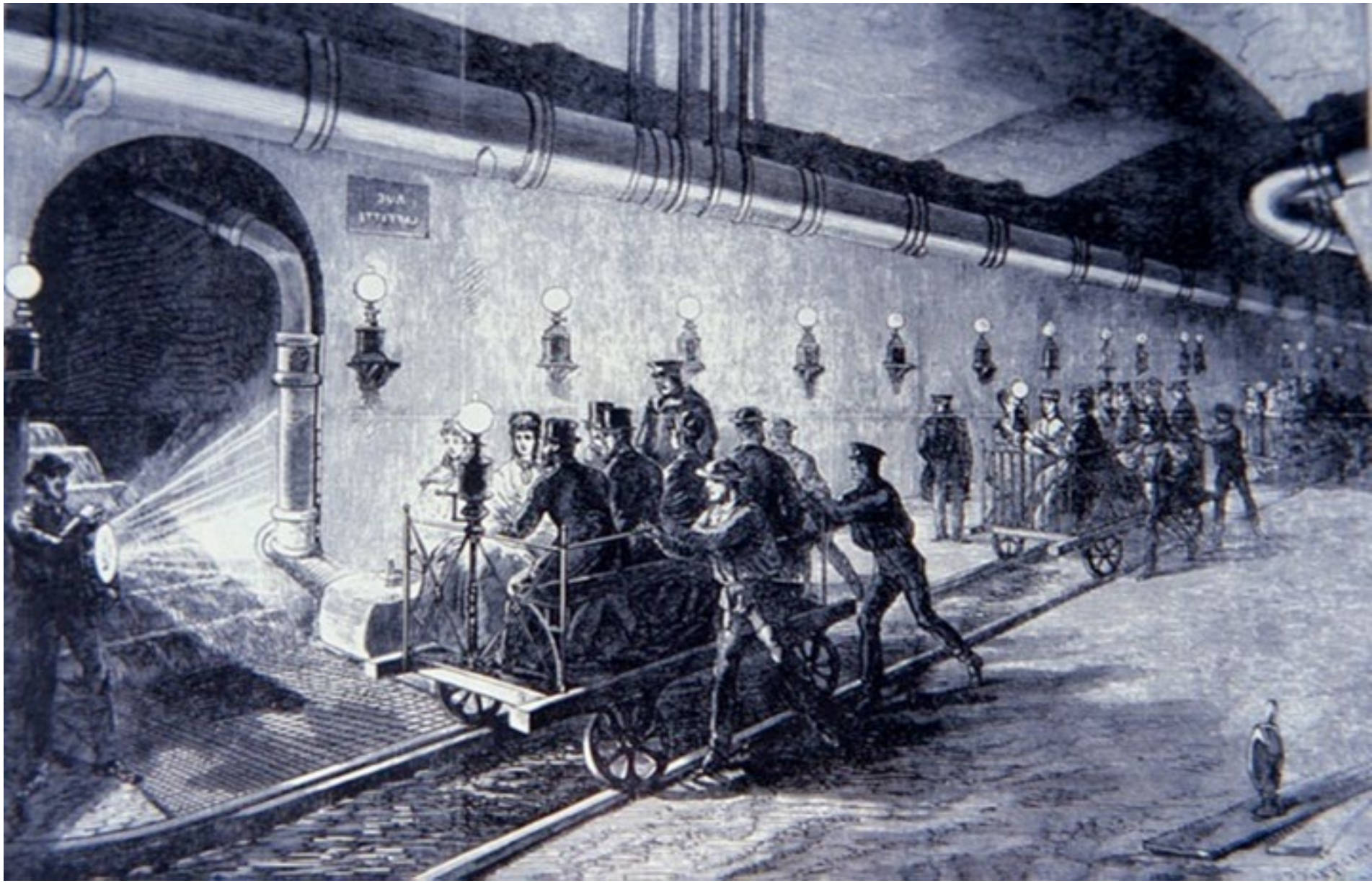
THE BOULEVARDS OF PARIS

A comprehensive urban vision.
The boulevards combined the infrastructure for traffic and leisure promenading with a new underground system of services (sewer, gas, etc)

