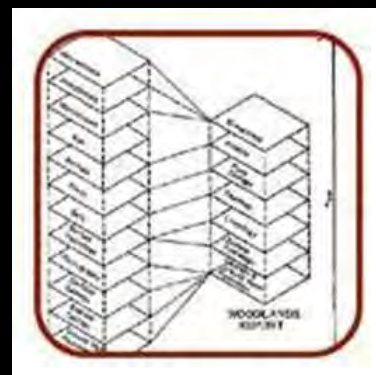
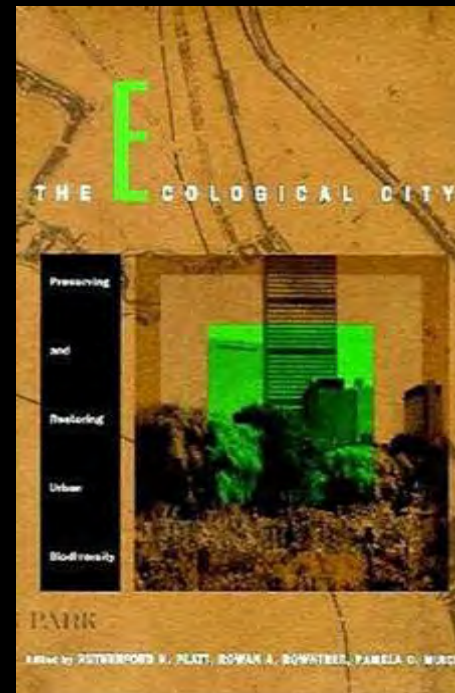


Design with Nature: Ecological Cities and the Myth of Sustainability

Kevin M. Anderson Ph.D.

Austin Water Center for Environmental Research

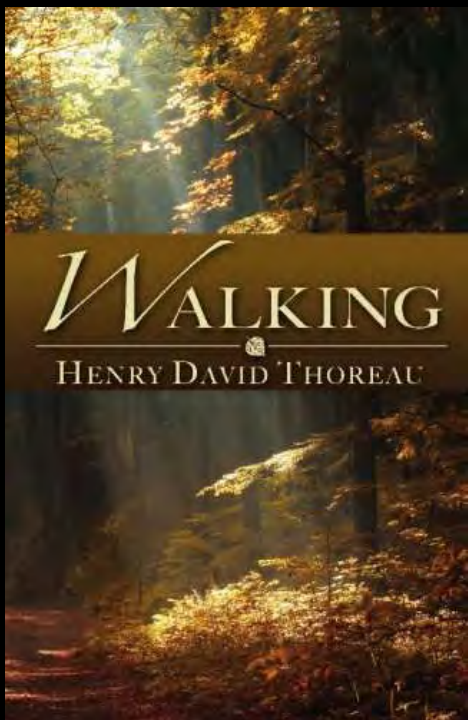


American Urban Nature

“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. Every tree sends its fibers forth in search of the Wild.

The cities import it at any price.”

-Henry David Thoreau, “Walking”



Narrative of Redemptive Urban Nature

This narrative presupposes the framework of iterative natures with preserves, parks, and gardens established for urban landscapes of wild first nature and pastoral second nature.

The further presupposition is that the urban industrial second nature is degradation in need of redemption.

The narrative of redemptive urban nature is the story of nature which is deliberately “imported at any price” into urban design as a tonic for body and spirit.

Space for nature is created to provide recreation for physical health and to allow contact with officially sanctioned nature for mental health.

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



Narrative of Redemptive Urban Nature

Design with Nature 1969 – Ian McHarg

Ian L. McHarg (1920 - 2001) was born in Clydebank, Scotland and became a landscape architect and a renowned writer on regional planning using natural systems.

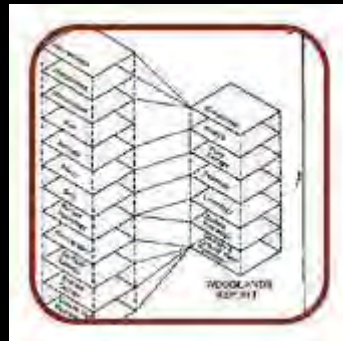
He was the founder of the department of landscape architecture at the University of Pennsylvania.

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. In this book, he set forth the basic concepts that were to develop later in Geographic Information Systems.



