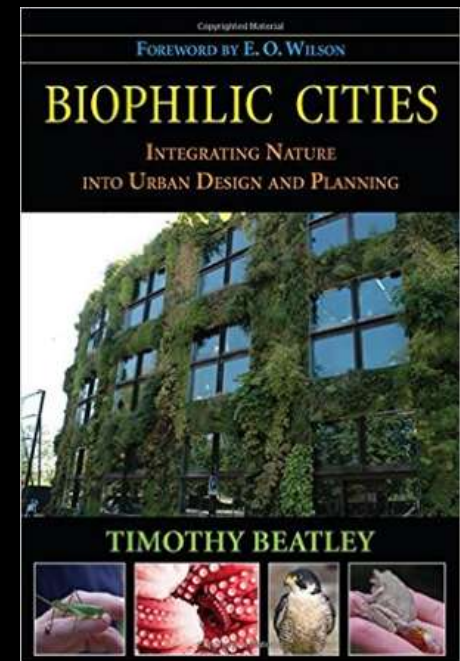
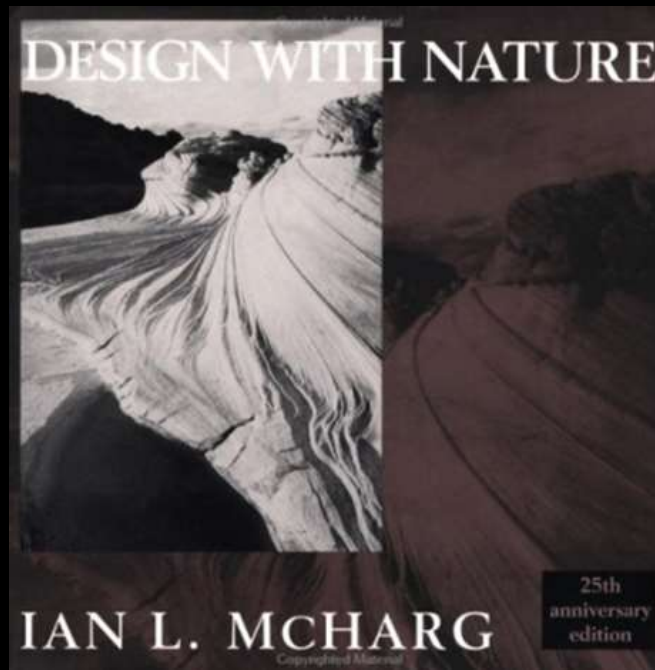
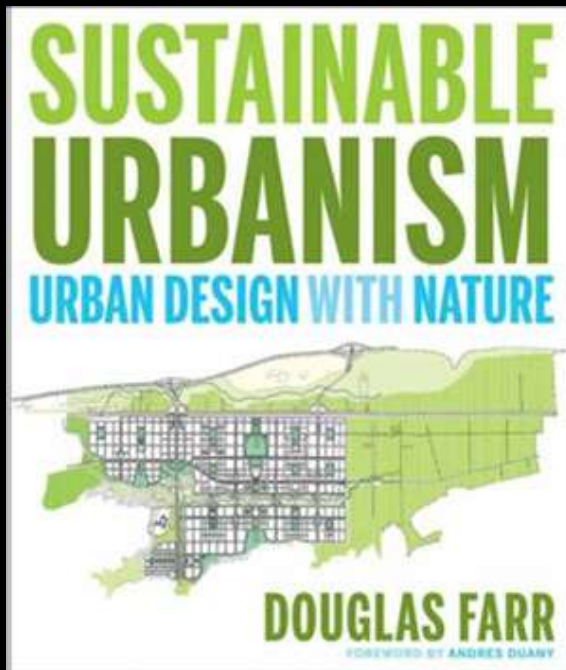




Design with Nature: Urban Planning, Management, and the Sustainability Myth



Kevin M. Anderson, Ph.D.
Austin Water – Center for Environmental Research

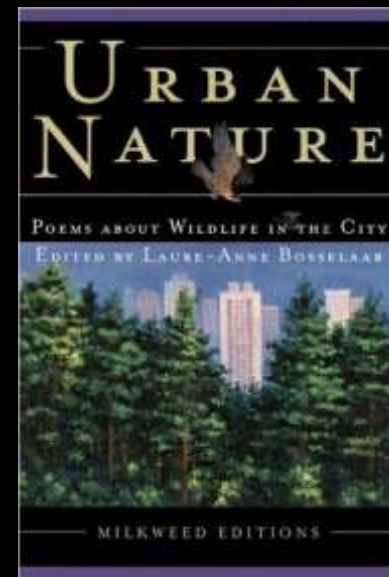
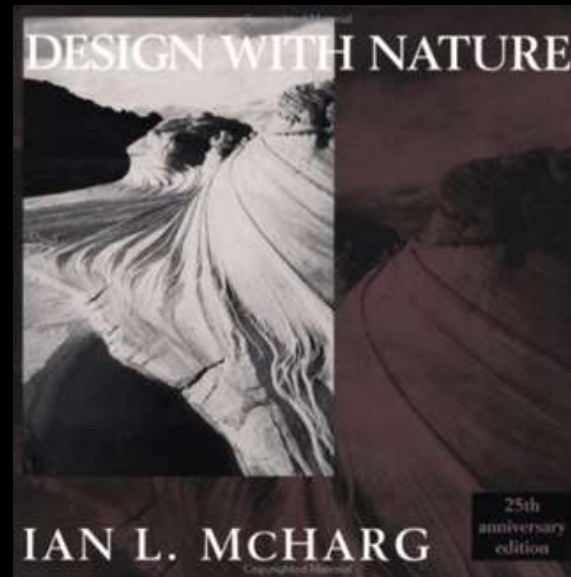
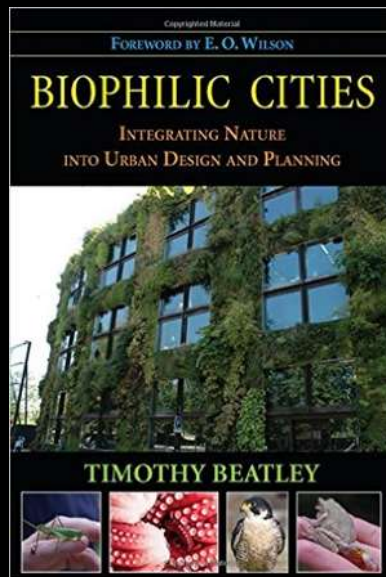
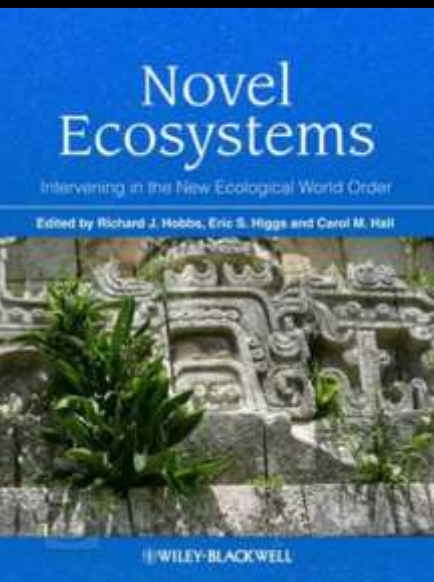


The CER Lunchtime Lectures 2017

Understanding Urban Nature: Ecology, Culture, and the American City

The Proper Place of Urban Nature

- October Nature Out of Place: Invasive Species, Novel Ecosystems, and Urban Ecology
- November Design with Nature: Urban Planning, Management, and the Sustainability Myth
- December Encounters with Urban Nature: Ecology, the City, and the Arts



Rethinking the Human Place in Nature

We need to embrace the full continuum of a natural landscape that is also cultural, in which the city, the suburb, the pastoral, and the wild each has its proper place, which we permit ourselves to celebrate without needlessly denigrating the others.

William Cronon “The Trouble with Wilderness or, Getting Back to the Wrong Nature”
in *Uncommon Ground: Rethinking the Human Place in Nature* (1995)



The Sustainability Myth Environment - Economy - Equity

Sustainability – maintaining a stable state

Our Common Future, also known as the *Brundtland Report*, from the United Nations World Commission on Environment and Development was published in 1987.

Sustainable development is defined in the report as:

"development that meets the needs of the present without compromising the ability of future generations to meet their own needs."



Sustainable Cities



**OUR
COMMON
FUTURE**

THE WORLD COMMISSION
ON ENVIRONMENT
AND DEVELOPMENT

Design with Nature: Can Nature make a City more...Sustainable?

Ecologically and Culturally Redeemed?

Ecologically Restored?

Ecologically Functional?

The Sustainability Myth

- Narrative of Redemptive Urban Nature – Ecology and Culture
- Narrative of Restorative Urban Nature – Ecology and Design
- Narrative of Functional Urban Nature – Science, Engineering, Management

Sustainable Cities



The American Myth of Nature

In the United States, the kinds of nature that we celebrate are wilderness and pastoral landscapes.

They are the foundation of the American myth of nature from which we assess the value of nature in America.



The Socioecological Problem of Urban Nature

- In American cities, we perceive nature in the urban landscape filtered through a conceptual framework that prejudices its ecological and cultural value.
- Our understanding of what constitutes good urban nature in American cities is shaped by culturally dominant metaphors of nature.

Wilderness

Pastoral

Urban Nature?



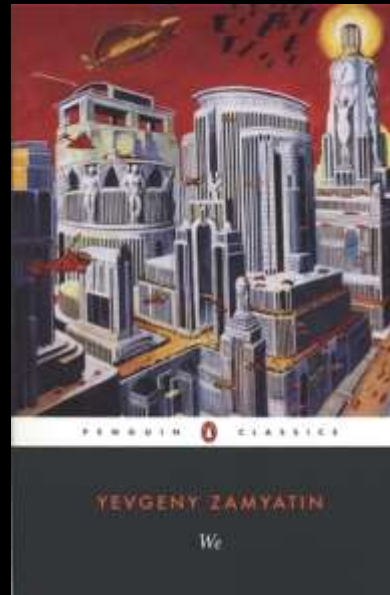
Wild Nature, Human Culture, and the City Wall

Oh, how great and divinely limiting is the wisdom of walls. This Green Wall is, I think, the greatest invention ever conceived. Man ceased to be a wild animal the day he built the first wall; Man ceased to be a wild man only on the day when the Green Wall was completed, when, by this wall we isolated our machine-like, perfect world from the irrational, ugly world of trees, birds, and beasts.

- Eugene Zamyatin, *We* (1921)



Yevgeny Zamyatin (1884–1937)



The Iterative Natures - Classical Western Ideas of Nature

1. First nature - wilderness or pristine nature (untrammelled by humans)

Wilderness is the dangerous realm of the gods or “primitive” humans

2. Second nature – pastoral arcadia – pastures, farms, settlements

Virgil is credited in the Eclogues with establishing Arcadia as a poetic ideal

3. Third nature – Renaissance formal gardens

Jacopo Bonfadio wrote in 1541 that formal gardens make a “third nature, which I would not know how to name.”



The illustration shows a distant mountain (first nature) giving way to cultivated agricultural land (second nature) and then a formal garden (third nature).

Frontispiece to l'Abbé de Vallemont's *Curiositez de la nature et de l'art* (1705)

From Positive to Negative Narrative of Second Nature The Urban

From Pastoral Arcadia

Cicero *De natura deorum* (45BC)

We enjoy the fruits of the plains and of the mountains, the rivers and the lakes are ours, we sow corn, we plant trees, we fertilize the soil by irrigation, we confine the rivers and straighten or divert their courses. In fine, by means of our hands we essay to create as it were a second world within the world of nature.

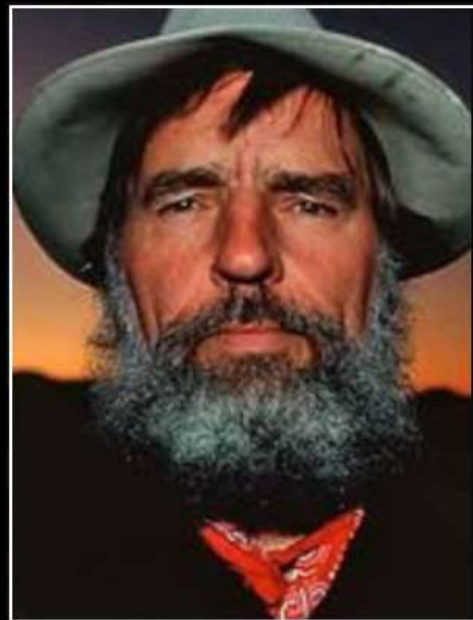
to Urban Decay

Henri Lefebvre *The Production of Space* (1974)

Nature, destroyed as such, has already had to be reconstructed at another level, the level of “second nature” i.e. the town and the urban. The town, anti-nature or non-nature and yet second nature, heralds the future world, the world of the generalized urban. Nature, as the sum of particularities which are external to each other and dispersed in space, dies. It gives way to produced space, to the urban.



American Narrative of Redemptive Nature – Wilderness and Wildness

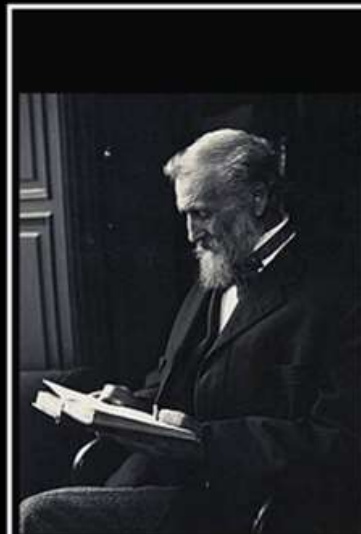


Wilderness is not a luxury but a necessity of the human spirit, and as vital to our lives as water and good bread. A civilization which destroys what little remains of the wild, the spare, the original, is cutting itself off from its origins and betraying the principle of civilization itself.

— Edward Abbey —

AZ QUOTES

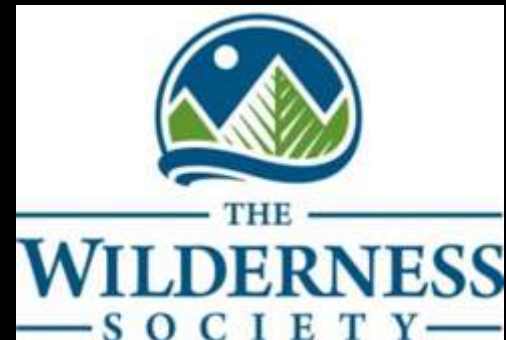
**“In wilderness
is the preservation
of the world.”
Thoreau**



In God's wildness lies the hope of the world—the great fresh unblighted, unredeemed wilderness. The galling harness of civilization drops off, and wounds heal ere we are aware.