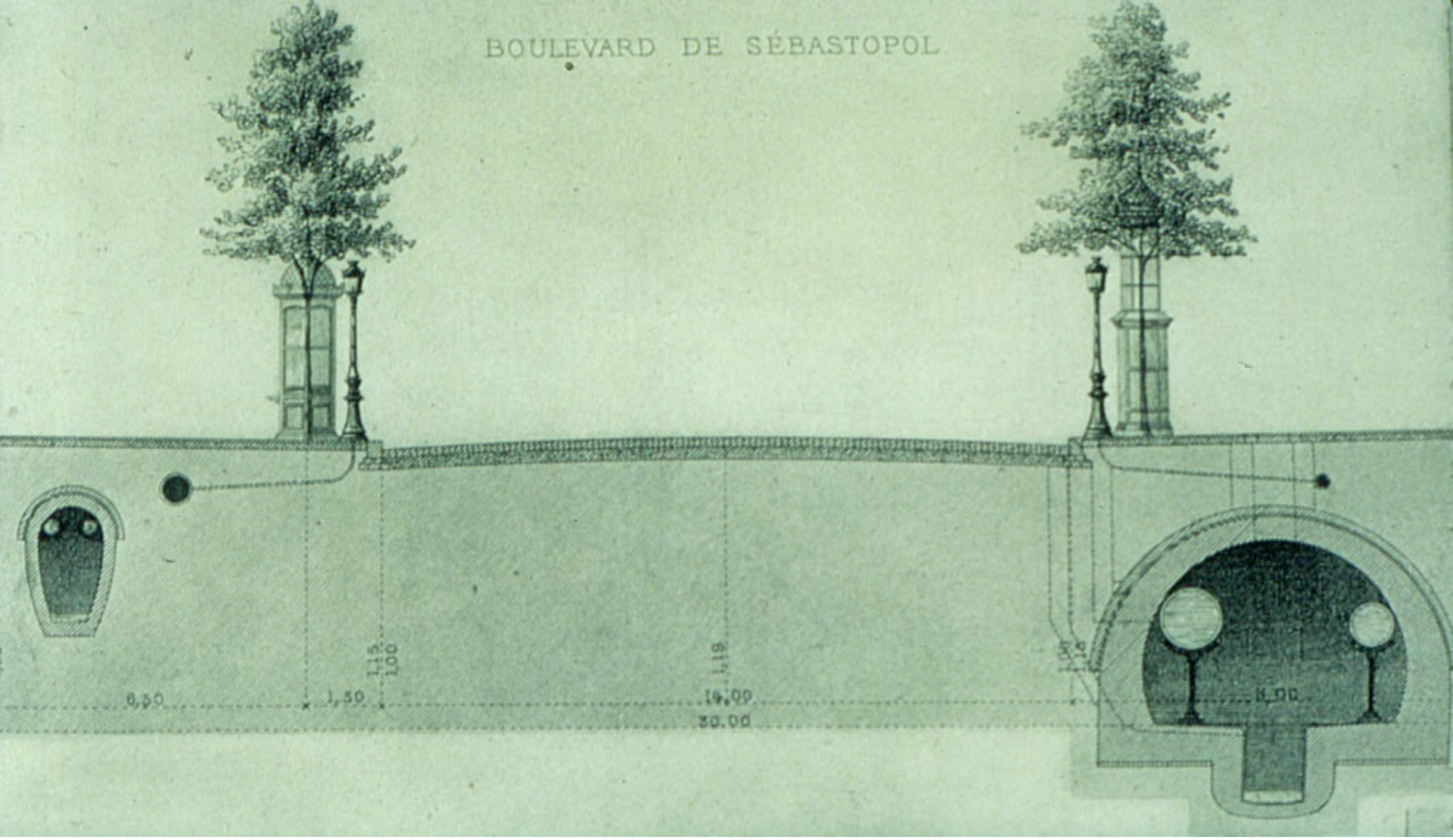
BELOW



Pierre-Auguste Renoir: *Les grands boulevards* 1875



Taking visitors to view the new sewer system- 1870



Infrastructure and Public Space

Section through Boulevard de Sebastopol, Paris

Jean-Charles Alphand

Services below, planting and lighting above to create a new public space

In the 20th century, planning of infrastructure became increasingly technocratic and standardized.

Instead of comprehensive planning, the professions diverged and became more specialized.

The work of urban planners and designers was limited to the "visible city," while infrastructure systems were relegated to the "hidden city" of the engineers.

Image from Harry Granick, *Underneath New York*, 1947

Can infrastructure be a source of social and cultural meaning?

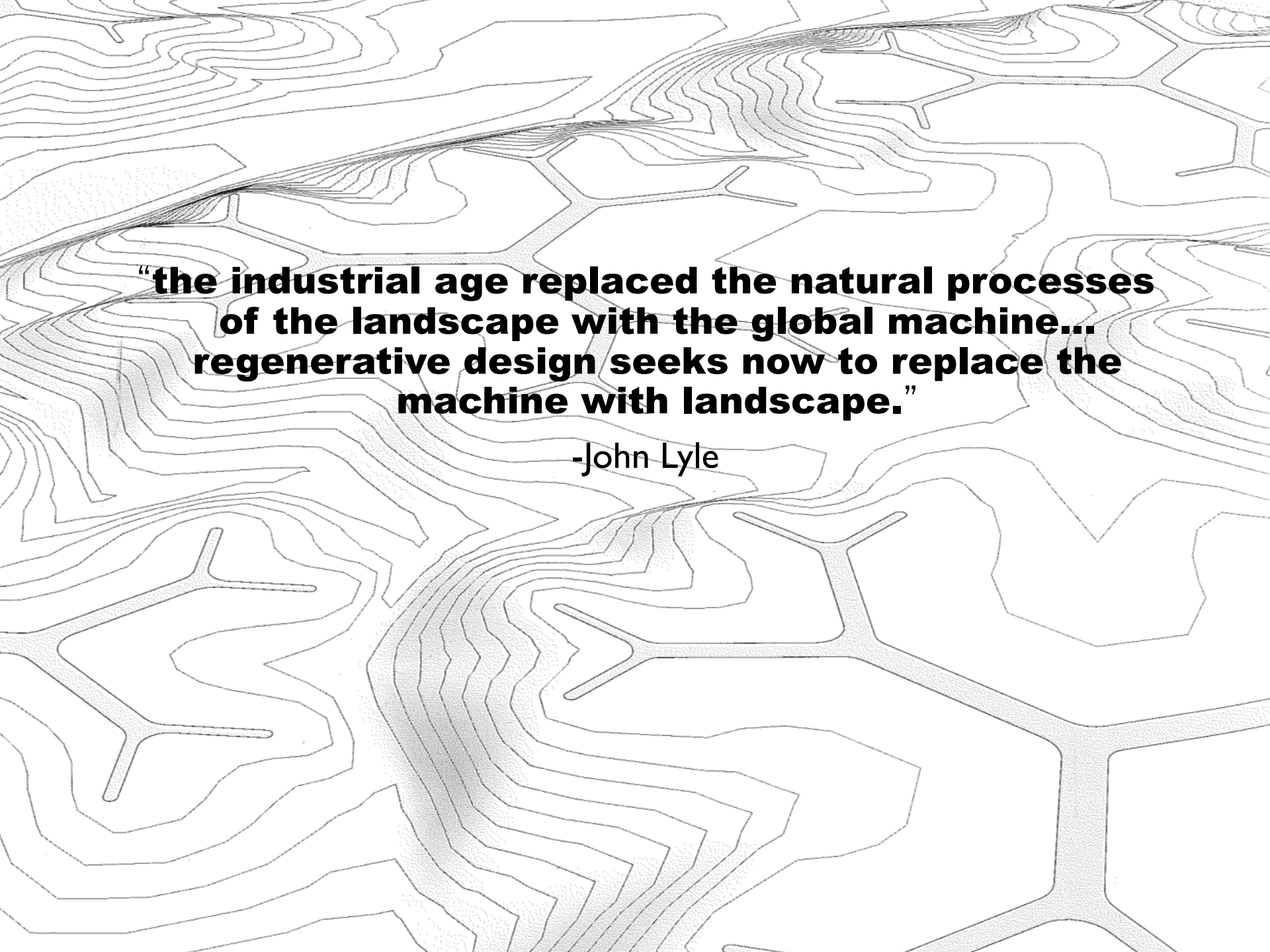
Not as a neutral (and sometimes invisible) system, but as a visible and expressive means of highlighting the relationship between natural systems and **everyday urban life?**