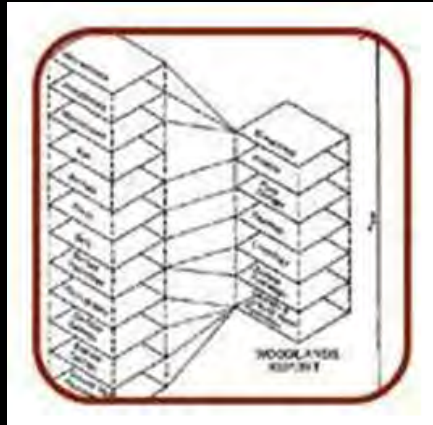
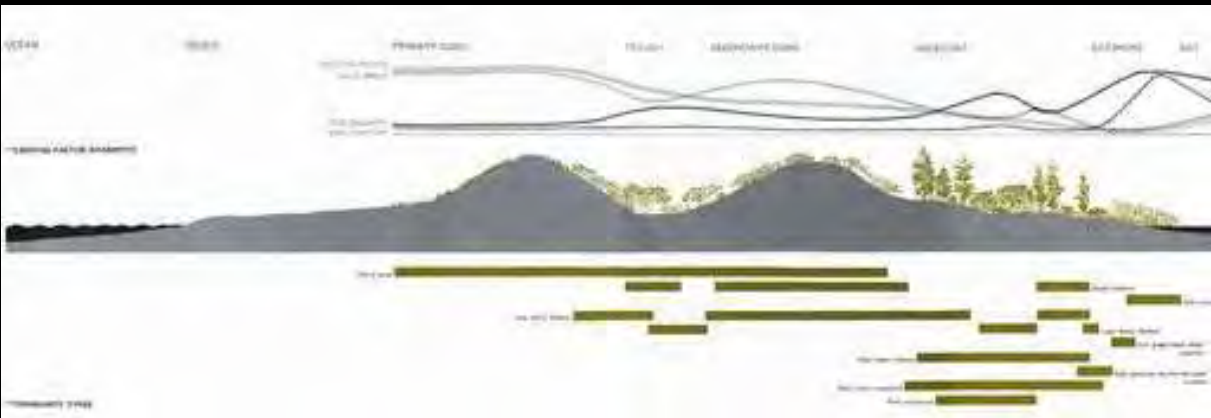
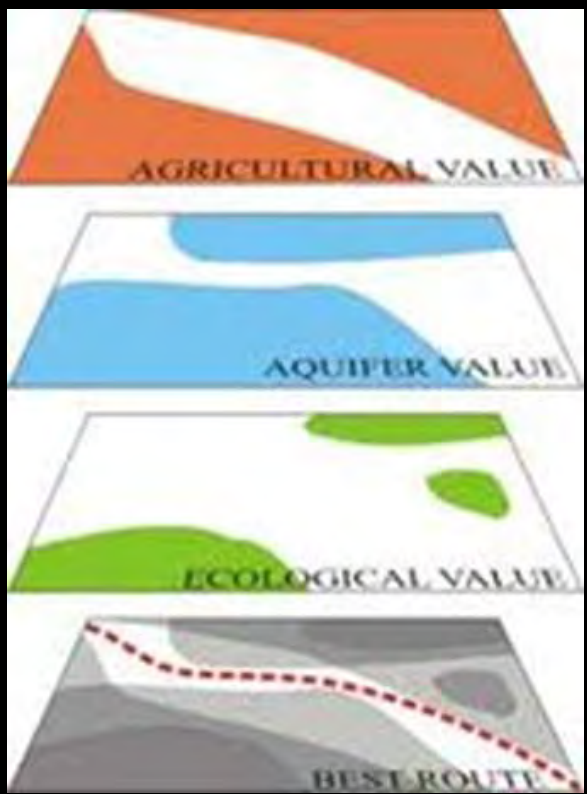
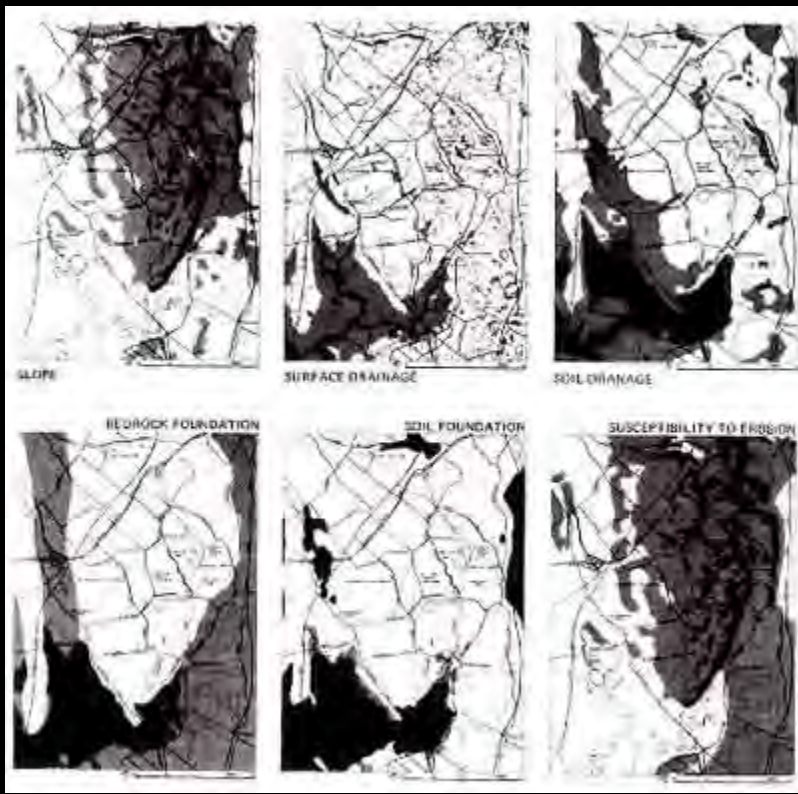
A 'Design with Nature' approach to community design means...

- 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 – Ian McHarg and the Ecological Inventory

Overlays of factors to reveal spatial patterns of “intrinsic suitabilities” for diverse land uses



Design with Nature – Ian McHarg - The Ecological Inventory

With the publication of *Design with Nature* in 1969, McHarg formalized a design practice that prioritized incorporating nature throughout the urban landscape and promoted “landscape architecture as the instrument of environmentalism.”

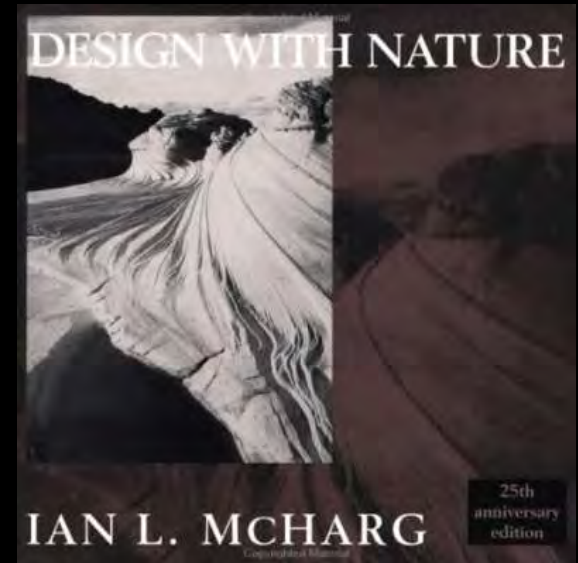
McHarg insisted that urban design should find its “rules” in nature and those rules emerged from the scientific study of nature where ecologists provide “not only an explanation, but also a command.”

1. It is based on a scientific, mechanistic manipulation of nature for our own ends to produce “green space”

2. Nature as process

3. Humans as the great disrupters

“I invented ecological planning in the 60’s”



Nature as process and Humans as the great disrupters

George Perkins Marsh 1801 – 1882

This remarkable text engendered worldwide awareness of the ill-effects of human agency, along with efforts to repair the damage and conserve the fabric of nature. Most noteworthy was Marsh's stress on the unforeseen and unintended consequences, as well as the heedless greed, of technological enterprise.