(John Muir)

izquotes.com



19th Century Re-invention of American Nature

American Transcendentalism

The Romantic idea of Nature transformed into the American Transcendentalist idea of Nature in Ralph Waldo Emerson's essay, "Nature" (1844).

- Nature is a source of sensations--healthy feelings.
- It is therapy for a diseased, overcivilized heart.
- Humans can discover emotional health in nature.
- Such health leads to moral and spiritual clarity.

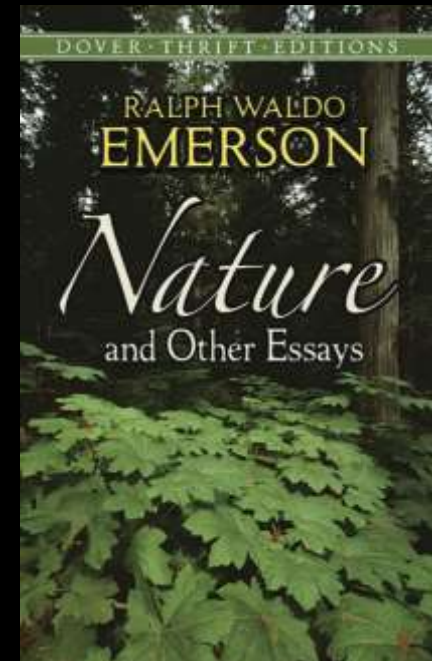
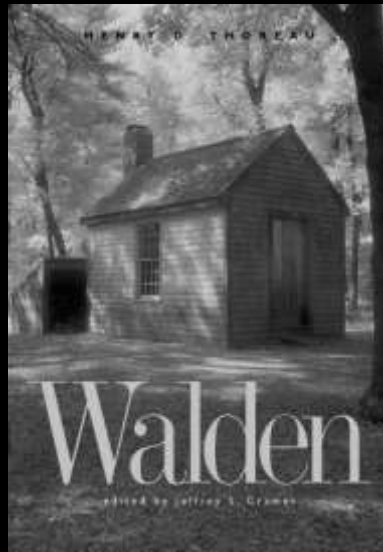


Thoreau's *Walden* (1854)

Nature is a refuge from the artificial constructs of civilization.



Henry David Thoreau



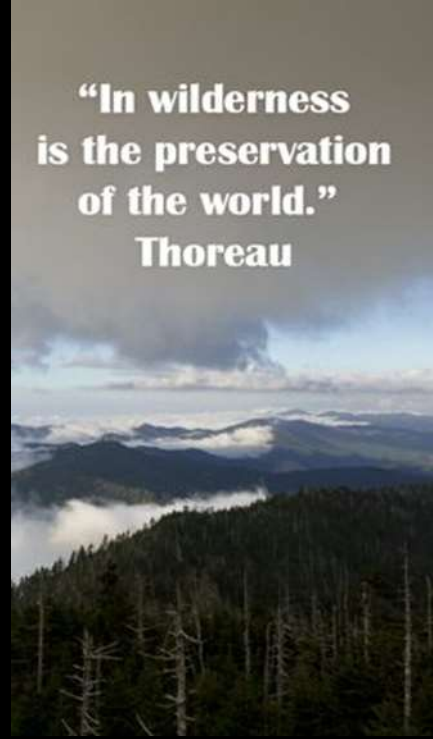
Defense of American Nature - Wildness and Wilderness

Henry David Thoreau, "Walking" (1862)

The West of which I speak is but another name for the Wild; and what I have been preparing to say is, that in Wildness is the preservation of the world.

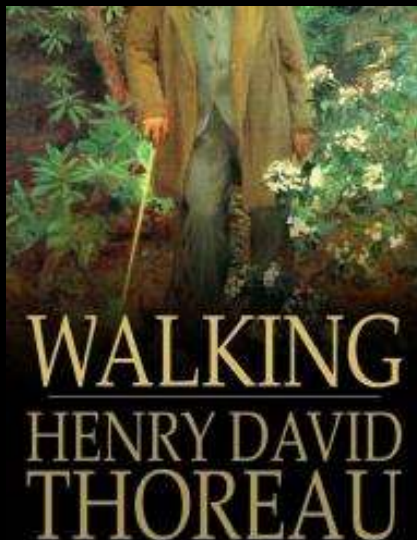
Life consists with Wildness. The most alive is the wildest. Not yet subdued to man, its presence refreshes him.

Hope and the future for me are not in lawns and cultivated fields, not in towns and cities, but in the impervious and quaking swamps.



SWAMPS?

1817-1862



American Pastoral Nature

Jefferson and the American Agrarian Myth

“Cultivators of the earth are the most valuable citizens. They are the most vigorous, the most independent, the most virtuous, & they are tied to their country & wedded to its liberty & interests by the most lasting bands.”

1785 Letter to John Jay

The yeoman farmer was portrayed as a self-reliant individual, the bedrock of democracy.

He owned a small farm and worked it with the help of his family and was seen as simple, honest, healthy because he lived close to nature.

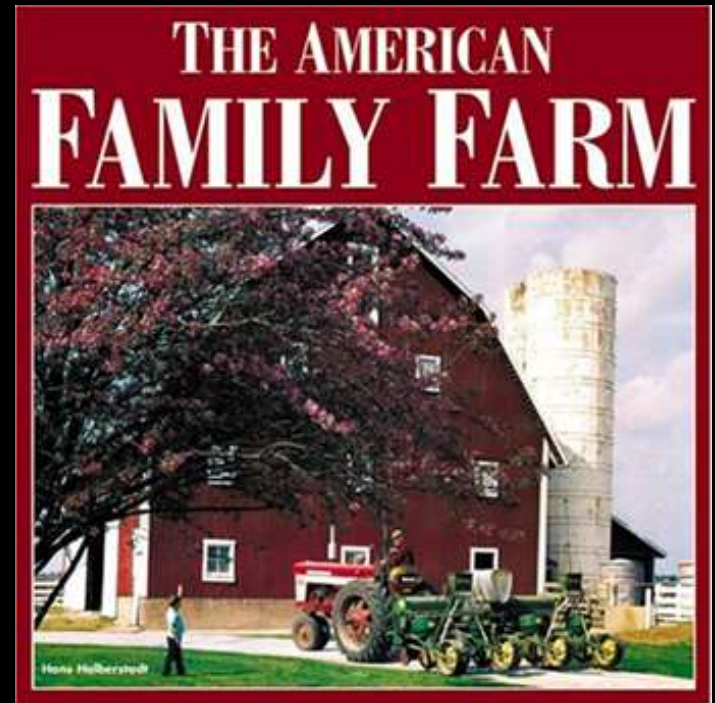


Late 19th Century

American Agrarianism and the City

Agrarianism refers to a social philosophy or political philosophy which values rural society as superior to urban society, the independent farmer as superior to the paid worker, and sees farming as a way of life that can shape the ideal social values.

It stresses the superiority of a simpler rural life as opposed to the complexity of city life, with its banks and factories.

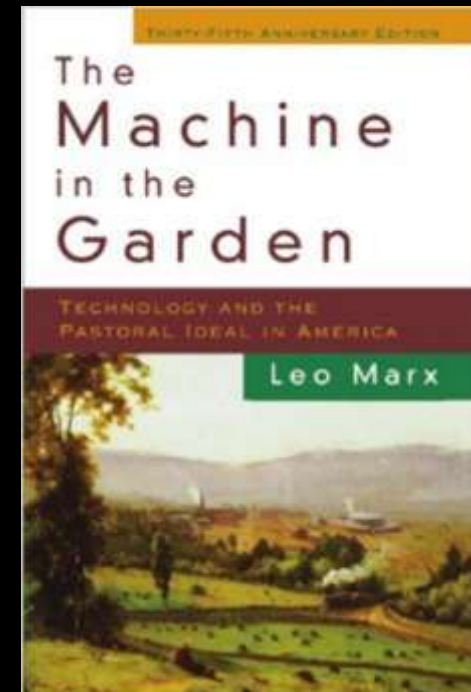
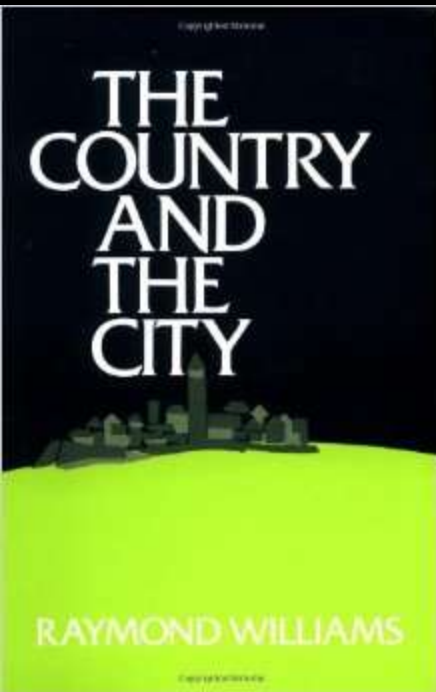


American Narrative of Redemptive Urban Nature – The Urban Nature Myth

- The American narrative of redemptive urban nature emerged in the 19th century, and so it uses the Transcendentalist myth of nature in which nature is a tonic for body and spirit.
- Space for urban nature is created to provide recreation and “healthy, local” food for physical health and to allow contact with officially sanctioned nature for mental health.
- Tension between the Country and the City

Jean-Honoré Fragonard

Pastoral Landscape with a Shepherd and Shepherdess at Rest 1761



The 19th Century American Pastoral Aesthetic – Cities and Towns

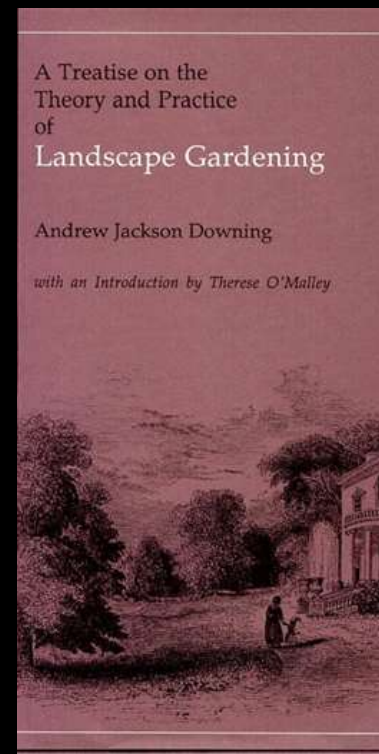
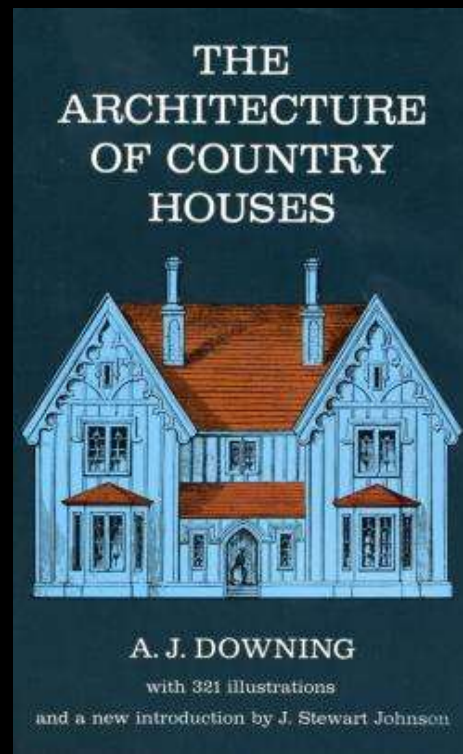
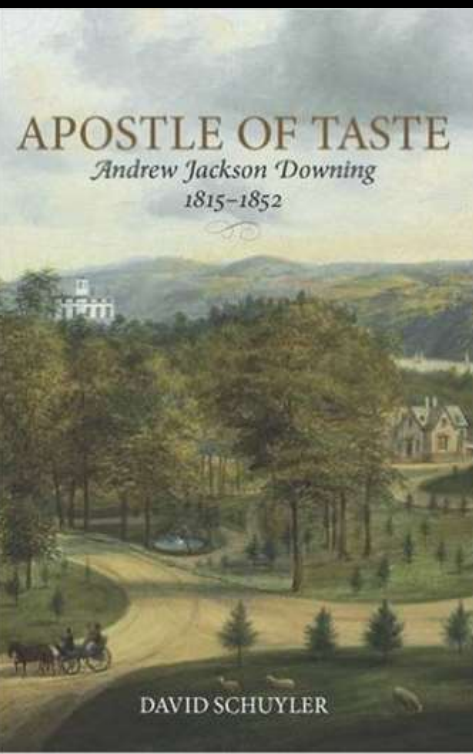
"There is a moral influence in a country home."

A. J. Downing 1815-1852

In 1841 his first book, *A Treatise on the Theory and Practice of Landscape Gardening, Adapted to North America*, was published to a great success; it was the first book of its kind published in the United States.

Editor of *The Horticulturist* magazine (1846–52)

Democracy of taste – Regardless of one's wealth or social standing, American republicanism offers equal and unlimited access to intellectual and artistic growth and the development of good taste, all of which accompany moral improvement.

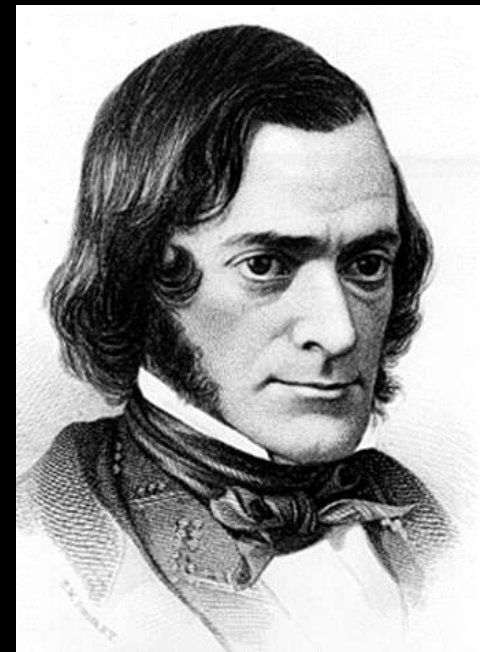


Redemptive Urban Nature - Democratic? The Social and Political Role of American Urban Parks

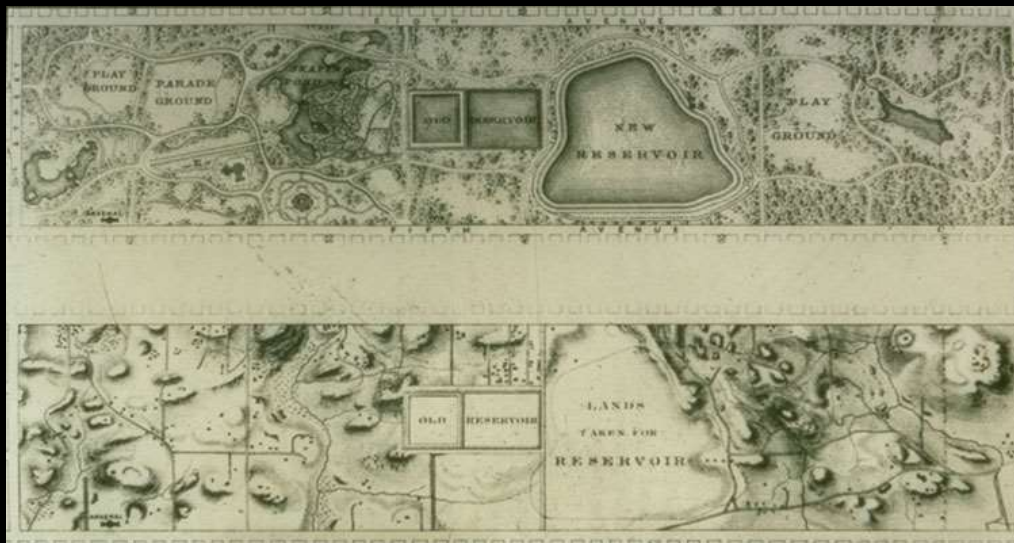
“banish the plague-spots of democracy”

“Plant spacious parks in your cities, and unloose their gates as wide as the gates of morning to the whole people.