A socio-ecological perspective on blue-green infrastructure

core principles:

- **decentralization**
- **site-specificity**
- **multifunctionality**

The core principles that are associated with the biophysical realm also have social meaning:
cultural identity, social cohesion and the sense of place.


“the industrial age replaced the natural processes of the landscape with the global machine... regenerative design seeks now to replace the machine with landscape.”
-John Lyle

נוף בתשתית

Landscape as Infrastructure: a socio-ecological approach

An integrative approach addressing functional as well as ***ecological, aesthetic and social*** *concerns.*

The social and cultural dimensions of infrastructure landscapes have not been fully recognized.

Historically, infrastructure was planned more holistically as a way of structuring the city.

1. **Infrastructure was legible and expressive.**

2. **Natural systems provided an armature for the plan of the city.**

3. **Infrastructure systems were planned in tandem with public space systems**

Blue-Green Infrastructure

‘‘all natural, semi-natural and artificial networks of multifunctional ecological systems within, around and between urban areas, at all spatial scales’’. Tzoulas et al. (2007)

“a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services.” European Union

‘‘An adaptable term used to describe an array of products, technologies, and practices that use natural systems—or engineered systems that mimic natural processes—to enhance overall environmental quality and provide utility services’’

The United States Environmental Protection Agency (EPA) 2020

Blue-Green Infrastructure

A critique of centralized, single-purpose engineering systems

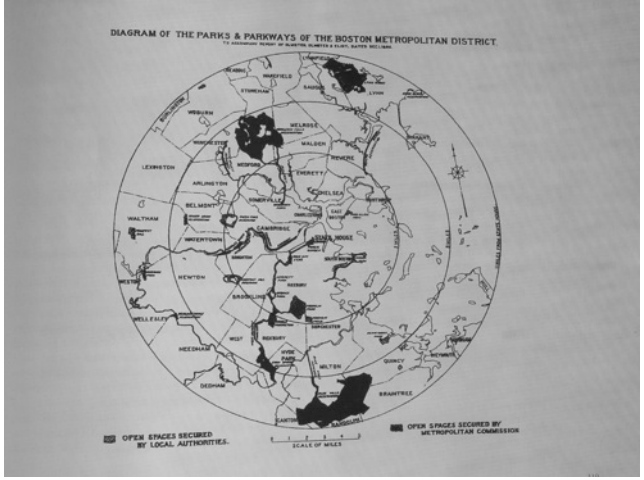
NEW MODELS required for the design of urban infrastructure to respond to contemporary conditions of

- dispersal
- decentralization
- mobility
- flexibility

Nature-based solutions (NBS) refers to the sustainable management and use of nature for tackling socio-environmental challenges.

The challenges include issues such as **climate change, water security, water pollution, food security, human health, and disaster risk management**.

פתרונות מבוססי טבע (NBS) מתייחסים לניהול ושימוש בר-קיימא של מערכות טבעיות להתמודד עם אתגרים חברתיים-סביבתיים. האתגרים כוללים **סוגיות כמו שינויי אקלים, אבטחת מים, זיהום מים, אבטחת מזון, בריאות האדם וניהול סיכוני אסון.**