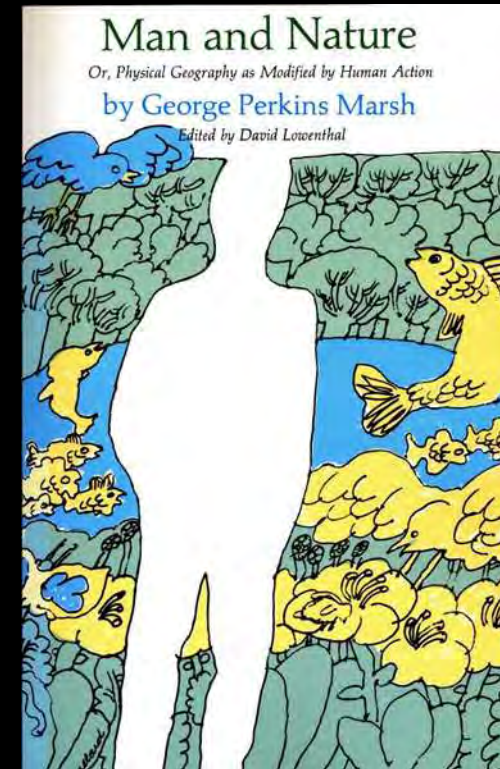


1864

"Man is everywhere a disturbing agent. Wherever he plants his foot, the harmonies of nature are turned to discord"

"...Man, who even now finds scarce breathing room on this vast globe, cannot retire from the Old World to some yet undiscovered continent, and wait for the slow action of such causes to replace, by a new creation, the Eden he has wasted"

"Man has too long forgotten that the earth was given to him for usufruct alone, not for consumption, still less for profligate waste. Nature has provided against the absolute destruction of any of her elementary matter... But she has left it within the power of man irreparably to derange the combinations of inorganic matter and of organic life."



The Garden City Movement

A method of urban planning that was initiated in 1898 by Sir Ebenezer Howard [1850 -1928] in the UK.

Garden cities were intended to be planned, self-contained communities surrounded by "greenbelts" (parks), containing proportionate areas of residences, industry and agriculture.

Inspired by the Utopian novel *Looking Backward*, Howard published his book *Tomorrow: a Peaceful Path to Real Reform* in 1898 (which was reissued in 1902 as *Garden Cities of Tomorrow*).

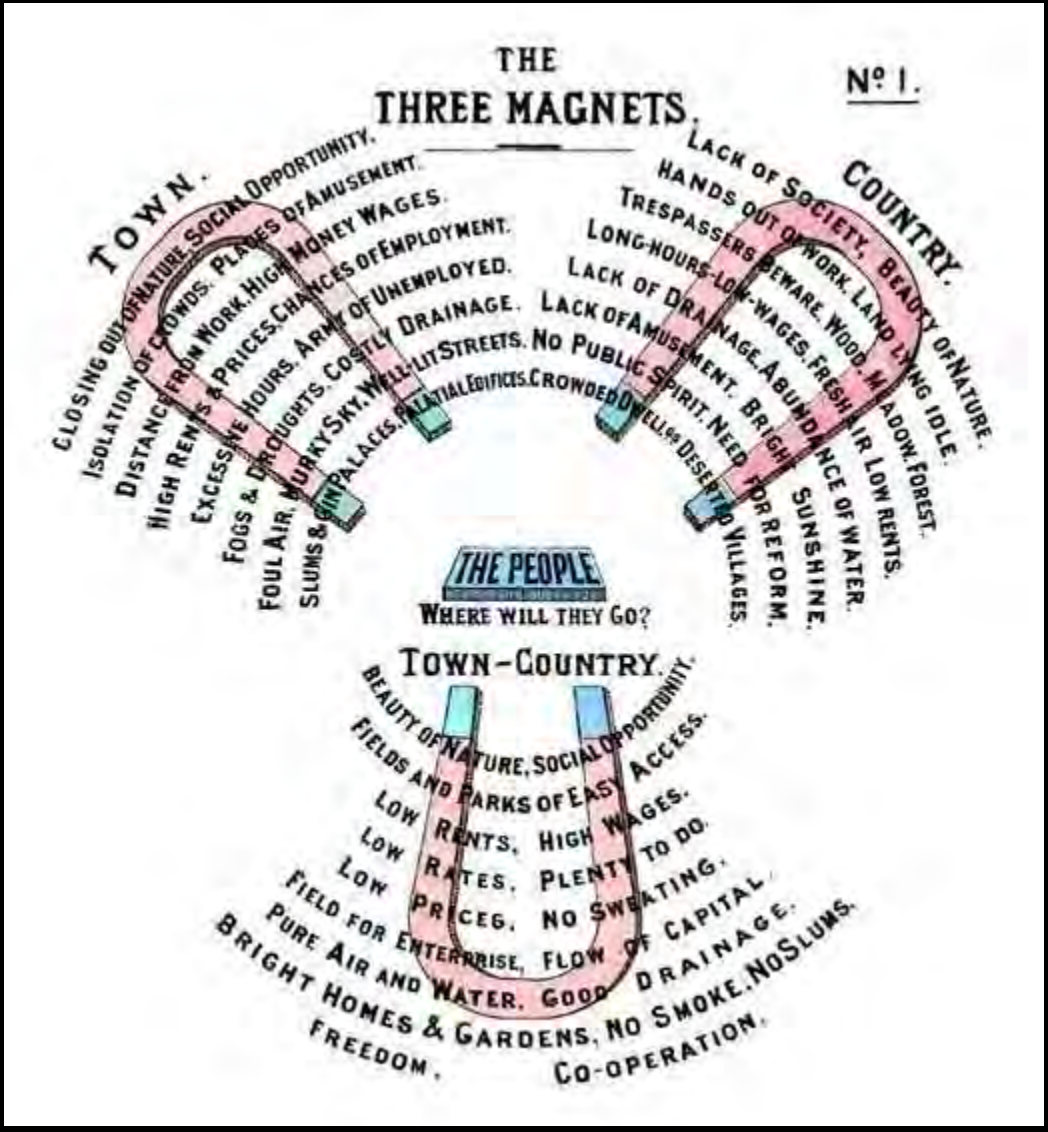
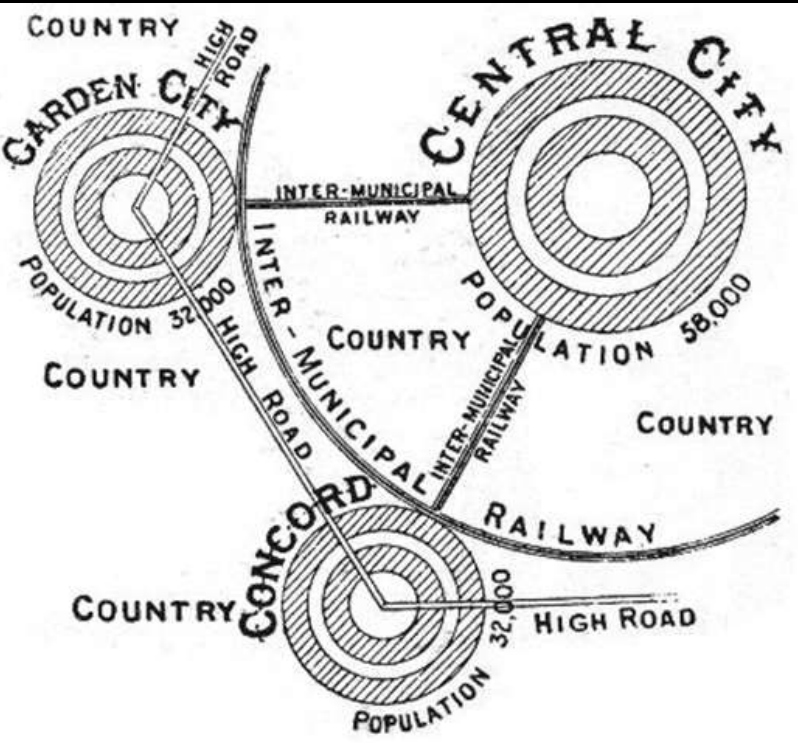
His idealized garden city would house 32,000 people on a site of 6,000 acres , planned on a concentric pattern with open spaces, public parks and six radial boulevards, 120 ft wide, extending from the center.