As there are no dark places at noonday, so education and culture – the true sunshine of the soul – will banish the plague-spots of democracy.”

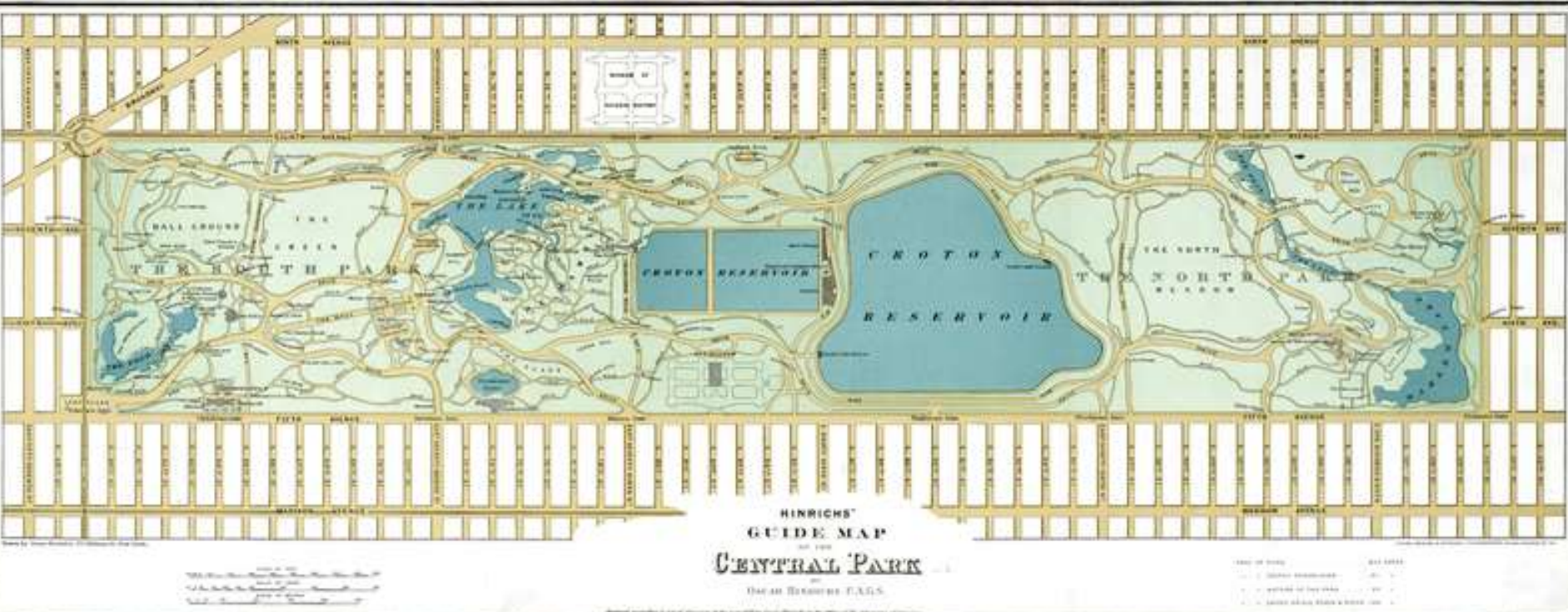


The New York Park 1851



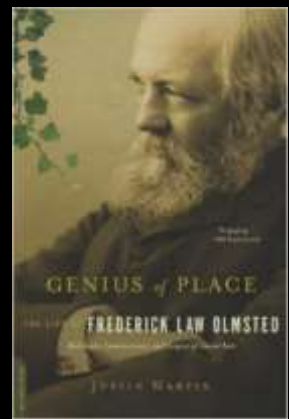
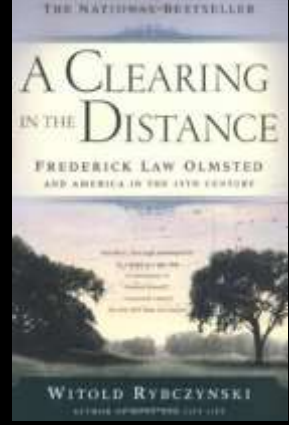
Redemptive Urban Nature in Urban Park Design

Olmsted observed that New York's Central Park had a "harmonizing and refining influence upon the most unfortunate and most lawless classes of the city - an influence favorable to courtesy, self-control, and temperance."



America's First Landscape Architect Frederick Law Olmsted 1822 – 1903

- Central Park
- Prospect Park, Brooklyn
- South Park, Chicago
- Mount Royal Park, Montreal
- U.S. Capitol Grounds, Washington
- Back Bay Fens, Boston
- Arnold Arboretum, Boston
- World's Columbian Exposition, Chicago
- National Zoological Park, Washington
- Biltmore Estate, Asheville, NC
- Park and parkway system in Buffalo
- The first Yosemite Park Commission
- Niagara Falls Park
- Biltmore Estate, Ashville, North Carolina
- Colleges and Universities – Stanford, Yale, Smith, Mount Holyoke, Vassar, Bryn Mawr, Brown, Chicago, Williams, Johns Hopkins, Duke, Notre Dame



Narrative of Redemptive Urban Nature

Should the forces which push men into the arms of ignorance, sin, and death, be allowed a free field in our cities or should there be parks and open spaces to redeem the city with all that mingling of the natural and the human which we call landscape?

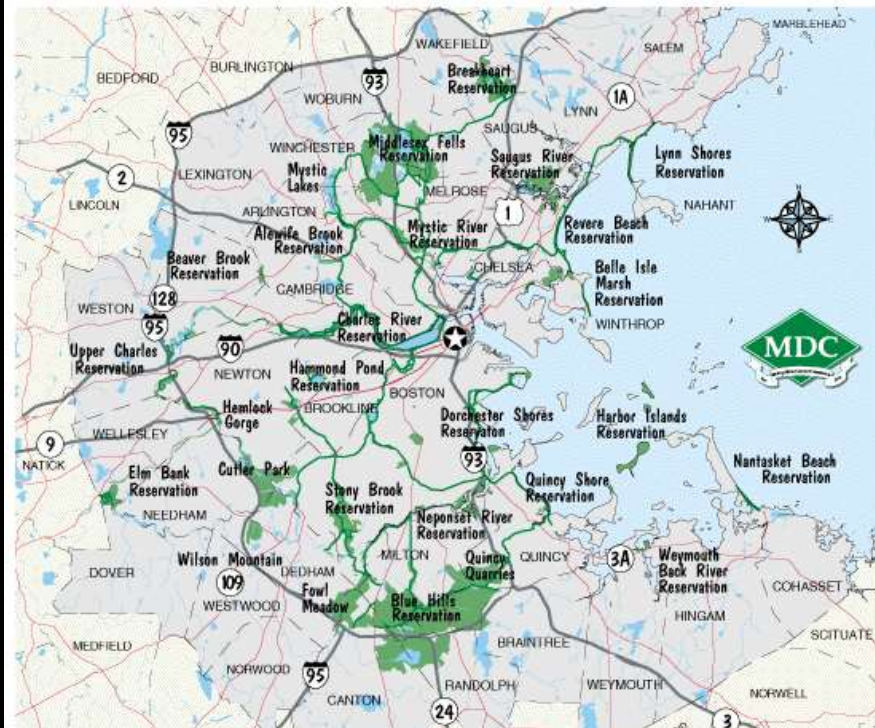
Charles Elliot, Jr. 1891



Charles Eliot Jr.
1859-1897

Confident in their Romantic philosophy, men like Downing, Olmsted, and Eliot saw themselves as educators teaching with shovel and pen a new meaning for nature in urban society.

Metropolitan Park System of Greater Boston

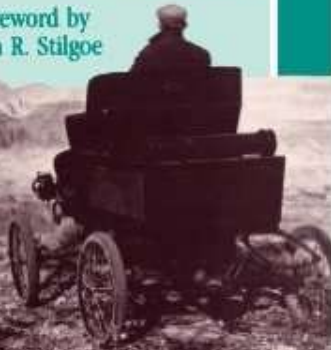


BACK TO NATURE

The Arcadian Myth
In Urban America

Peter J. Schmitt

foreword by
John R. Stilgoe



The Arcadian Myth in Urban America

Back to Nature vs. Back to the Land

Americans turning “back to nature” rather than “back to the land” responded to a philosophy only faintly related to the pattern of thought...called “agrarianism.”

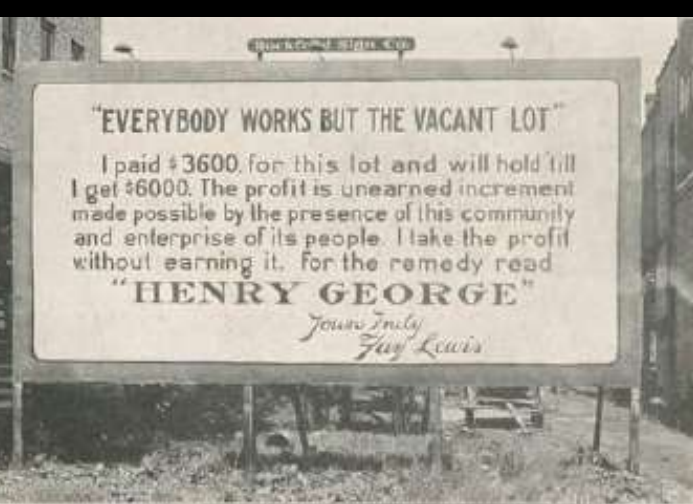
Simply put, this urban response valued nature’s spiritual impact above its economic importance; it might be called “Arcadian.”

If the Arcadian myth was not simply a reversion to Thomas Jefferson’s agrarianism, neither was it a revival of nineteenth century Transcendentalism...

Peter J. Schmitt, *Back to Nature: The Arcadian Myth in Urban America* 1969

Confident in their Romantic philosophy, men like Downing, Olmsted, and Eliot saw themselves as educators teaching with shovel and pen a new meaning for nature in urban society.



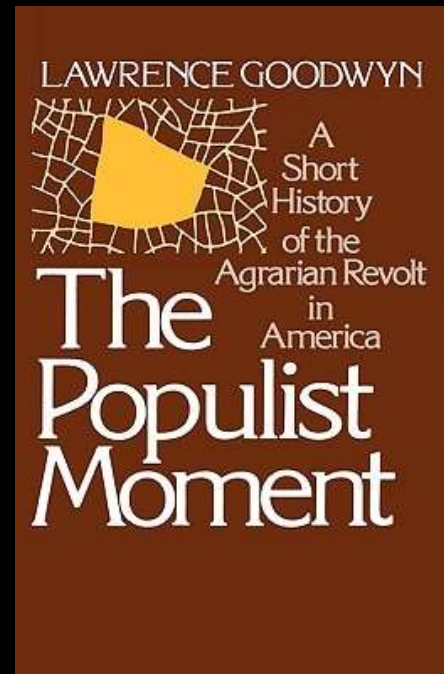
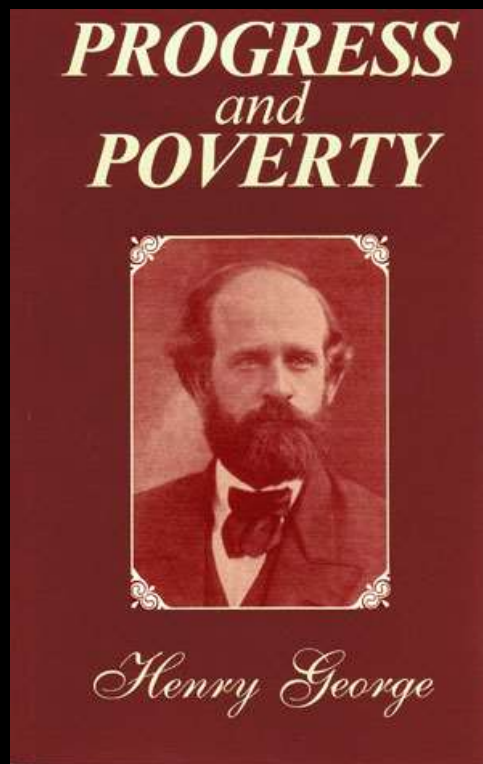
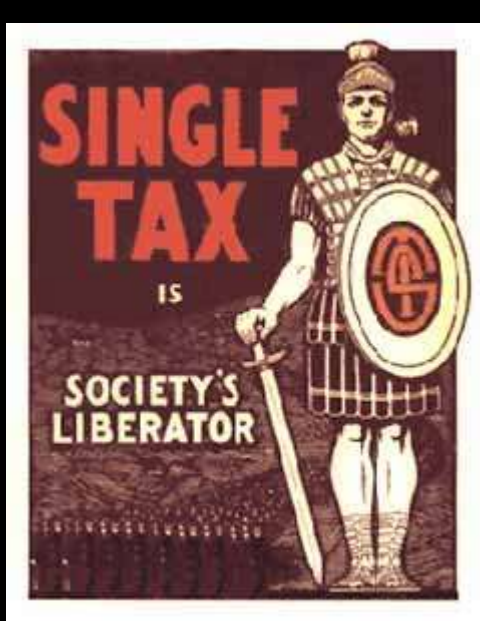