Parks & Parkways of the Boston Metropolitan District, Olmsted and Eliot, 1896

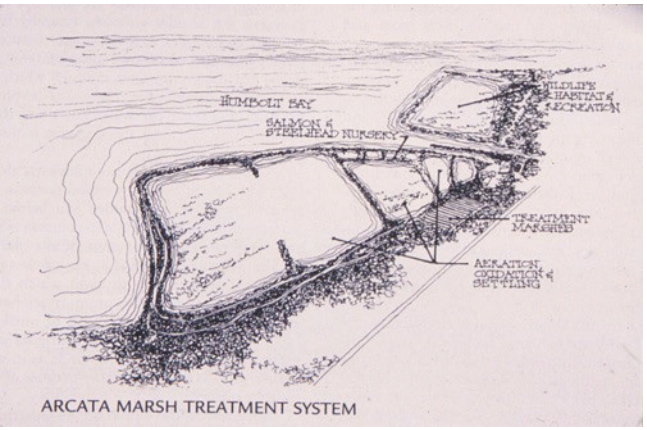
Charles Eliot

Charles Eliot and Sylvester Baxter
Metropolitan Parks System, Boston

Hydrological systems as an urban armature

Eliot and Baxter's plan for Boston- An example of park planning based on the identification and protection of regional landscape systems such as hydrology and topography, as well as scenic natural features.

Water infrastructure doubled as a recreational infrastructure for the city bringing together **engineering** and **urban design** in a cohesive approach to park planning.



Plan: treatment ponds, salmon nursery and wildlife area

View of restored marsh

Microorganisms breakdown pollutants in wastewater

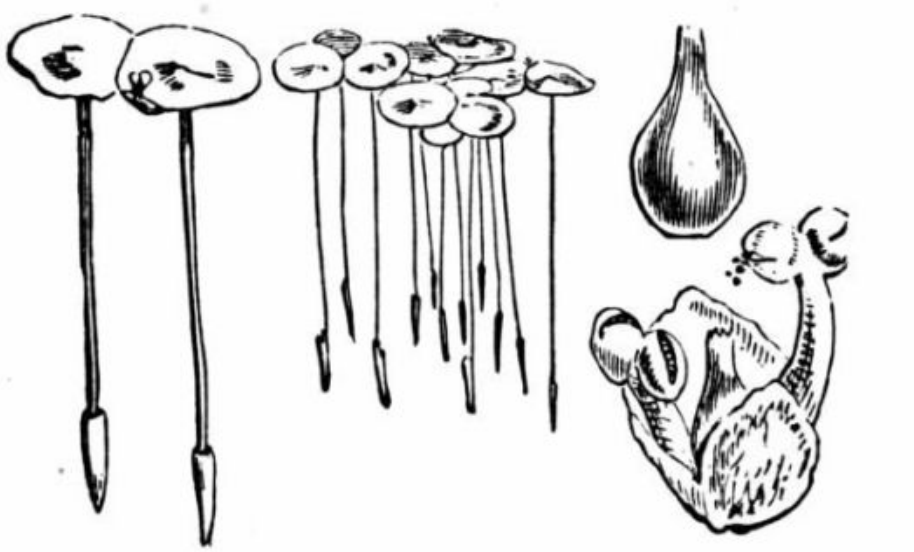
:

Arcata Marsh and Wildlife Sanctuary, Arcata CA, 1981

Green Infrastructure principles- contemporary use of landscape processes

- Marsh treatment system for tertiary wastewater treatment using biological processes
- Multifunctional plannning- includes recreational open space,
  walking and bike trails, wildlife sanctuary, salmon aquaculture.

Great blue heron in wildlife sanctuary



947. Lemna minor L.

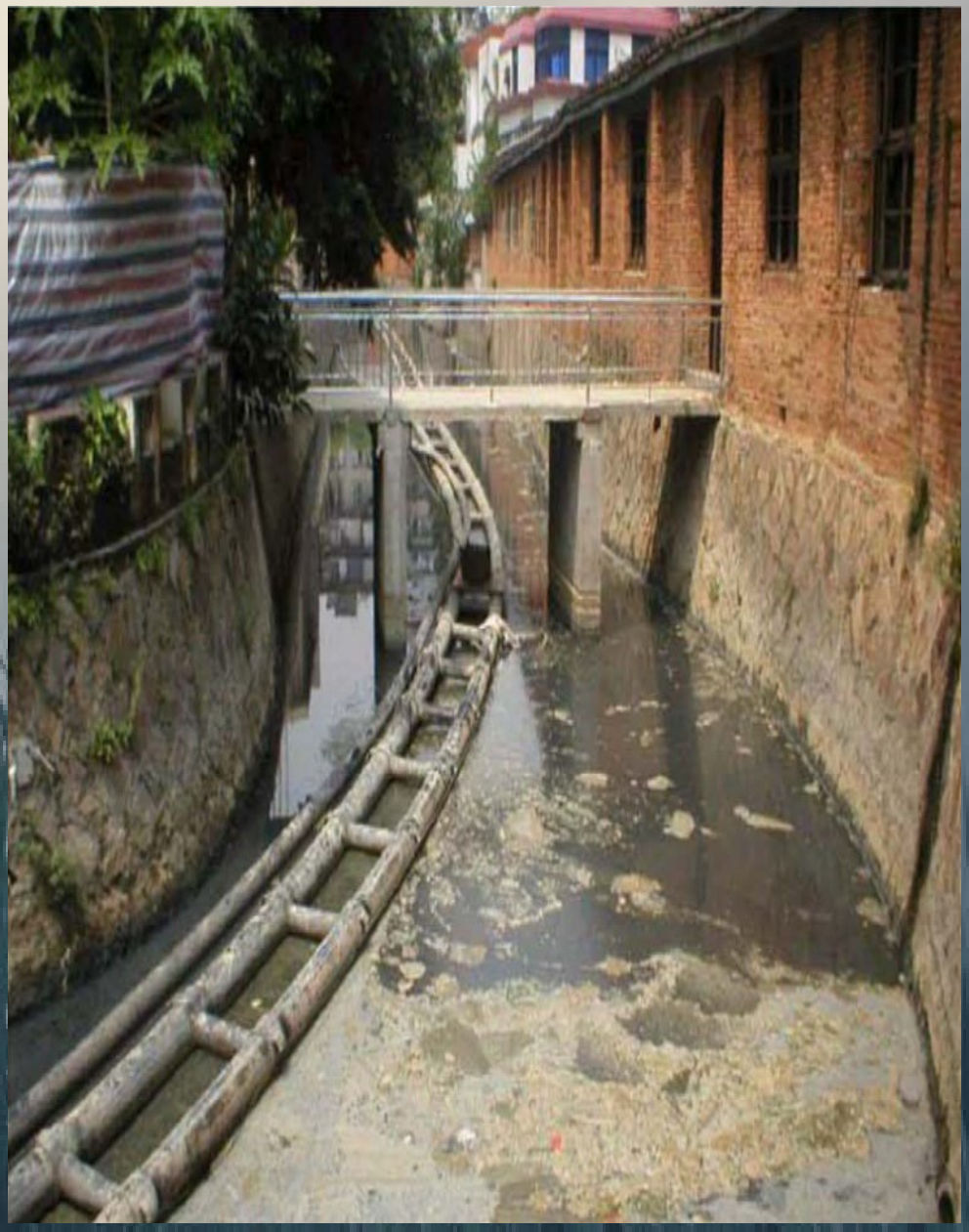
Lesser Duckweed.