The Garden City Movement

The garden city would be self-sufficient and when it reached full population, another garden city would be developed nearby.

Howard envisaged a cluster of several garden cities as satellites of a central city of 50,000 people, linked by road and rail.



Patrick Geddes 1854-1932

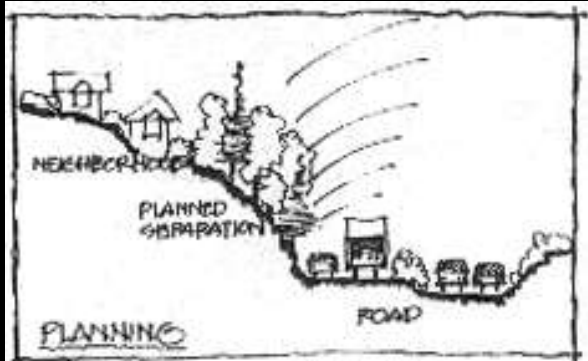
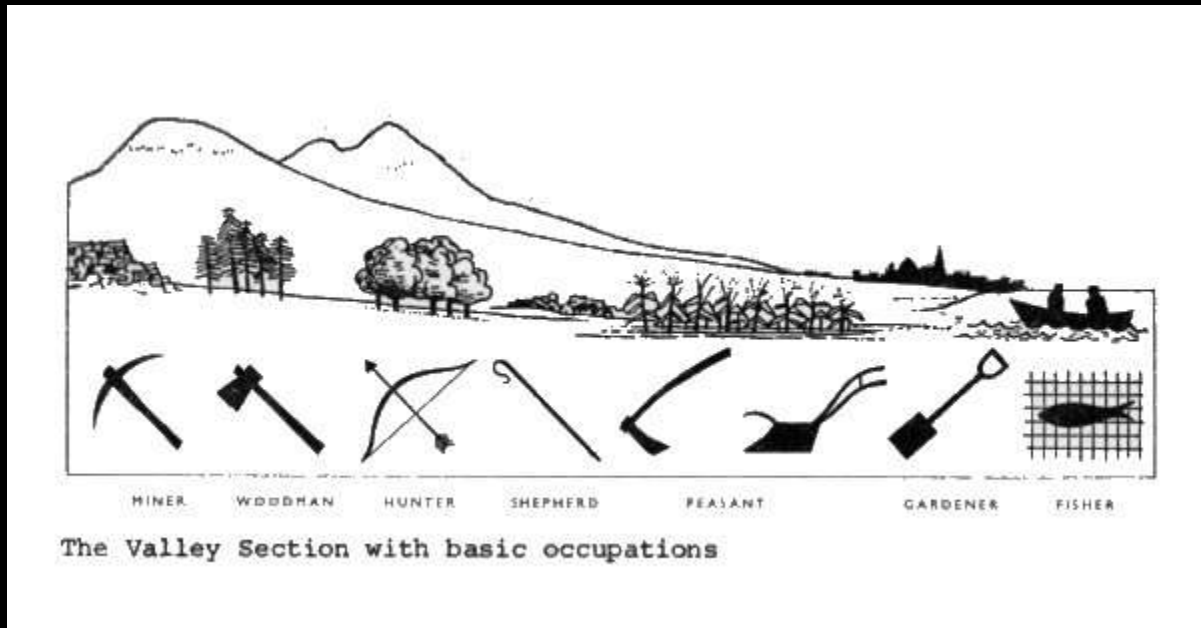
Geography and Sociology

Family, Place, Work

Organism, Environment, Function [Spencer]

Social Theory and Evolution

Great influence on Lewis Mumford





3. The "valley section" (from *Cities and Town-Planning Exhibition* [1911], reprinted in Patrick Geddes, *Cities in Evolution* [London: Williams and Norgate, 1949]).



4. Great Valley physiographic region, Potomac River Basin Study of 1965-66, reproduced in *Design with Nature*.

McHarg relies on the functional narrative of urban ecology

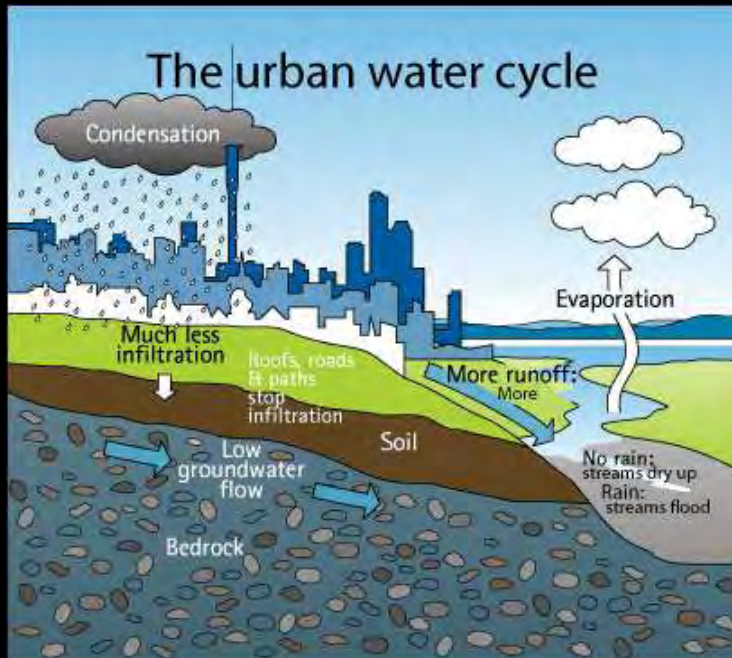
Narrative of Functional Nature

Urban Ecology

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)

The narrative of functional urban nature that emerges from the study and practice of urban ecology is an account that does not necessarily start with a list of good and bad nature (or native and non-native nature).