Back to the Land Pastoral Rebellion 1879 – 1920s

Henry George 1838-1897

The Progressive Era and The Rural
Populist Revolt

An economic depression between 1893
and 1897 caused poverty and
unemployment



Urban Back to Land Movement – Urban Populism and the Labor Movement

Bolton Hall 1854 – 1938

1908 published *A Little Land and A Living*

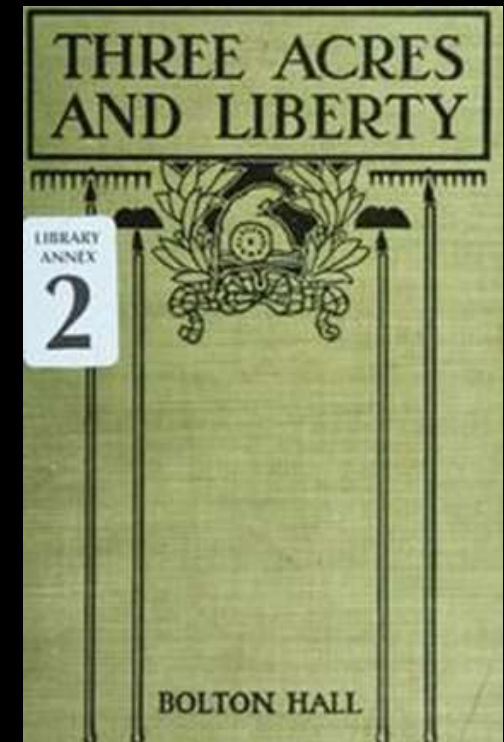
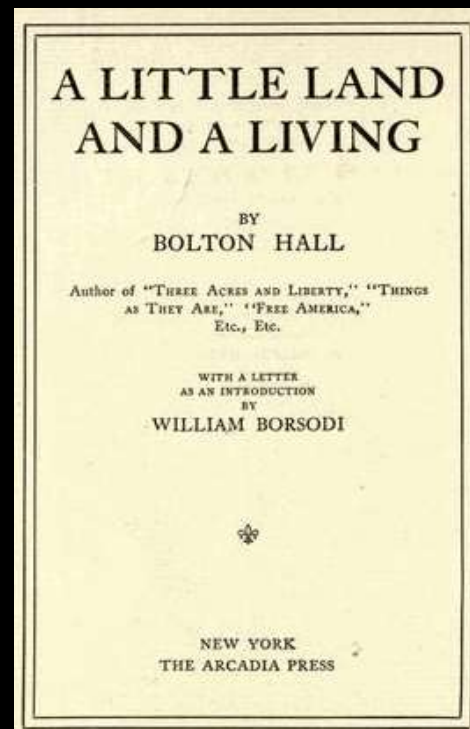
1908 established the Vacant Lot Gardening Association in New York City

Urban Agrarian “Little plots, well-tilled”

– “any dunce can raise a crop of onions on an acre of land”

- Potato Patches 1890-1930
- Depression Relief Gardens 1929-1939

Many farmers disliked the welfare garden program, thinking that it maintained the economic depression by adding to the overproduction already taking place

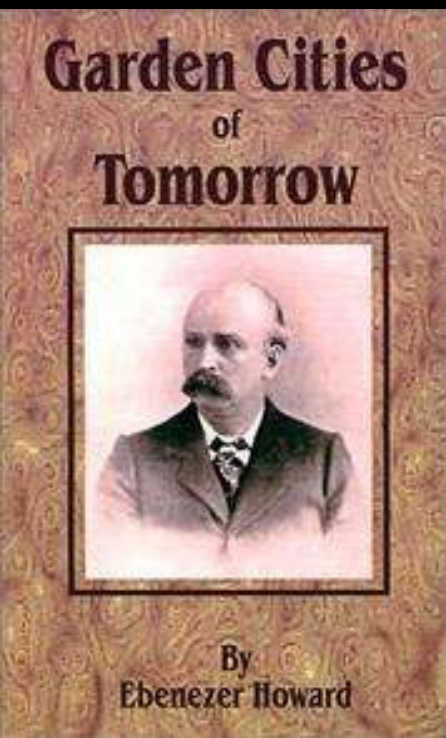


20th Century Urban Design and Utopian Visions - The Garden City Movement

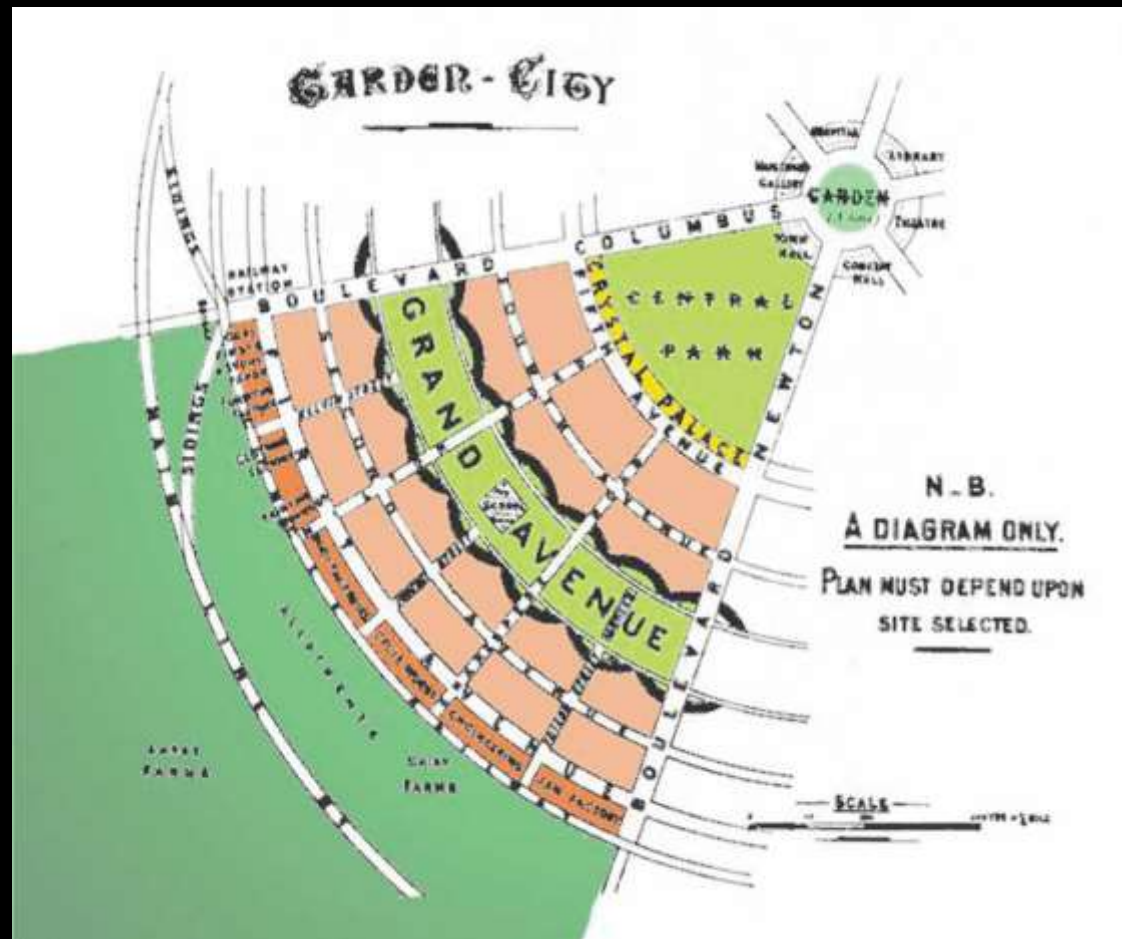
Sir Ebenezer Howard 1850 -1928

Garden cities - planned, self-contained “sustainable” communities surrounded by "greenbelts" (parks), containing proportionate areas of residences, industry and agriculture

Howard believed that overcrowding and deterioration of cities was one of the troubling issues of their time. The garden city concept combined the town and country in order to provide the working class an alternative to working on farms or in ‘crowded, unhealthy cities’.



1898



The Garden City To American New Towns

Integrating Green Space in American Urban Planning

Henry Wright 1878-1936

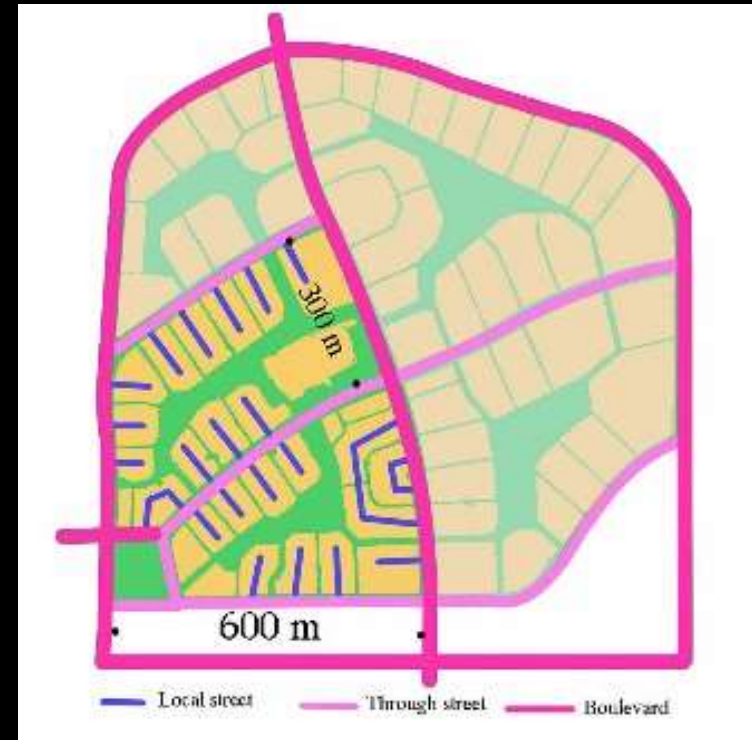
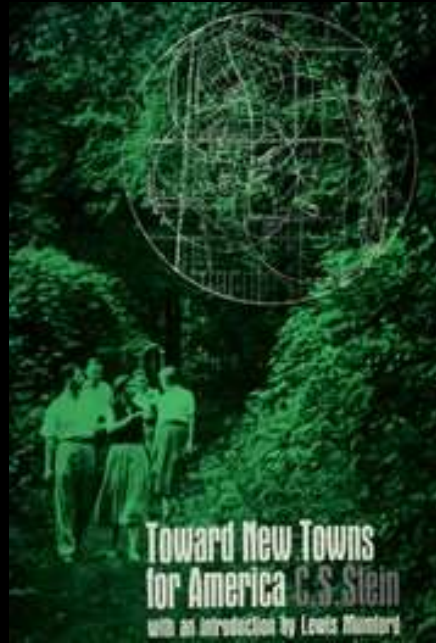
Clarence Stein 1882-1975

Wright and Stein expanded the idea of a Garden City.
Molding urban construction into nature.

1923 collaborated on the plan for Sunnyside Gardens, a neighborhood of the New York City borough of Queens.

1929 collaborated on the plan for the Radburn community in Fair Lawn, New Jersey

Village Green, Los Angeles
Baldwin Village, Los Angeles
Chatham Village, Pittsburgh
Green Brook, New Jersey
Greenbelt, Maryland
Greendale, Wisconsin



A diagram showing the street network structure of Radburn and its nested hierarchy. Separate pedestrian paths run through the green spaces between the culs-de-sac and through the central green spine

20th Century Urban Design and Holistic Vision

Ecology, Urban Planning, and Education

Patrick Geddes 1854–1932 Biologist, Geographer, Urban Planner

“Here or nowhere is our Utopia”

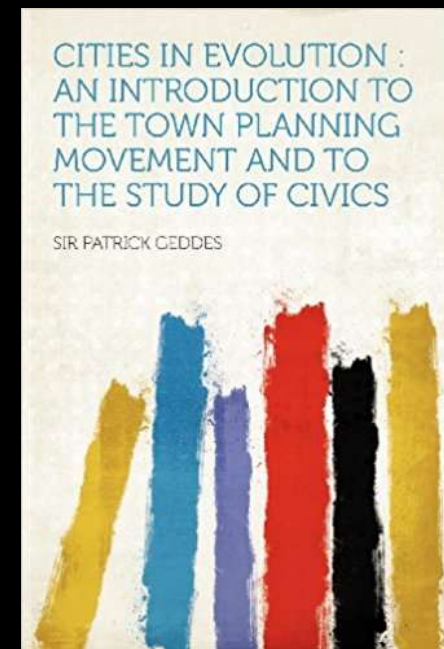
“It takes a whole region to make a city”

- For Geddes the role of the designer was two-fold:
 1. the integration of people and their livelihood into the environmental context of the particular place and region they inhabit
 2. to affect in the transformation of culture through education
- The Urban Region and Civic Survey - planning decisions have to be based on a detailed regional “Civic” survey, which established an inventory of a region’s hydrology, geology, flora, fauna, climate and natural topography, as well as its social and economic opportunities and challenges.
- The valley section suburbs and urban - a schematic representation of a regional watershed that suggested a hierarchy of forms of human settlements from croft, to village, to market town to city adapted to particular environmental conditions and associated with different livelihoods and occupations.

“Our greatest need today is to see life as whole, to see its many sides in their proper relations”



1915



20th Century Urban Design and Holistic Vision

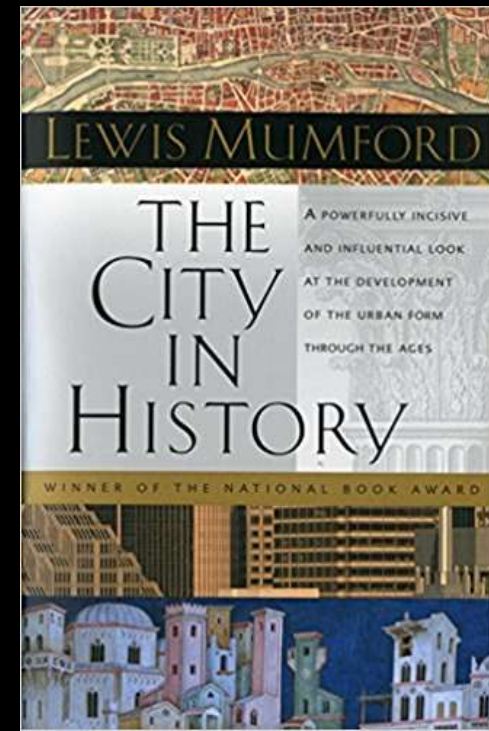
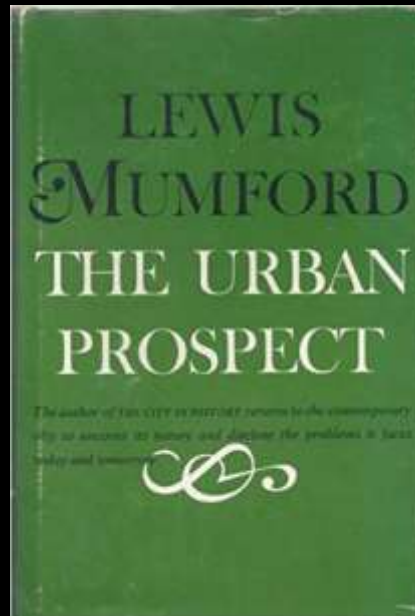
The American City and Nature

Lewis Mumford 1895 – 1990

The City in History 1961

The Urban Prospect 1968

An integrative approach to cities and their regions “once a more organic understanding is achieved of the complex interrelations of the city and its region, the urban and the rural aspects of environment...a new sense of form will spread through both architecture and urban design...which must include the form-shaping contributions of nature, of river, bay, hill, forest, vegetation, climate, as well as those of human history and culture...”