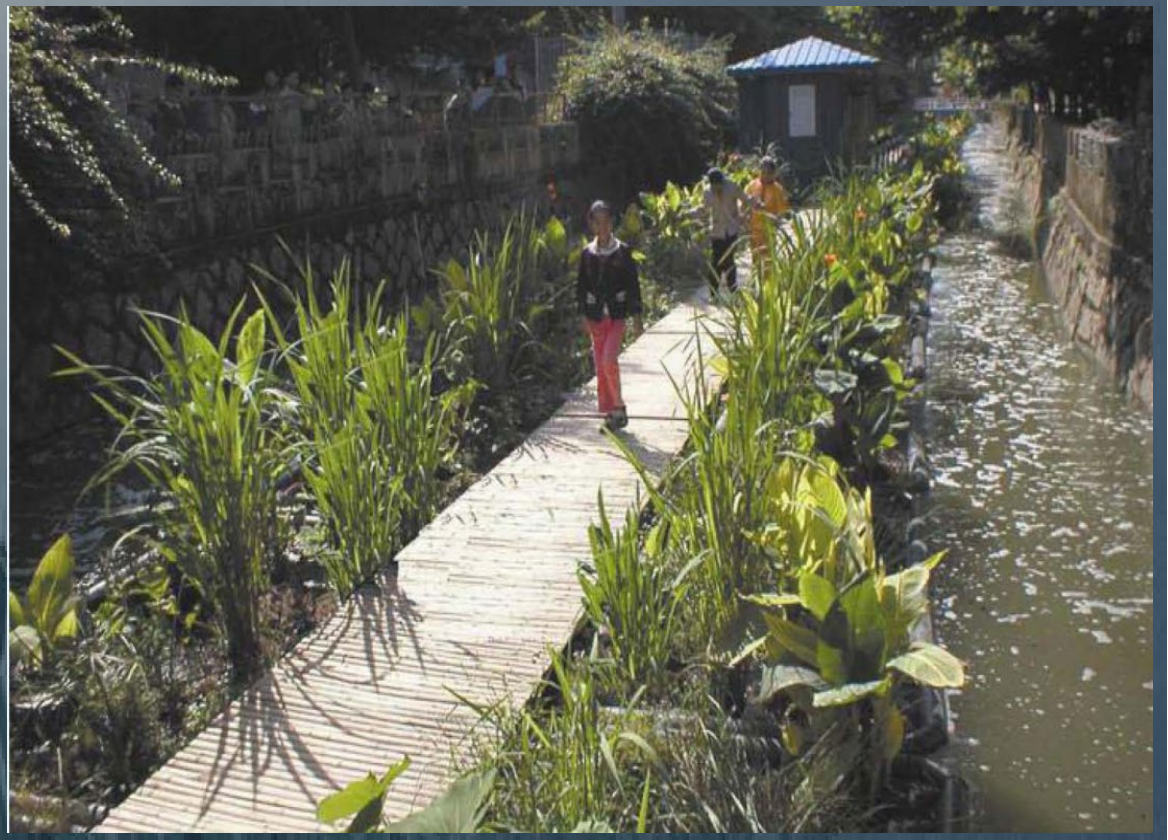
Wastewater Treatment

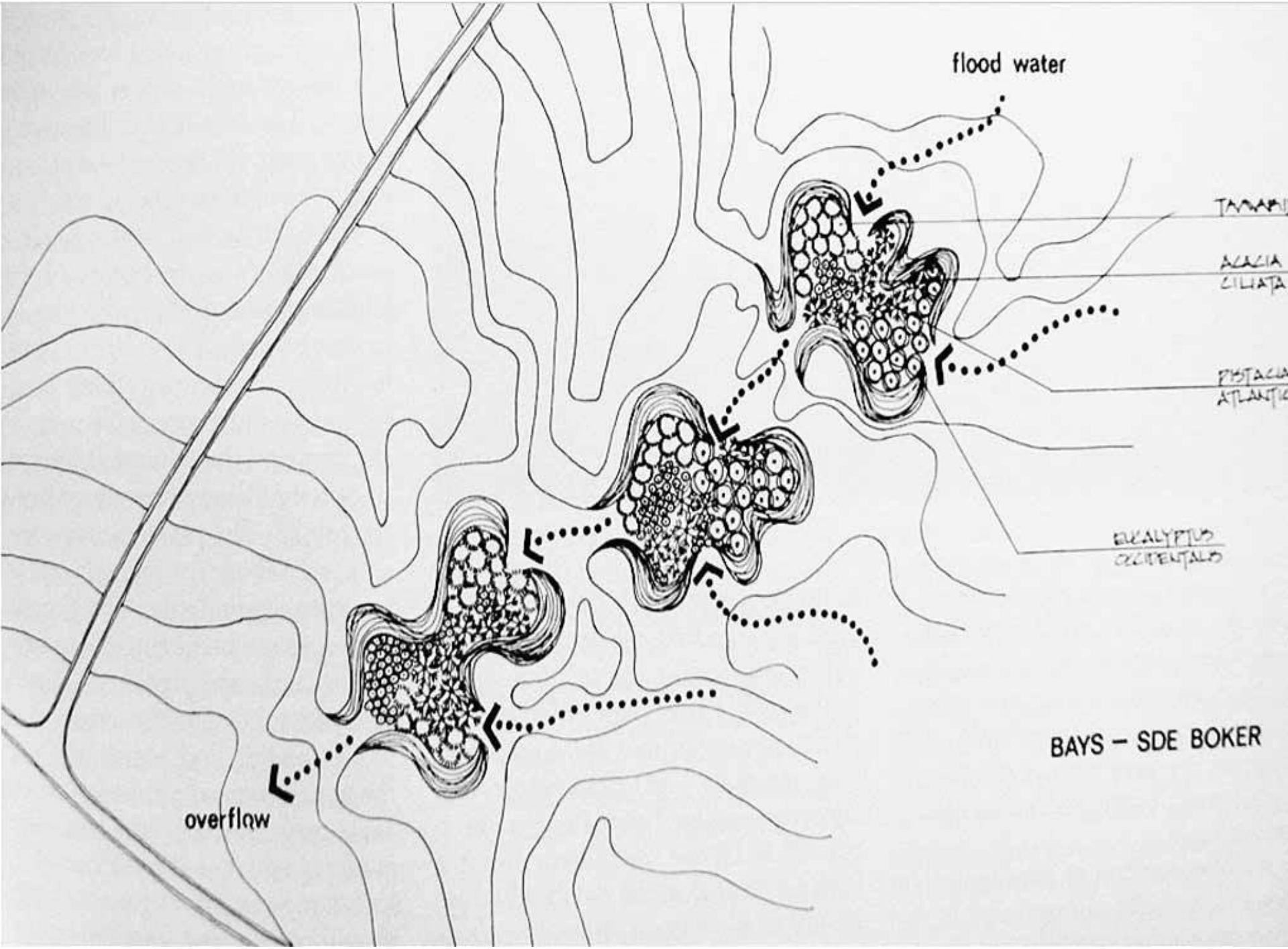
Lemna Pond, Devil Lake ND

Viet Ngo (1990)


BAIMA CANAL, FUZHOU, CHINA
John Todd, Ocean Arks International
Image © 2009 GeoEye
©2009 Google
26°03'46.07" N 119°19'07.66" E elev 12 m
Eye alt 3.57 km

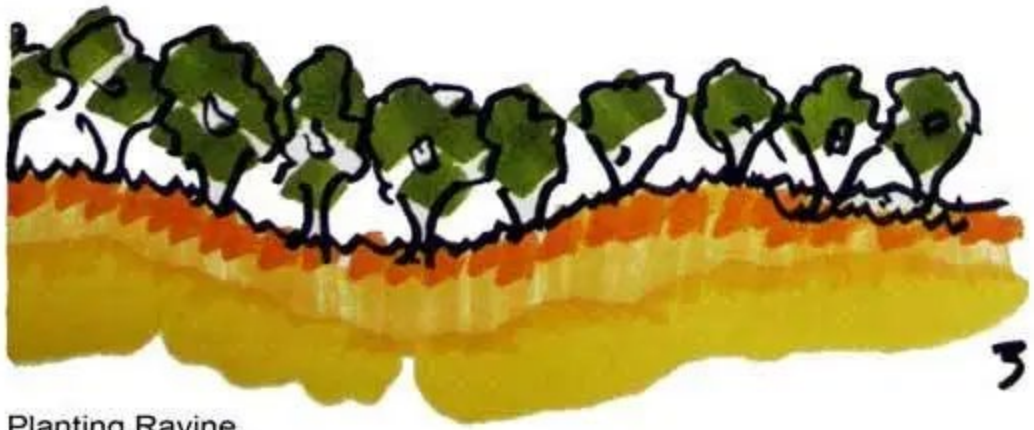





flood water
ACACIA
CILIATA
EUCALYPTUS
OCCIDENTALIS
BAYS – SDE BOKER
overflow

Eroded Landscape

Filing Wide Ravine



Planting Ravine

אקולוגיה פוליטית עירונית - על מטבוליזם ויחסי כוח ב״טבעיר״

נתי מרום

* המאמר מציג גישה רדיקלית לחקר היחסים ההדדיים בין הטבע לעיר, ודרך חדשה לבחון את המרחב החברתי–אקולוגי של העיר.