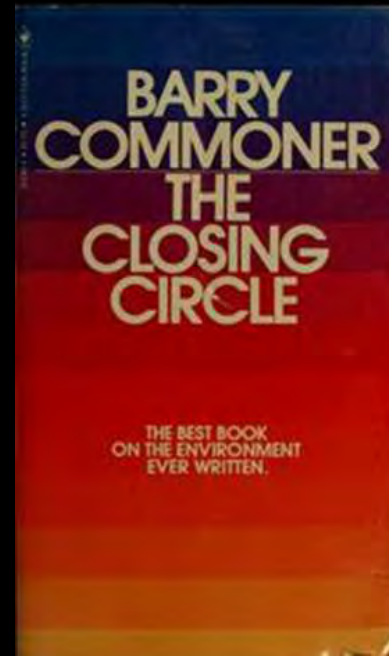
The Environment and Sustainability

Barry Commoner 1917-2012

The Closing Circle 1971

Commoner's 4 Principles

1. Everything is connected to everything else.
2. Everything must go somewhere.
3. Nature knows best.
4. There is no such thing as a free lunch.



He had a long-running debate with Ehrlich and his followers, arguing that they were too focused on overpopulation as the source of environmental problems, and that their proposed solutions were politically unacceptable because of the coercion that they implied, and because the cost would fall disproportionately on the poor.

He believed that technological, and above all social development would lead to a natural decrease in both population growth and environmental damage

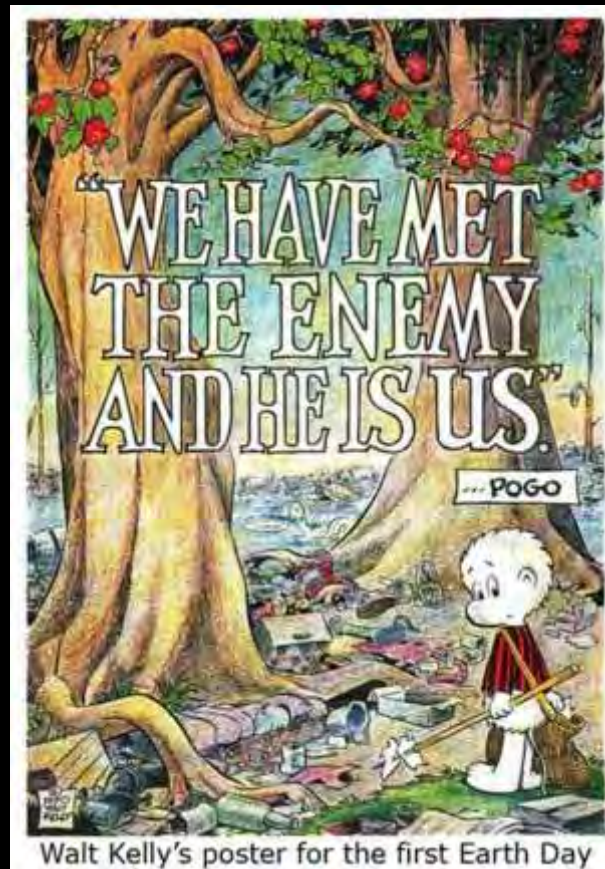
The Environment and Mass Culture

Earth Day – April 22, 1970

The idea came to Earth Day founder Gaylord Nelson, then a U.S. Senator from Wisconsin, after witnessing the ravages of the 1969 massive oil spill in Santa Barbara, California.

Senator Nelson announced the idea for a “national teach-in on the environment” to the national media; persuaded Pete McCloskey, a conservation Republican Congressman, to serve as his co-chair; and recruited Denis Hayes as national coordinator. Hayes built a national staff of 85 to promote events across the land.

As a result, on the 22nd of April, 20 million Americans took to the streets, parks, and auditoriums to demonstrate for a healthy, sustainable environment in massive coast-to-coast rallies.



Walt Kelly's poster for the first Earth Day



Sustainability Defined

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

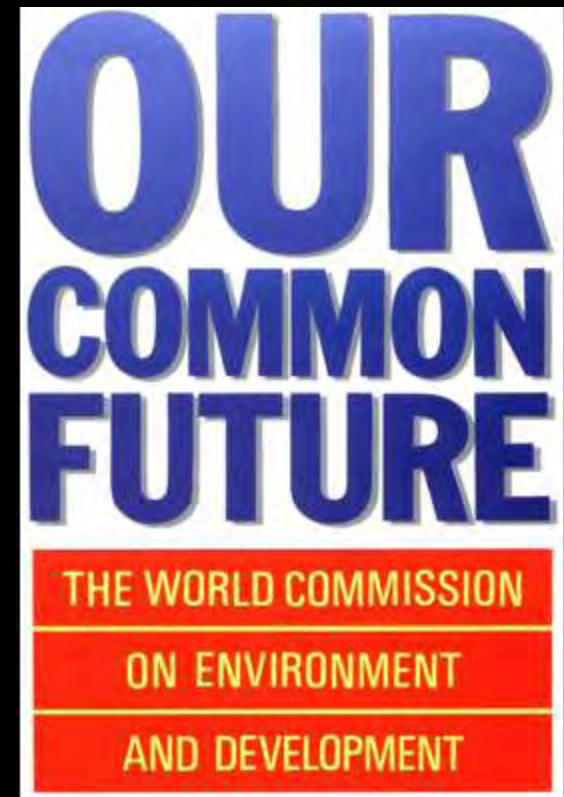
Sustainable development is defined in the report as: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Environment – Economy – Equity

"In the middle of the 20th century, we saw our planet from space for the first time. Historians may eventually find that this vision had a greater impact on thought than did the Copernican revolution of the 16th century, which upset the human self-image by revealing that the Earth is not the centre of the universe.

From space, we see a small and fragile ball dominated not by human activity and edifice but by a pattern of clouds, oceans, greenery, and soils. Humanity's inability to fit its activities into that pattern is changing planetary systems, fundamentally. Many such changes are accompanied by life-threatening hazards.