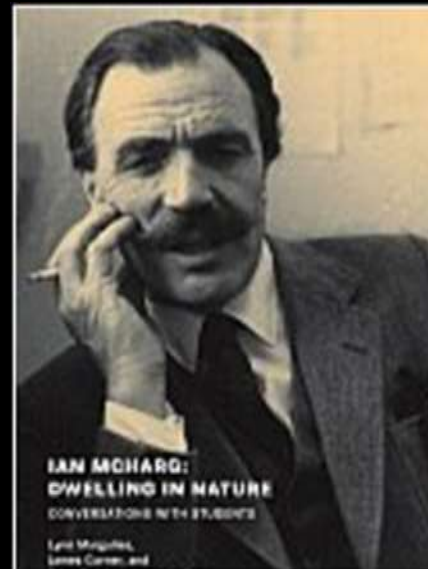
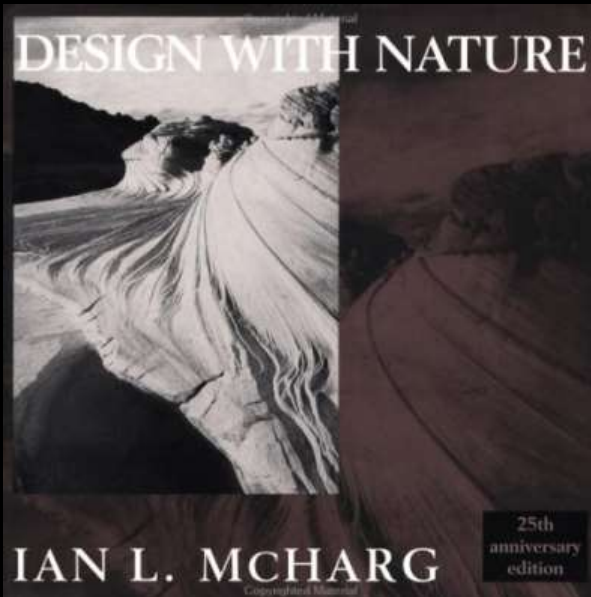


Narrative of Restorative Urban Nature – Design with Nature

This urban restoration narrative emerges from a positive view of cooperation with nature and pastoral ideals of improvement of nature. It, also, presupposes that urban industrial second nature is degradation “the city is a pathological environment” which can be restored to ecological sustainability through design and planning.

It is based on a scientific, mechanistic manipulation of nature for our own ends to produce a functional urban ecosystem overlaid with a “green” aesthetic.

Ecologists provide “not only an explanation, but also a command.”



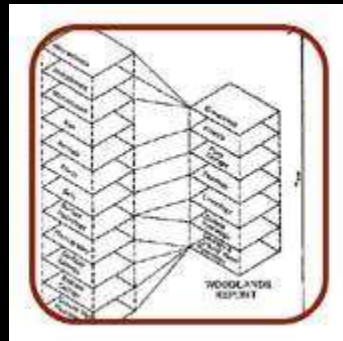
We are the bullies of the earth: strong, foul, coarse, greedy, careless, indifferent to others, laying waste as we proceed, leaving wounds, welts, lesions, suppurations on the earth body, increasingly engulfed by our own ordure and, finally, abysmally ignorant of the way the world works, crowing our superiority over all life.

— *Ian Mcharg* —

AZ QUOTES

Design with Nature

- Ian L. McHarg (1920 - 2001) was born in Clydebank, Scotland and became a landscape architect and a writer on regional planning using natural systems.
- He was the founder of the department of landscape architecture at the University of Pennsylvania in the United States.
- His 1969 book *Design with Nature* pioneered the concept of ecological planning. It continues to be one of the most widely celebrated books on landscape architecture and land-use planning.



A 'Design with Nature' approach to community design means...



- Develop compact, complete communities
- Increase transportation options
- Reduce the loads on water, waste and energy systems
- Protect and restore urban 'green' space
- Strive for a lighter 'hydrologic footprint'
- Achieve higher levels of stream, wetland and lake protection

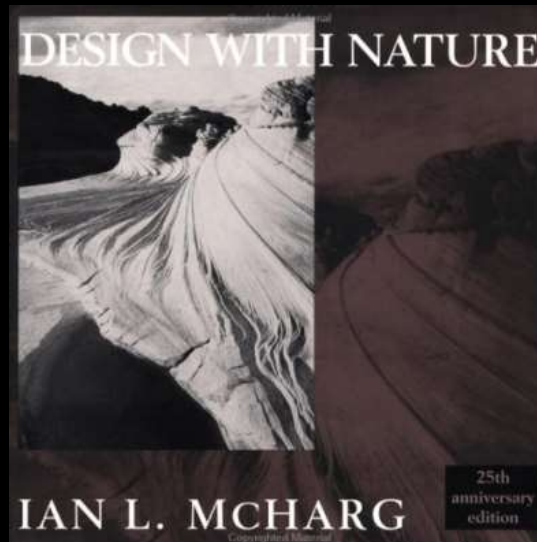
Design with Nature and Science

- *Design with Nature*
 - prioritized incorporating nature throughout the urban landscape
 - promoted “landscape architecture as the instrument of environmentalism.”
- McHarg insisted that urban design should
 - Find its “rules” in nature
 - Those rules emerged from the scientific study of nature
 - Ecologists provide “not only an explanation, but also a command.”

A ‘Design with Nature’ approach to community design means...

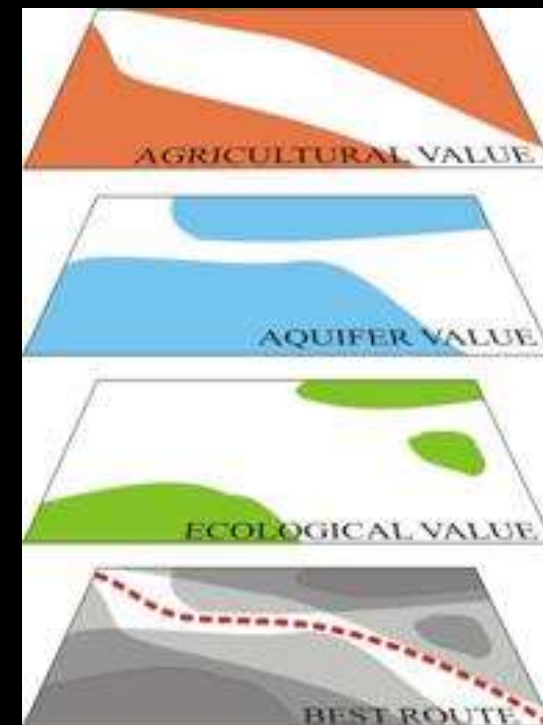


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- Achieve higher levels of stream, wetland and lake protection



Design with Nature – Privileging of science and ecology

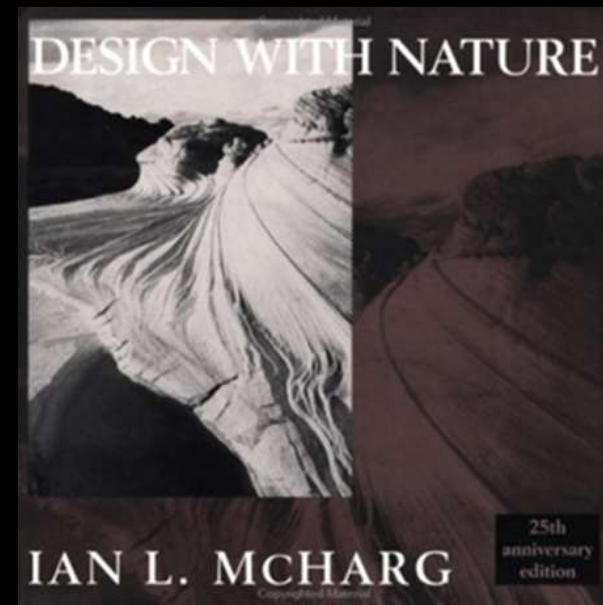
- Ecological inventory as a “diagnostic tool”, McHarg advocated a comprehensive scientific understanding of the components of a site placed within the ecological context of a region.
- This privileging of science and ecology met resistance within architecture, but McHarg helped bring together ecological planning and design which influenced later architects and planners to promote deliberate incorporation of nature in cities to enhance ecosystem function.
- In so doing, a new narrative of urban nature emerged focused on restoring ecological function to the damaged urban ecosystem by including nature in urban design.



A 'Design with Nature' approach to community design means...



- Develop compact, complete communities
- Increase transportation options
- Reduce the loads on water, waste and energy systems
- Protect and restore urban 'green' space
- Strive for a lighter 'hydrologic footprint'
- Achieve higher levels of stream, wetland and lake protection



Criticism – Privileging of “Ecology”

McHarg conflates,

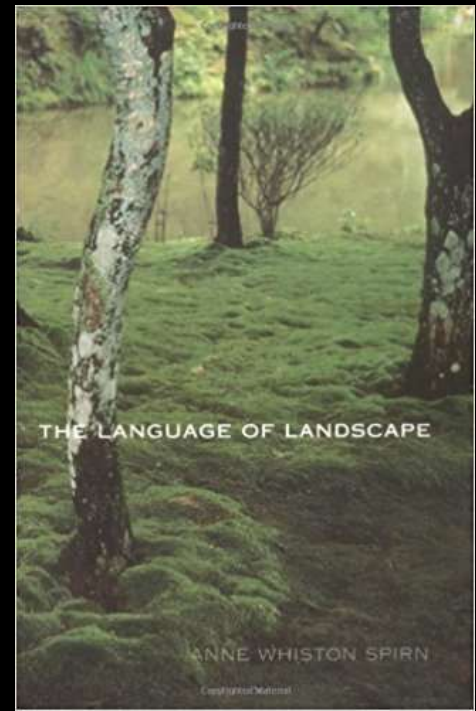
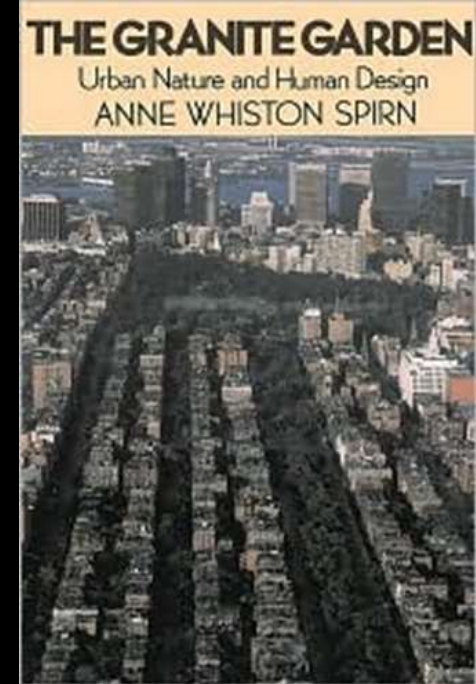
- ecology as a science [a way of describing the world]
- ecology as a cause [a mandate for moral action]
- ecology as an aesthetic [a norm for beauty]

“It is important to distinguish the insights ecology yields as a description of the world, on the one hand, from how these insights have served as a source of prescriptive principles and aesthetic values, on the other.”

Anne Spirn “Ian McHarg, Landscape Architecture, and Environmentalism” 2000

“The city must be recognized as part of nature and designed accordingly. The city, suburbs, and surrounding countryside must be viewed as a single, evolving system within nature...Nature in the city must be cultivated, like a garden, rather than ignored or subdued.”

The Granite Garden 1984

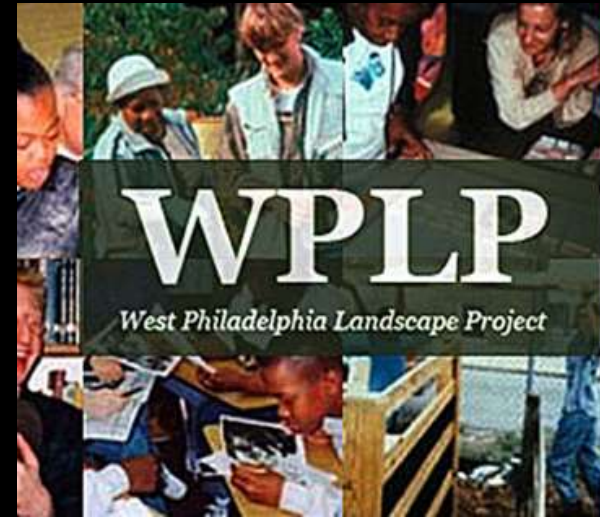


Design, Ecology, and Community

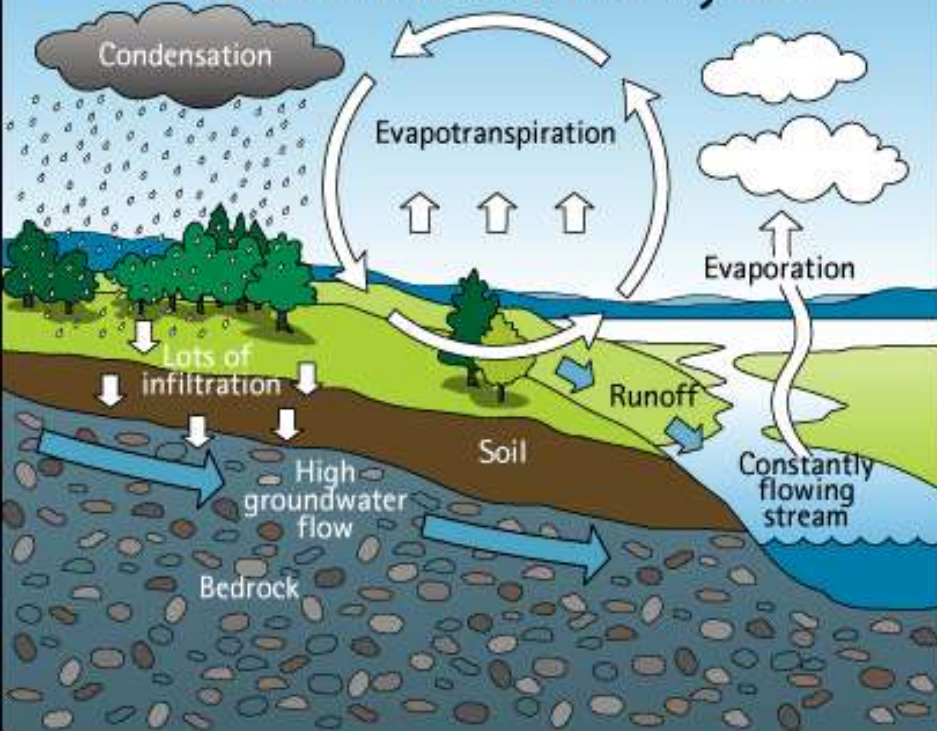
Geddes emphasis on the transformation of culture through education?