* הגישה מאתגרת את יכולת המערכת הפוליטית–כלכלית הנאו–ליברלית לאפשר קיימות עירונית. בשל הטענה לכשל שכזה, מוצעת דרך חלופית להסתכלות על הנוף, שרלוונטית מרמת השכונה ועד רמת כדור הארץ כולו.

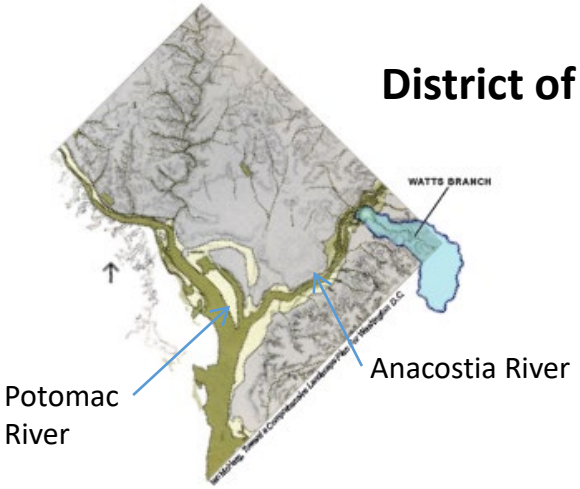
* עיקרי גישת האקולוגיה הפוליטית העירונית נסקרים במאמר זה, תוך דגש על שני ממדיה המרכזיים: הממד האקולוגי של המטבוליזם העירוני, והממד הפוליטי המתמקד ביחסי הכוחות והאי–שוויון בין גורמים שונים המשפיעים על תהליכי המטבוליזם.

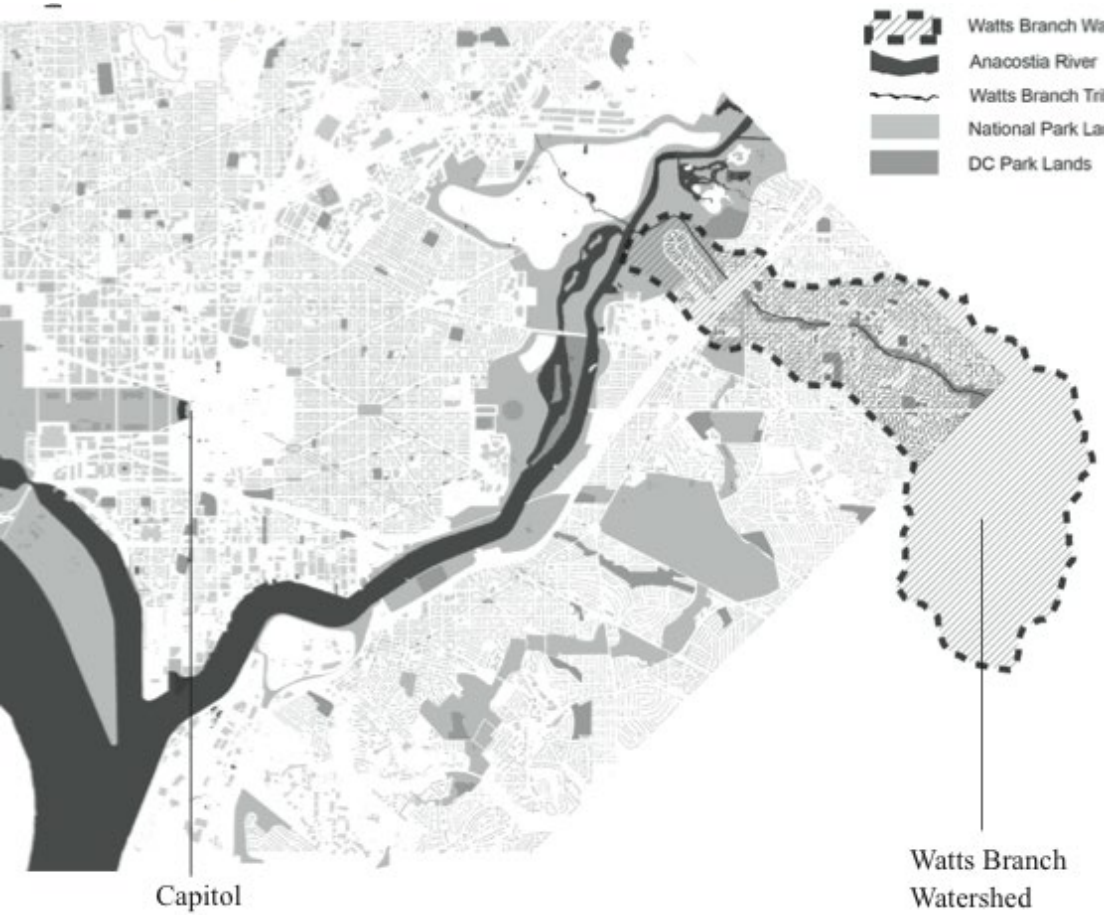
**"ב״מטבוליזם״ עירוני, מגוון התהליכים שהעיר צורכת דרכם משאבי טבע ואנרגיה מהסביבה, מייצרת תרכובות ושילובים חדשים,
ופולטת תוצרי לוואי ופסולת, תוך פיזור עלות ותועלת מטבוליות באופן בלתי אחיד בין קבוצות חברתיות שונות. התהליכים המטבוליים הללו מתקיימים בתיווכן של מערכות תשתיות מורכבות
ומפוצלות, המקצינות לעתים את האי–שוויון העירוני."** נתי מרום

Green Infrastructure and community building:
Marvin Gaye Park, Washington, DC

Marvin Gaye Park is a 2.5 km long linear park located in a dense, low-income residential neighborhood in Northeast Washington, DC along the Watts Branch stream valley - connects more than a dozen predominantly African-American neighborhoods- named after singer Marvin Gaye who was a resident of the neighborhood.