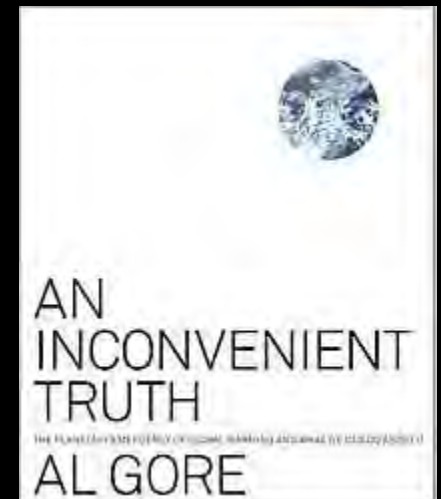
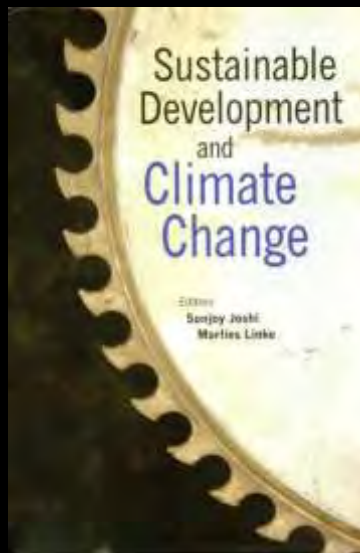
This new reality, from which there is no escape, must be recognized - and managed."



YOU CONTROL CLIMATE CHANGE.



TURN DOWN. SWITCH OFF. RECYCLE. WALK. **CHANGE**



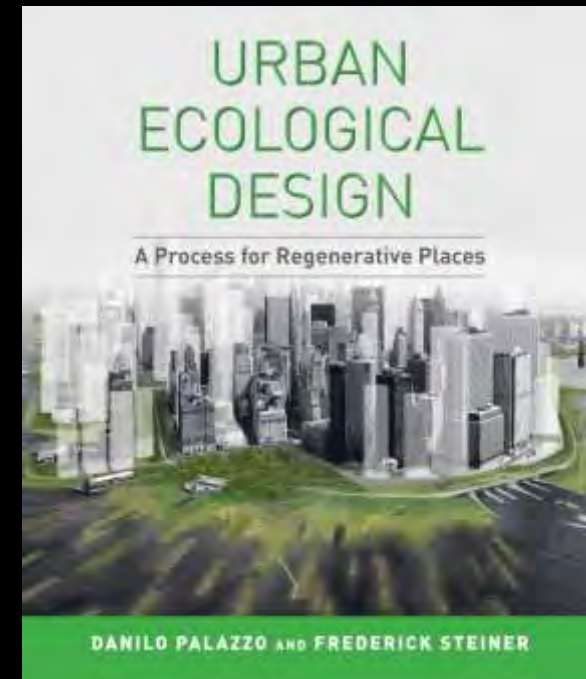
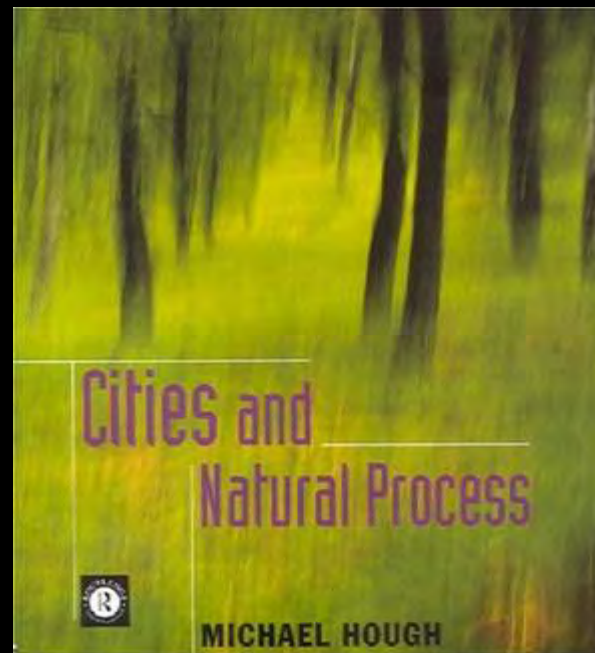
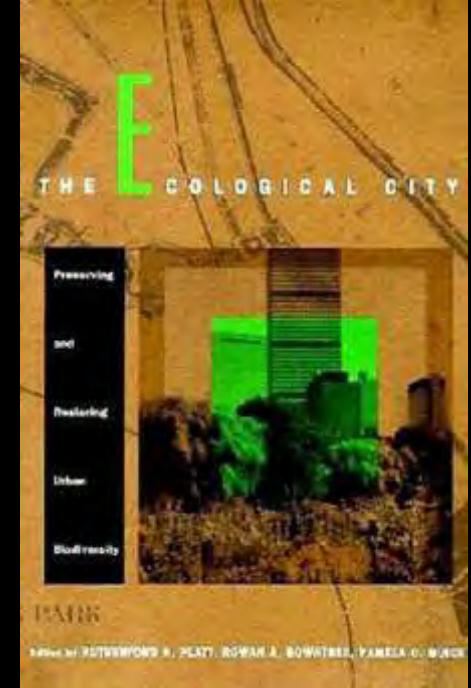
New Narrative - Restoration of Urban Nature

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

McHarg and the urban designers that he has influenced seek to restore nature in urban space as a response to degradation of the original ecosystem upon which the city was built.

Using the ecological inventory, this indigenous ecosystem is remembered and restored as functional “green space” amidst urban space.

In this design with nature version, the restoration privileges native flora and fauna as the authentic nature to restore in the city.



NATURE AND CITIES: URBAN ECOLOGICAL DESIGN AND PLANNING
AUSTIN, TEXAS

28 FEBRUARY – 1 MARCH 2014

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ORGANIC ARCHITECTURE: environment + landscape architecture + design

CONSERVATION SCIENCE AND PRACTICE no. 7

Urban Biodiversity and Design

Edited by Norbert Müller, Peter Werner & John G. Kelsey

WILEY-BLACKWELL

ZSL

FORSTER ROUBIS

Ecological PLANNING

A HISTORICAL AND COMPARATIVE SYNTHESIS

WITH RICHARD BLACKBURN & PETER WERNER

SUSTAINABLE URBANISM

URBAN DESIGN WITH NATURE

DOUGLAS FARR

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.