Since 1987, Anne Spirn has directed the West Philadelphia Landscape Project (WPLP), in an inner city community near the University of Pennsylvania. The WPLP links landscape design, community development, and urban stormwater management through an action research program integrating research, teaching and community service.

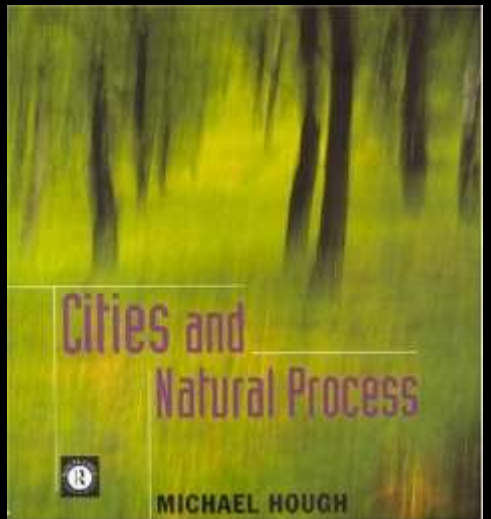
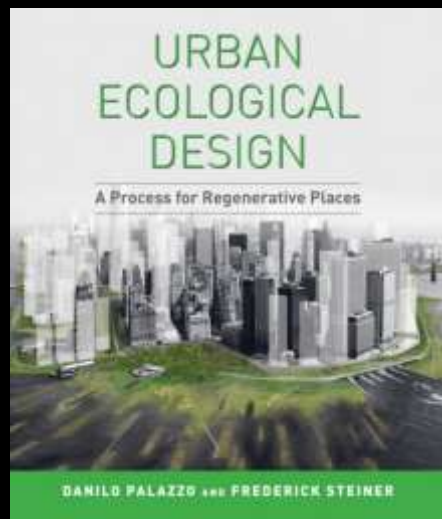
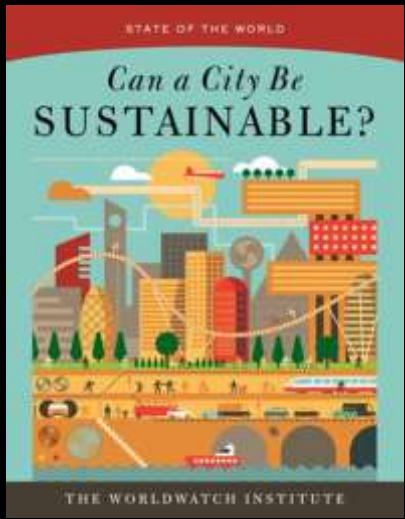
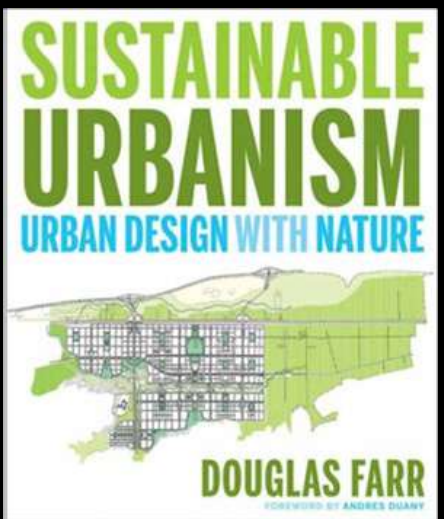
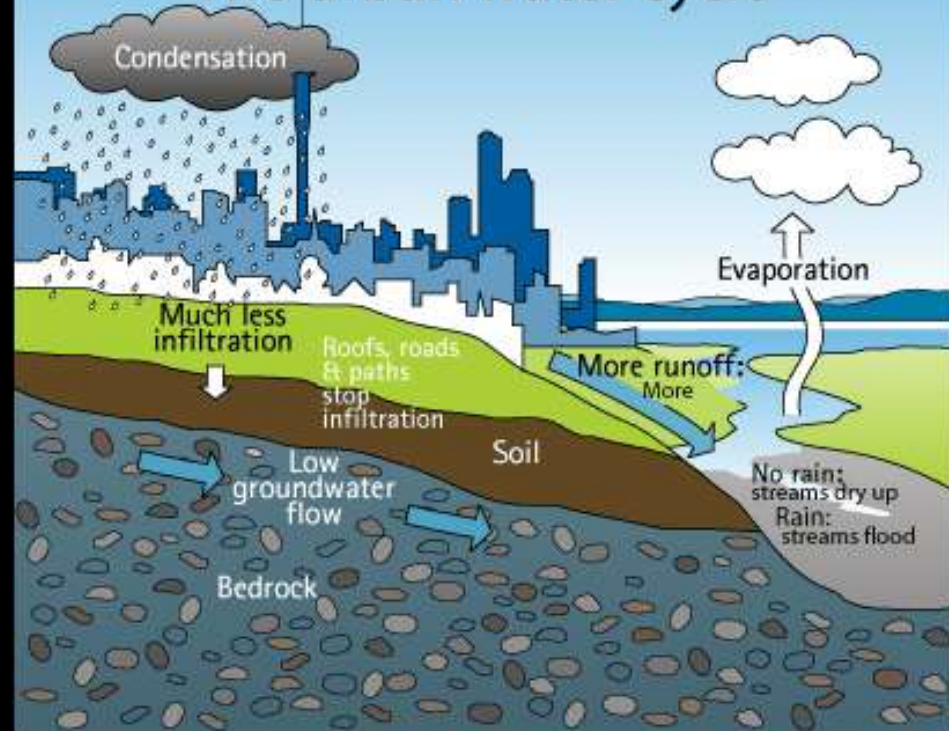
Its goals include development of strategic landscape plans to enhance environmental quality, implementation of landscape improvements to stimulate economic development, and mutual strengthening of public school curricula and undergraduate and professional education.



The natural water cycle



The urban water cycle



The Ecological Imperative and Sustainable Cities

NATURE AND CITIES THE ECOLOGICAL IMPERATIVE IN URBAN DESIGN AND PLANNING

Edited by
FREDERICK R. STEINER
GEORGE F. THOMPSON
ARMANDO CARBONELL



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BIOPHILIC CITIES

INTEGRATING NATURE
INTO URBAN DESIGN AND PLANNING



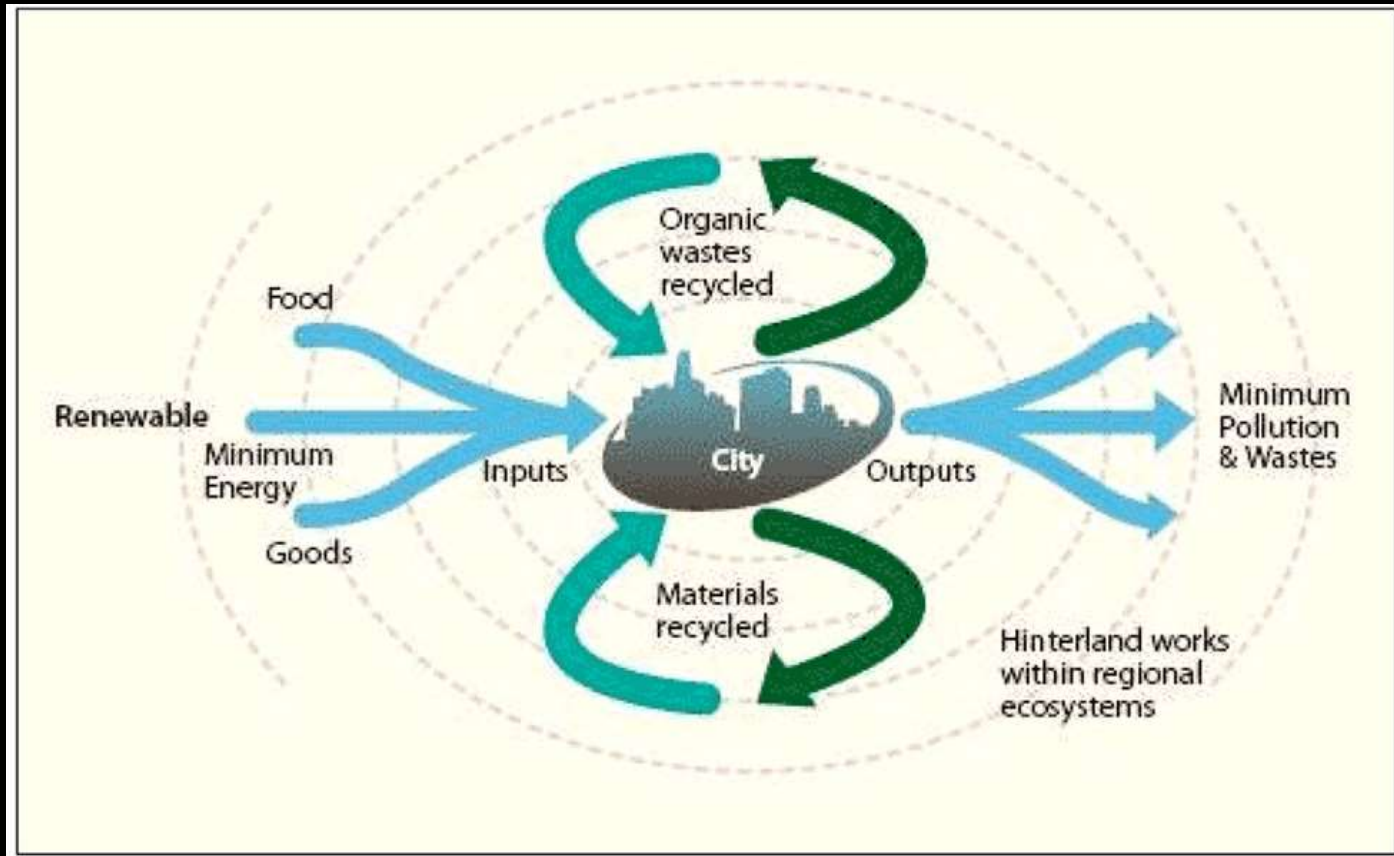
TIMOTHY BEATLEY



Sustainable Cities



Narrative of Functional Urban Nature Science, Engineering, and Urban Management

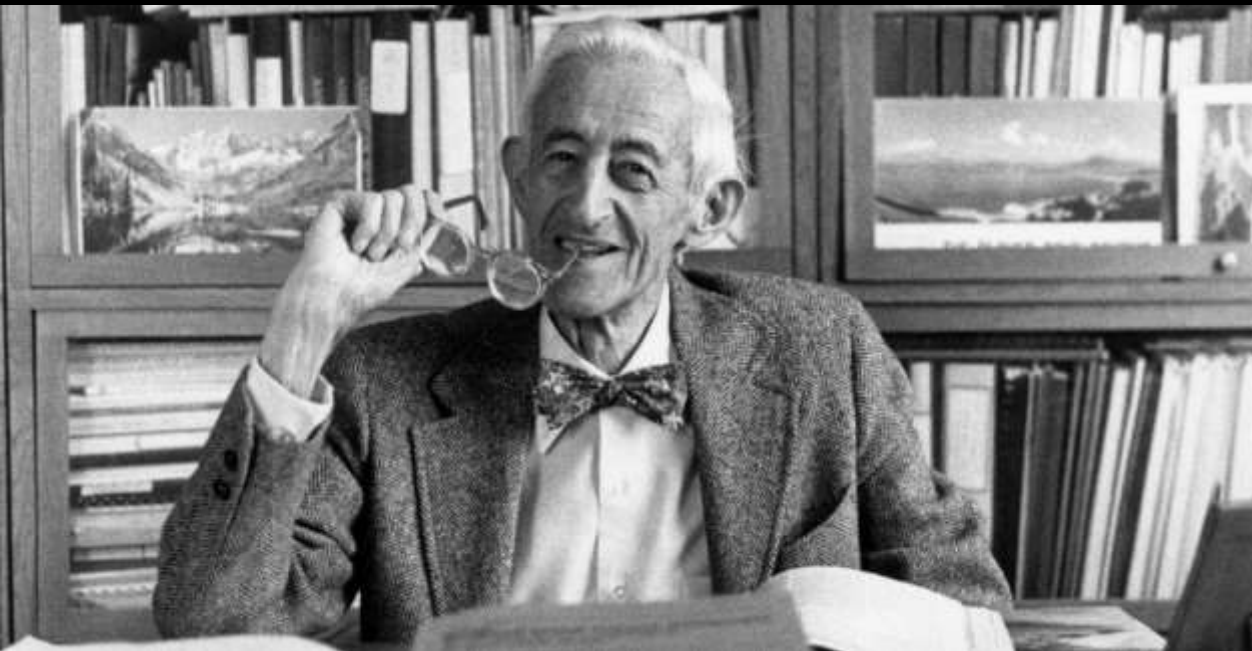


Narrative of Functional Nature

Urban Metabolism

The metabolic requirements of a city can be defined as the materials and commodities needed to sustain the city's inhabitants at home, at work and at play...The metabolic cycle is not completed until wastes and residues of daily life have been removed and disposed of with a minimum of nuisance and hazard.