District of Columbia





Anacostia watershed
(District of Columbia and Maryland)

Watts Branch Watershed
6 square-km watershed divided between Maryland and DC

With the loss of Federal funding in 1972 the park began a long period of decline.

By the 1990s it served as an illegal dumping ground and a haven for violent crime and drugs.

In 2001 the NGO *Washington Parks and People* (WPP) began a grassroots community development process.

Source: EDAW/ AECOM


STRAND LIQUORS

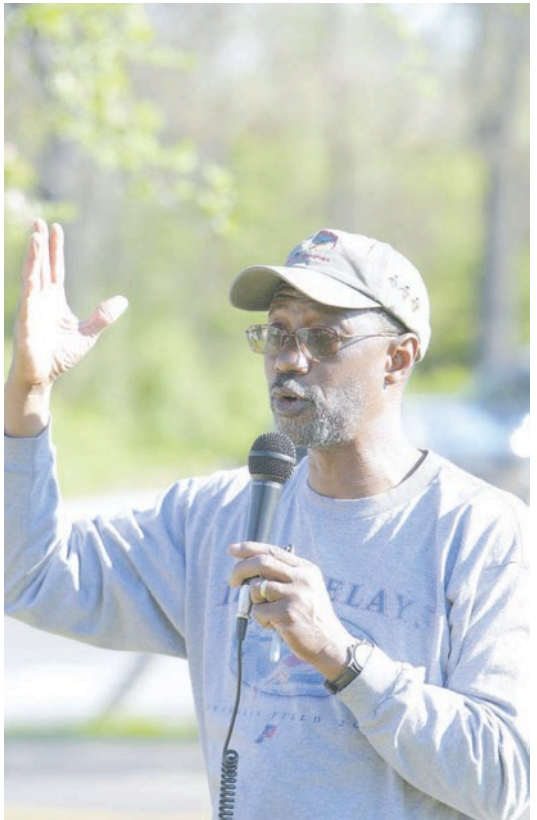
Steve Coleman,
Washington Parks for People

Two major initiatives transformed the park:

Stream restoration of Upper Watts Branch (by a partnership of state and federal agencies)

Community revitalization process of the neighborhoods surrounding park, headed by *Washington Parks and People* (WPP)

Dennis Chestnut ,
community organizer



U.S. Fish and Wildlife Service

Stream Restoration

Due to intense urbanization, increased volumes of stormwater runoff had severely eroded its stream banks and caused high levels of suspended sediment (TSS).

Approximately 1500 tons of sediment were being deposited into the Anacostia watershed each year.

Deeply incised stream channel with almost vertical banks disconnected stream from its natural floodplain.

Poor water quality and loss of habitat due to litter and leakage from the sanitary sewers

Community volunteers removing trash from the stream.

Cooking class in the park to teach healthy nutrition and counter childhood obesity.

Washington Parks and People

COMMUNITY ORGANIZING

(Washington Parks and People)

Began in 2001 with a large-scale grassroots clean-up effort. Over a period of five years, 24,000 volunteers removed 3000 tires, 14,000 hypodermic needles, 55,000 bags of garbage and towed 95 abandoned cars and trucks.

They cleared trails, removed thousands of exotic invasive plants, and planted 2000 native trees and shrubs

New activities and community programming were introduced to activate the park and drive out illegal uses, such as opening a farm stand in an active heroin dealing area, run by middle and high school students who worked in the nearby youth garden

Social sustainability: *combines the design of the physical realm with design of the social world including infrastructure to support social and cultural life*.

Watts branch stream provided **social and cultural infrastructure:**

- Place attachment - component of local identity
- empowers local groups to claim their histories
- sense of community identity and belonging
- local history – residents had "the stream in their bones" – stories/memories of the stream in everyday life

In 2006 the park was renamed after Motown singer Marvin Gaye, who grew up in one of the public housing projects in the neighborhood.

He began his career performing at the local Crystal Lounge which was converted into a new community

Motown singer Marvin Gaye

DC Green Corps trainees planting a small wetland channel (Sept 2011)

One year later - September 2012

Washington Parks and People

Economic strategy:

physical infrastructure leveraged as a productive economic base by generating employment programs, such as DC Green Corps a job-training program for members of the community in the areas of urban and community forestry and forest-based ecosystem and watershed restoration.


DC Green Corps in Marvin Gaye Park
ALLPROWEST.com


DC Green Corps in Marvin Gaye Park

Community programs: nutrition to combat obesity and “food desert” effect

urban agriculture and farmers markets

Marvin Gaye Park:

DECENTRALIZED

Planned as a flood control system - a neighborhood scaled component of a larger watershed strategy

SITE SPECIFIC

Stream provides neighborhood identity and place attachment/everyday experience of nature

MULTIFUNCTIONAL

Flood control/ open space/ economic base for employment programs/ food production/ forestry/ new public-private coalitions/entrepreneurship