Narrative of Degraded Urban Nature

Perceptions of American Biologists, Ecologists, and Environmentalists

A weedland community of inappropriate nature

(Urban growth) replaces the native species that are lost with widespread “weedy” nonnative species. This replacement constitutes the process of biotic homogenization that threatens to reduce the biological uniqueness of local ecosystems.

Michael L. McKinney, “Urbanization, biodiversity, and conservation”. *Bioscience* 52(10), (2002), 883–890.

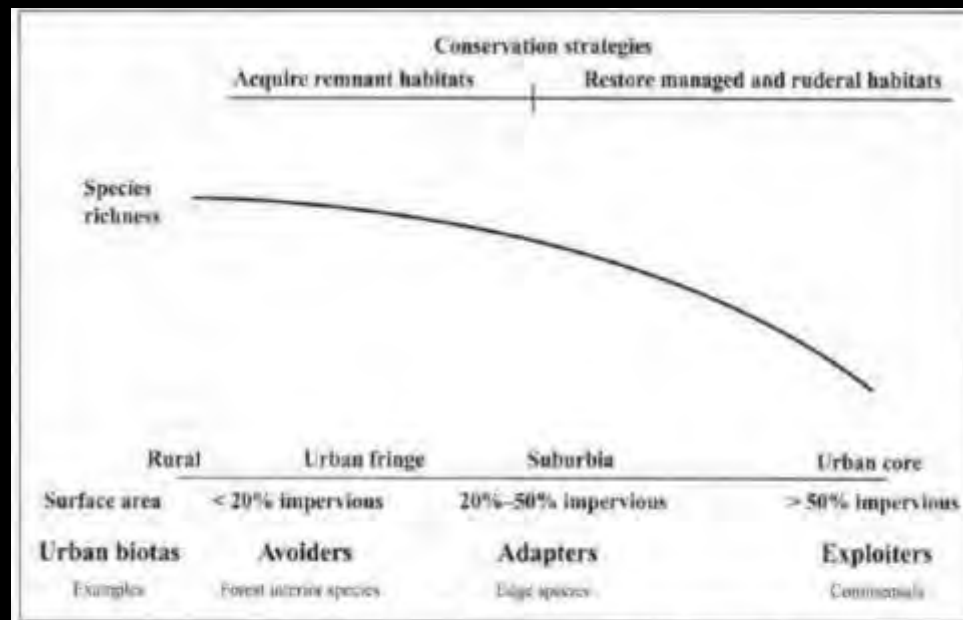


Figure 2. Urban-rural gradient. This is a very generalized and simplified depiction of changes in surface area, species richness, and composition, as compiled from a number of sources discussed in the text. Two basic conservation strategies with respect to urban sprawl are shown at the top.

Invaders

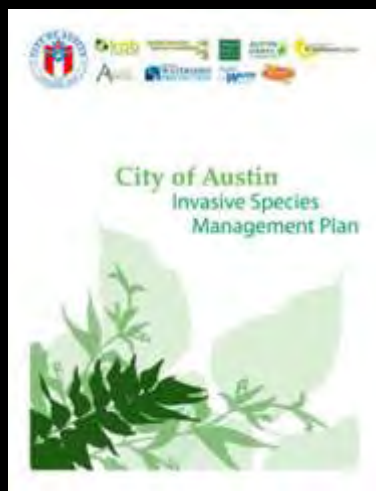
Of Texas - a Citizen Science Program to Detect and Report Invasive Species

“Invaders of Texas” website was created by the Lady Bird Johnson Wildflower Center as a tool for mobilizing the public against non-native invaders and the website employs the rhetoric of war and a resistance composed of “citizen scientists” defending the homeland –

“The Invaders of Texas Program is an innovative campaign whereby volunteer “citizen scientists” are trained to detect the arrival and dispersal of invasive species in their own local areas.

The Invaders of Texas program provides training and materials to volunteers who find, track, describe and photograph invasive species and report occurrences to a centralized database on the texasinvasives.org website. The anticipated outcomes of this citizen scientist program include a statewide network of volunteers contributing to our knowledge of the distribution of invasive species in Texas and increased public awareness of the dangers imposed by invasive species and what steps citizens can take when they encounter them; and reduced spread of invasive species through more timely control and eradication.”

- www.texasinvasives.org



Chinaberry



But not Monk Parakeets



Narrative of Restorative Urban Nature

Restoration ecology developed out of conservation biology as a proactive technique not to just conserve remnant habitats and species but to actively restore degraded ecosystems.

In the retrospective version of the narrative of restorative urban nature, cities must be restored to former landscapes degraded by the city.

The most controversial of these aliens are “invasive species” identified as non-native species introduced by humans. These transgressive weeds must be eradicated in order to bring back lost native landscapes.



Narrative of Restorative Urban Nature

This narrative of restoring American urban nature are preoccupied by a retrospective longing for lost pristine nature and native habitats.

The rhetoric of warfare with invasive non-native species combines with a vision of urban landscapes as weedlands resulting in a bleak picture of urban ecosystems in America.

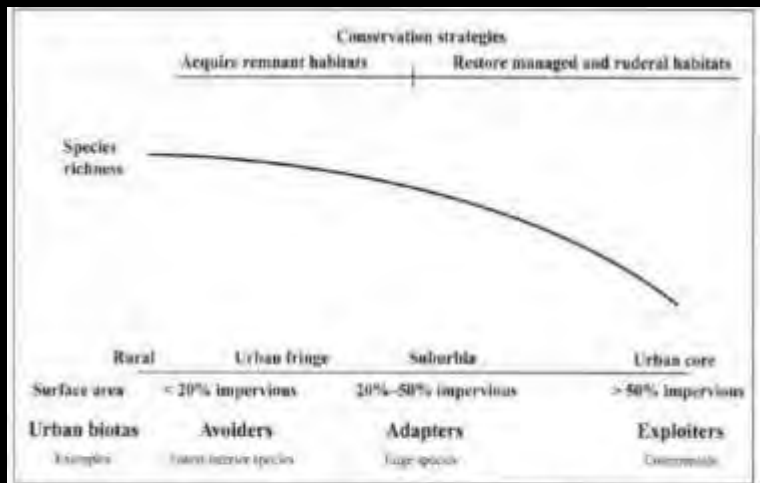
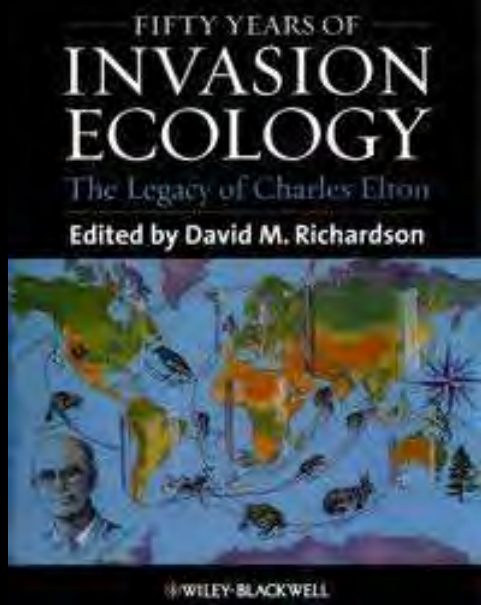