- Abel Wolman "The metabolism of cities" *Science* (1965)

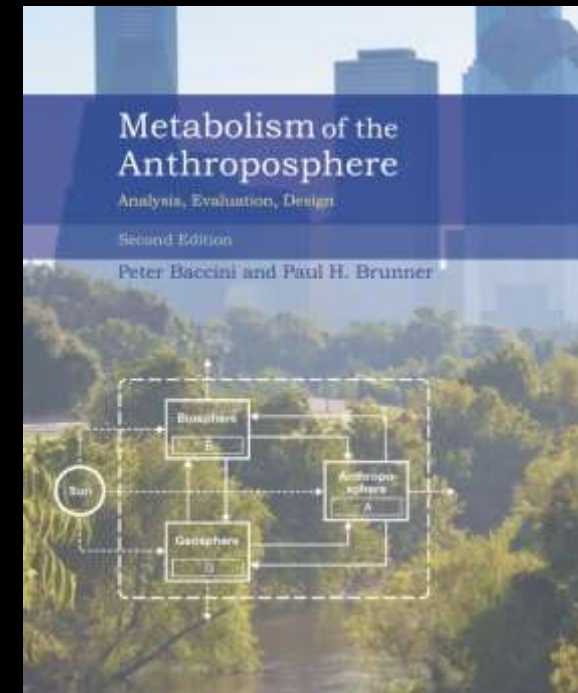
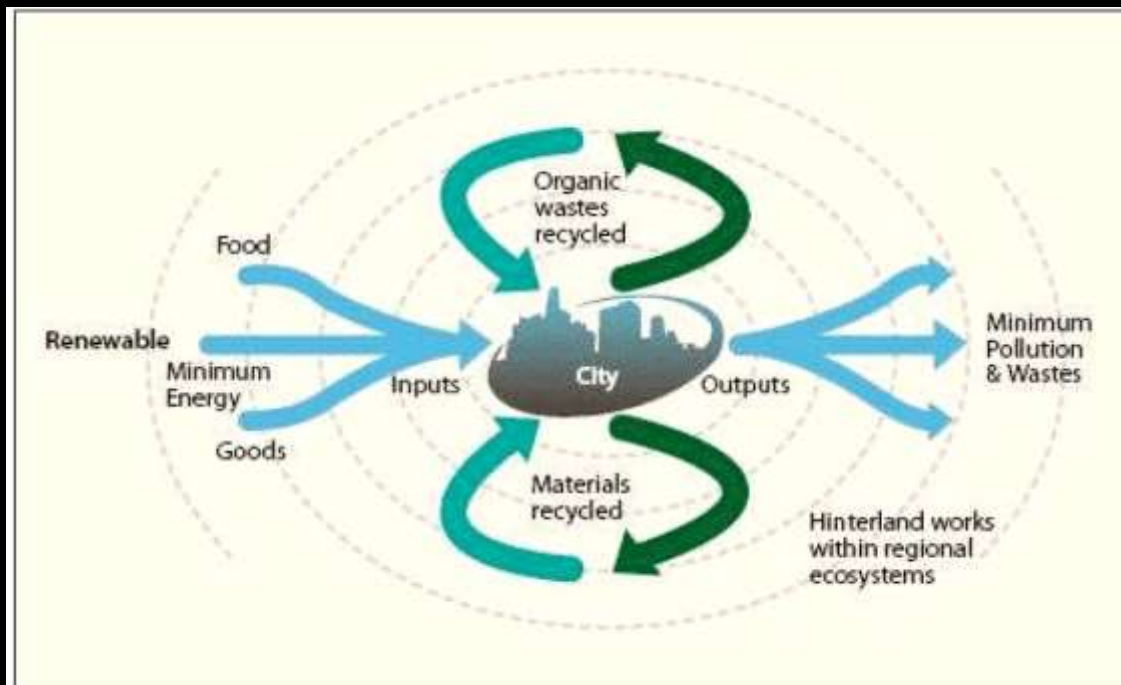
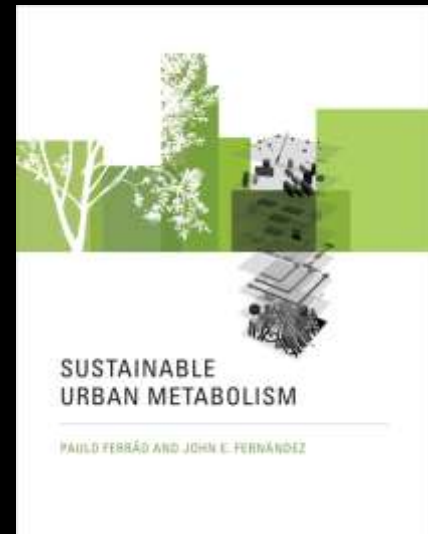


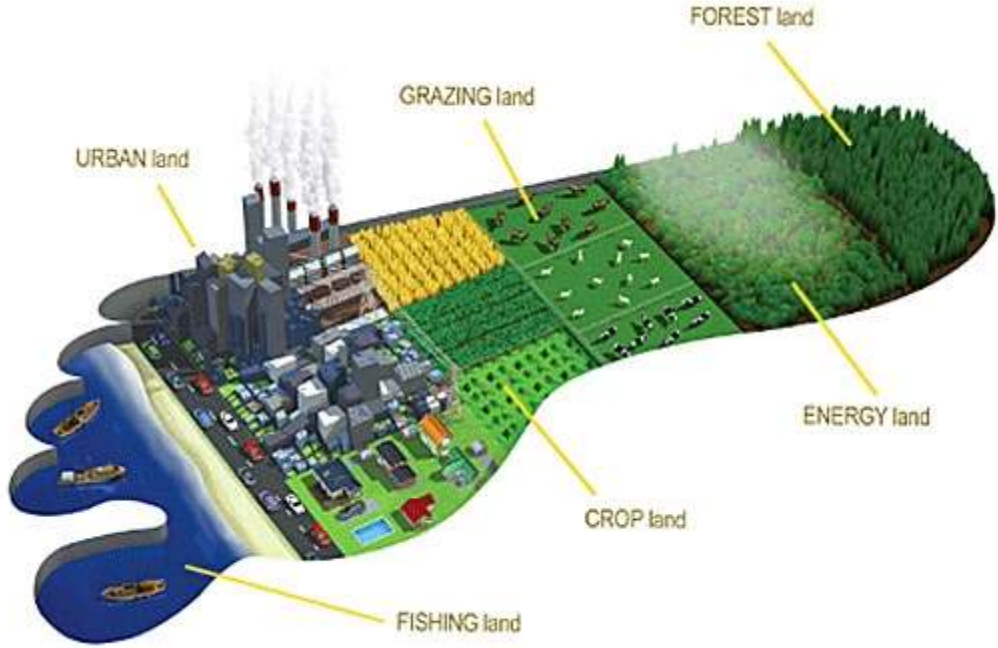
Urban Metabolism – The Earth as an “urban system”

Over the last several thousand years of human life on Earth, agricultural settlements became urban cores, and these regional settlements became tightly connected through infrastructures transporting people, materials, and information.

This global network of urban systems, including ecosystems, is the anthroposphere; the physical flows and stocks of matter and energy within it form its metabolism.

The characterization of these flows and the relationships between anthropogenic urban activities and natural processes and cycles defines the urban metabolism.





OUR ECOLOGICAL FOOTPRINT

Reducing Human Impact on the Earth

MATHIS WACKERNAGEL & WILLIAM REES

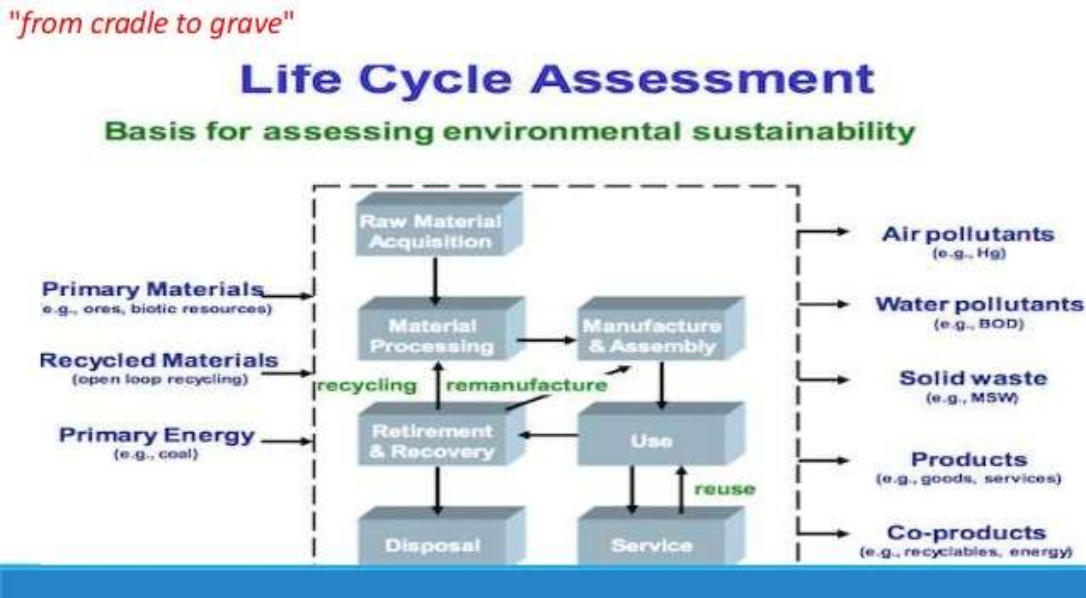
Illustrated by Phil Testemale

THE NEW CATALYST BIOREGIONAL SERIES

LIFE CYCLE ASSESSMENT

Principles, Practice and Prospects

Ralph Horne, Tim Grant, Karl Verghese



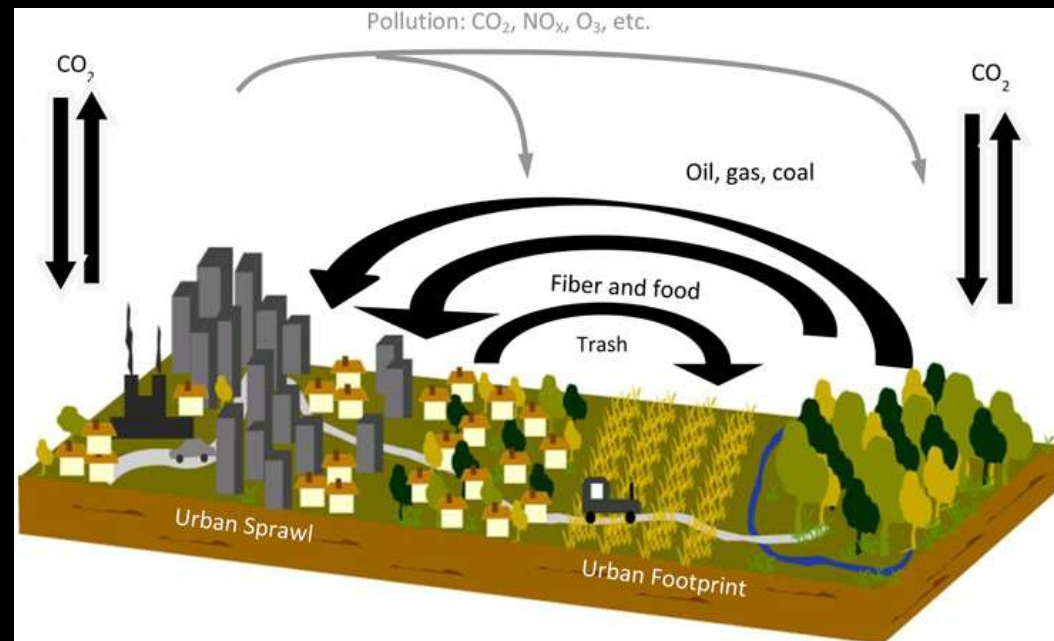
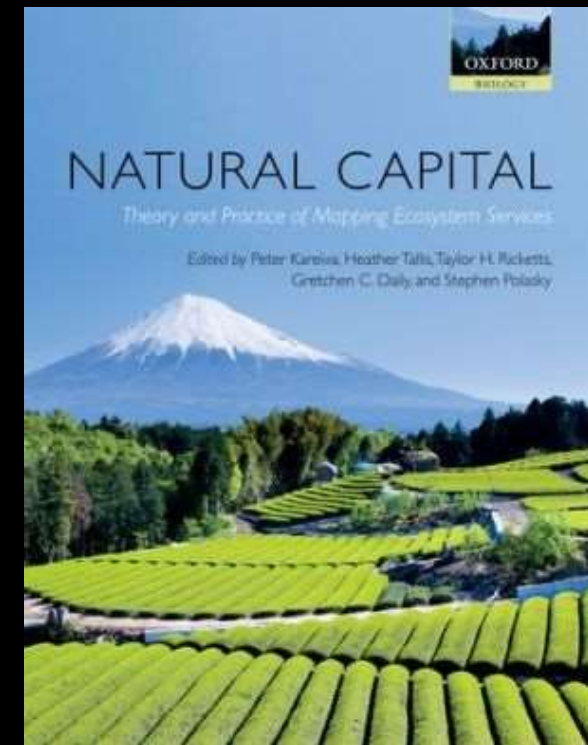
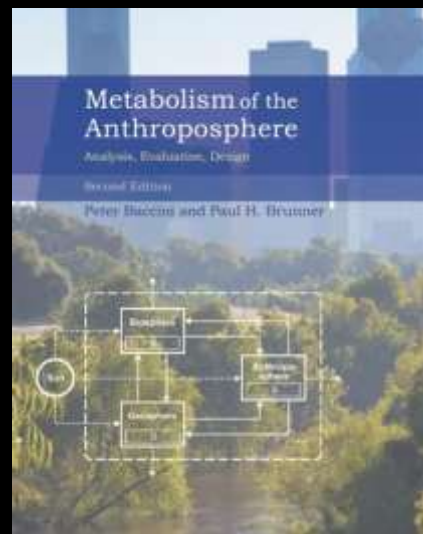
Remaking the Way We Make Things

cradle to cradle

William McDonough & Michael Braungart

Ecosystem Cycles and Services

- ✓ Maintenance of atmosphere
- ✓ Protection from ultraviolet rays
- ✓ Regulation of climate
- ✓ Maintenance of genetic diversity
- ✓ Purification of air and water
- ✓ Detoxification and decomposition of wastes
- ✓ Generation of soil and renewal of soil fertility
- ✓ Pollination of vegetation
- ✓ Control of agricultural pests
- ✓ Dispersal of seeds
- ✓ Translocation of nutrients

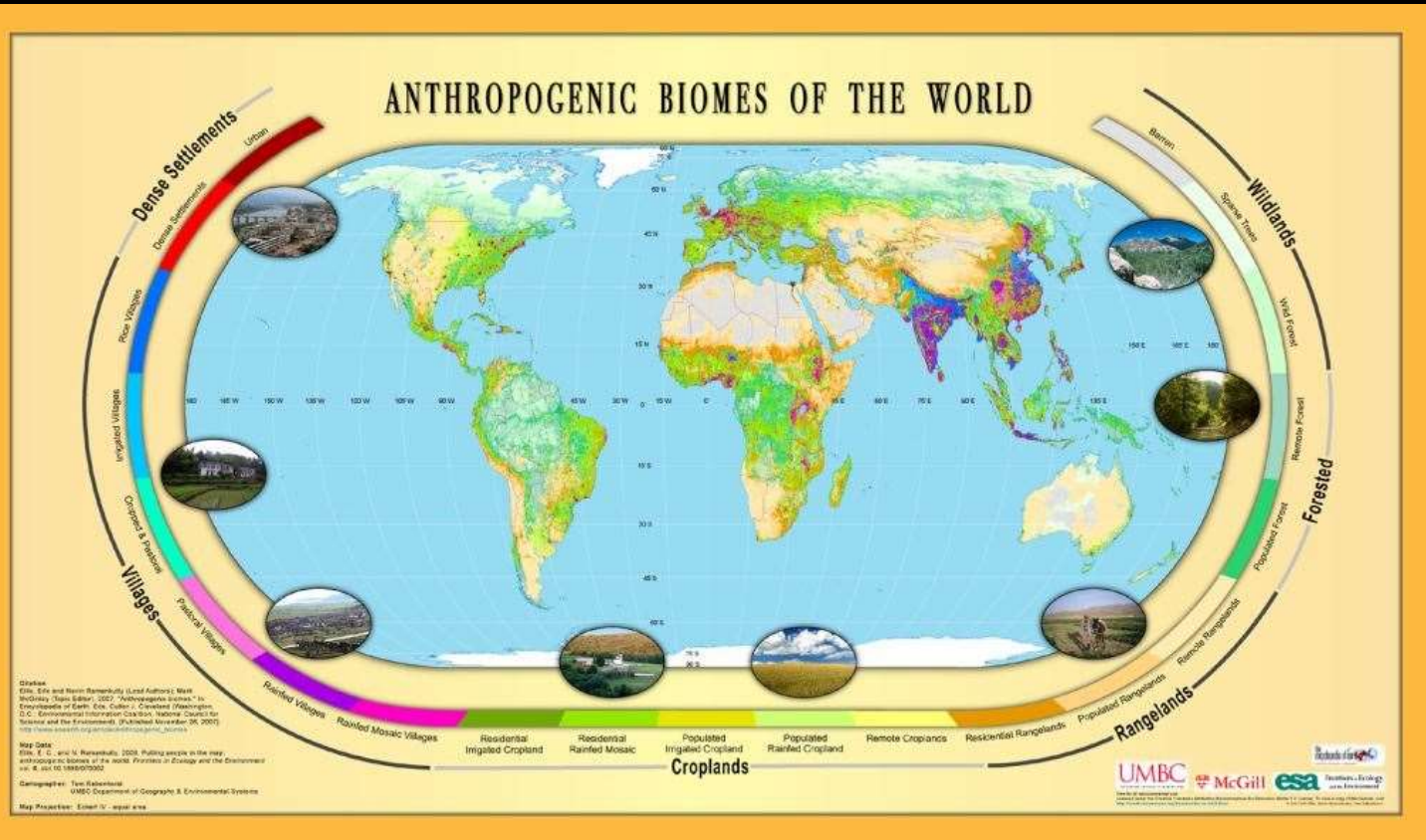


Anthropogenic Landscapes, or "Human Landscapes"

<http://ecotope.org/> Dr. Erle Ellis

Areas of Earth's terrestrial surface where direct human alteration of ecological patterns and processes is significant, ongoing, and directed toward servicing the needs of human populations for food, shelter and other resources and services including recreation and aesthetic needs.

Anthropogenic Biomes ("Anthromes"), describe the globally-significant types of anthropogenic landscapes.



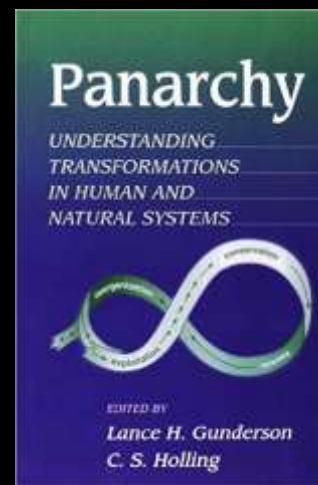
The New Narrative of Nature - Resilience Ecology

Managing Socio-Ecological Systems

Adapting to change – not a stable state

The basic concepts are:

- non-linearity, alternate regimes and thresholds
- adaptive cycles
- multiple scales and cross-scale effects - "panarchy"
- adaptability
- transformability
- general versus specified resilience

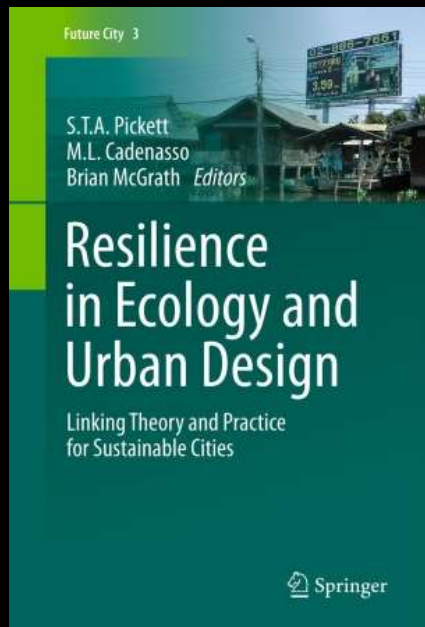
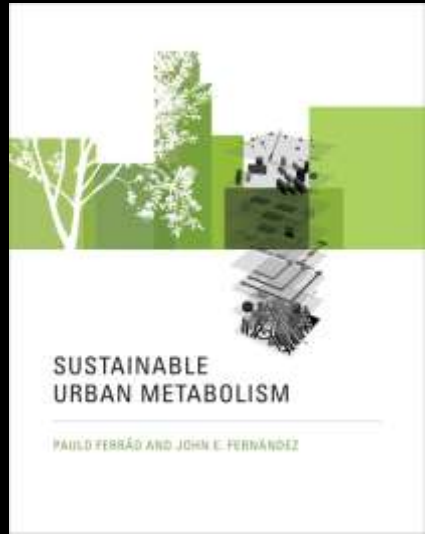
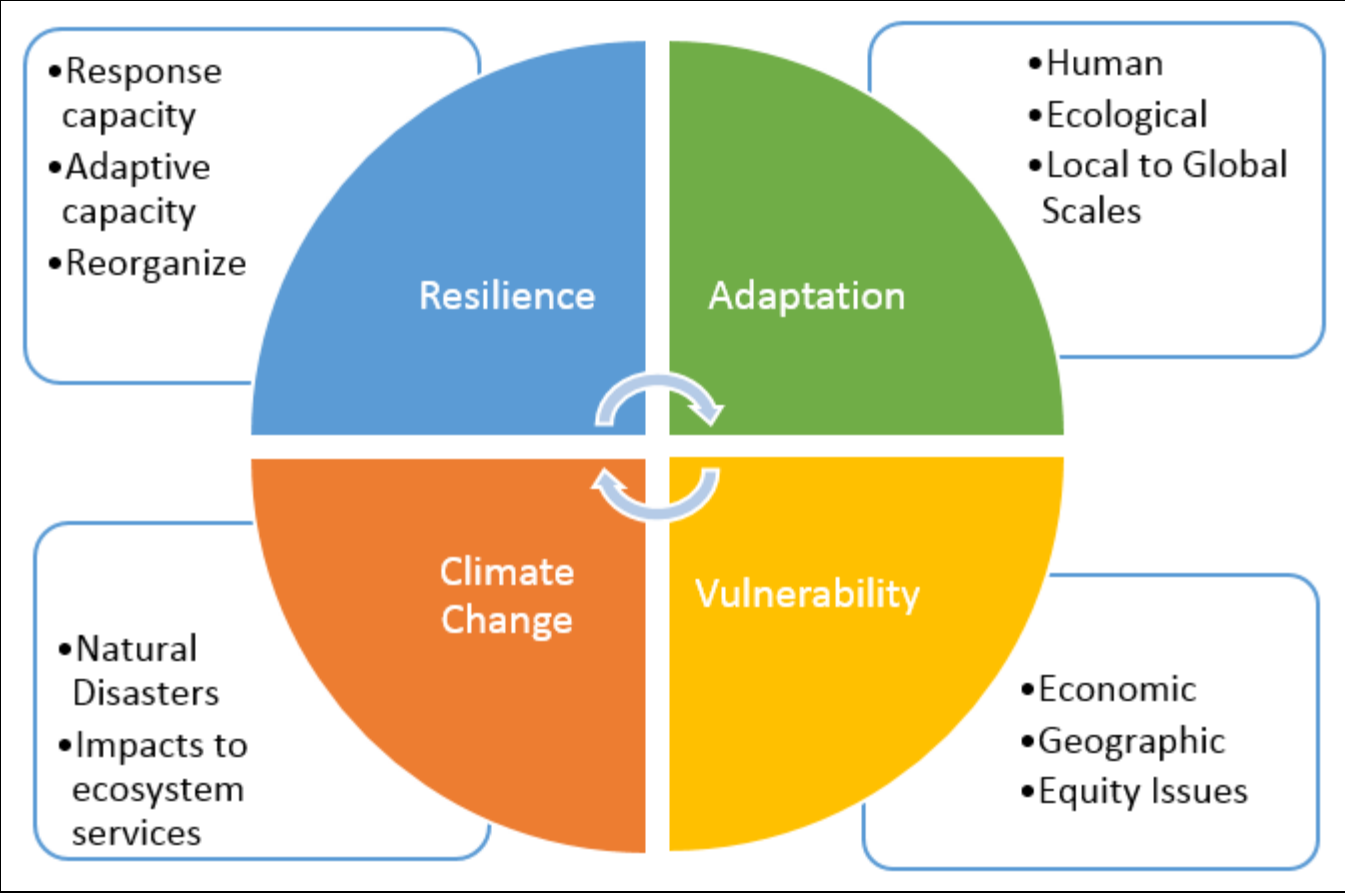


<http://www.resalliance.org>



Resilience and Urban Metabolism

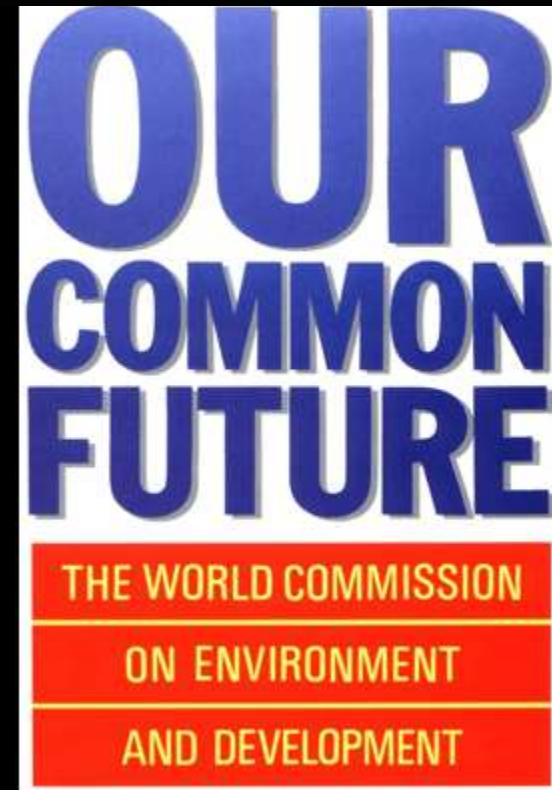
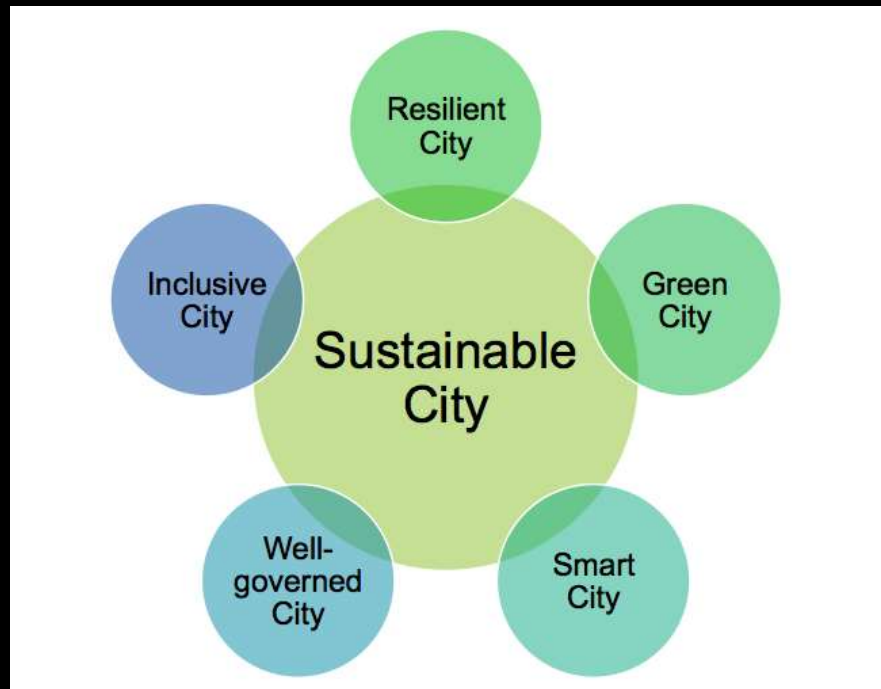
The characterization of flows and the relationships between anthropogenic urban activities and natural processes and cycles defines the behavior of urban production and consumption.



The Sustainability Myth Environment - Economy - Equity

Sustainability – Resilience - Adaptability

"development that meets the needs of the present without compromising the ability of future generations to meet their own needs."



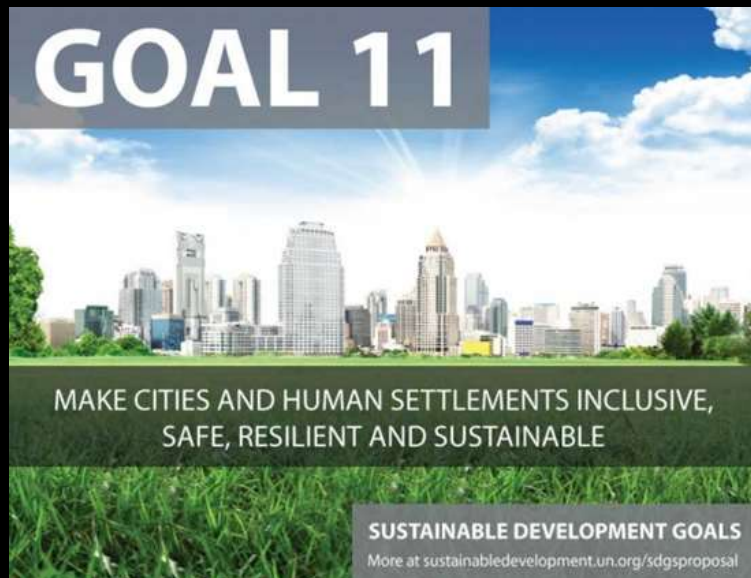
Sustainable cities are:

1. Low-carbon
2. Resilient
3. Resource-efficient and productive
4. EcoMobile
5. Smart
6. Happy, healthy and inclusive
7. With a sustainable local economy and public procurement
8. And with a sustainable city-region cooperation

U.S. CITIES SDG
INDEX 2017



The U.S. Cities SDG Index uses 49 indicators from 16 of the 17 Sustainable Development Goals – goals that were agreed upon by all countries at the United Nations in September 2015. The Index provides a more holistic and comprehensive assessment of sustainable development challenges faced by U.S. cities than available through other metrics.



Design with Nature: Can Nature make a City more...Sustainable?

Ecologically and Culturally Redeemed?

Ecologically Restored?

Ecologically Functional?

The Sustainability Myth

- Narrative of Redemptive Urban Nature – Ecology and Culture
- Narrative of Restorative Urban Nature – Ecology and Design
- Narrative of Functional Urban Nature – Science, Engineering, Management

Sustainable Cities