Figure 2. Urban-rural gradient. This is a very generalized and simplified depiction of changes in surface area, species richness, and composition, as compiled from a number of sources discussed in the text. Two basic conservation strategies with respect to urban sprawl are shown at the top.

Degraded Nature

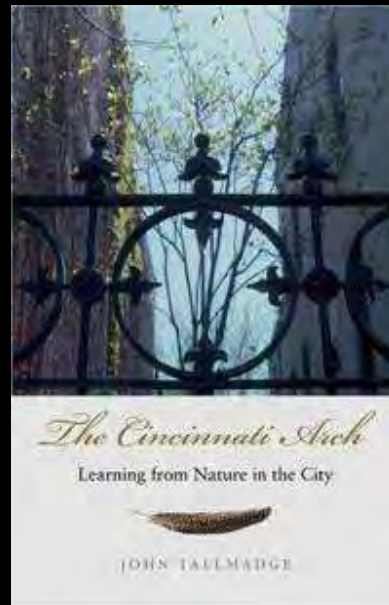
Urban Nature - Not a Real Ecosystem

John Tallmadge *The Cincinnati Arch: Learning from Nature in the City* (2004)

Urban nature is not sublime...There's too much sterility in the form of roofs and pavement, and, oddly enough, there's also too much wildness, too many weeds and wooded borders and tangled banks, not to mention vacant lots going to brush.

Of course, "wilderness" won't do to describe such landscapes either. Despite the degree of wildness, there's too much human impact, too many alien species, too few large animals to meet the legal and cultural criteria.

The fact is that urban landscapes are just too mixed up, chaotic, and confused to fit our established notions of beauty and value in nature. ... *Maybe it's not really nature at all, not a real ecosystem, just a bunch of weeds and exotics mixed up with human junk.*



Maybe it's not really nature at all

Beautiful flower in your garden
But the most beautiful by far
Is the one growing wild in the garbage dump
Even here, even here, we are

Song by Paul Westerberg, "Even Here We Are" (14 Songs, 1993)



The High Line – New York



Putting Vacant Lots into Perspective



The City of Pittsburgh has no easy way of categorizing its vacant land. In fact, there is no one unifying definition used throughout the city. In some databases, vacant land means any land without a structure. Other databases classify it as any structure or parcel with no residents. There is no database that easily defines vacant land (no structure) that is un-maintained and not part of a right of way or park. Most of this variety of vacant land, (estimated between 6,000 and 12,000 lots), is symptomatic of communities with high levels of disinvestment, absentee landlords, and underserved low income residents. Vacant land can also be a cause, however, of many negative characteristics associated with urban blight. Thus, un-maintained spaces in the midst of urban communities create a vicious circle that many communities do not have resources to address.

Negative Influences, Positive Opportunities

A growing body of statistical research revolving around vacant lot issues in urban areas point toward direct, empirical correlations between vacancy and a variety of negative economic, environmental, and social influences. Thankfully, there is a flip side - equally strong evidence that reversing vacancy leads to stronger, healthier neighborhoods.

Negative Influences of Vacant Lots

The impact of vacant lots reaches beyond visual blight and decay, negatively affecting communities across economic, environmental, and social bounds.

Economic Influences

A study of vacant lots in Philadelphia estimated that the city and closely related public agencies spent \$1.8 million annually on cleaning vacant lots.

Neighborhood blocks with higher concentration of unmanaged vacant lots decreased property values by close to 18% (Wachter, The Wharton School)

Environmental Influences

Vacant Lots are targets for litter, illegal dumping, and criminal activity.

Security Influences

The City of Richmond, Virginia found that of all the economic and demographic variables tested, vacant properties had the highest correlation to the incidence of crime. (The National Vacant Properties Campaign)

Positive Influences through Greening Strategies

Strategies that address vacant land through green means are proven to have positive effects on communities in economically feasible ways.

Economic Influences

Cleaning and greening of vacant lots can increase adjacent property values by as much as 30% (Wachter, The Wharton School)

Planting a tree within 50 feet of a house can increase its value by about 9% (Wachter, The Wharton School)

Location of a house within ¼ mile from a park increased property values by 10% (Wachter, The Wharton School)

Vacant properties located near newly constructed parks were the first to sell during a revitalization project in North Philadelphia. (Philadelphia Green - Urban Impact)

Health & Recreation Influences

When people have access to parks, they exercise more. Access to places for physical activity leads to a 25.6% increase in the percentage of people exercising on three or more days a week (Trust for Public Land)

The High Line in New York City



Ruinous Attractions – Social Space

Many waste places have these ruinous attractions: release from control, free play for action and fantasy, rich and varied sensations. Thus children are attracted to vacant lots, scrub woods, back alleys, and unused hillsides...those screened, marginal, uncontrolled places where people can indulge in behavior that is proscribed and yet not harmful to others – are regularly threatened by clean-ups and yet are a necessity for supple society.

- Kevin Lynch *Wasting Away* (1990) p. 26.



The paradox of meddling

These habitats are accidental from our perspective, but they are deliberate expressions by urban flora and fauna.

As we impose our expectations of nature on this urban nature, we decide which organisms are allowed to remain. Nonhuman planning for these sites is rejected by human planning, and the ruinous attractions created by nonhumans can undone.

The urban planning ideas of filling vacant land with development or greening it with parks and gardens displaces this kind of nature. In this contest between human and nonhuman intentions, these particular ruderal nonhumans lose.

The High Line in New York City



In the United States, the foundational narratives of Nature that we celebrate are wilderness and pastoral arcadia.

They are the foundational metaphors of American nature from which we assess the value of nature in America.



However, we are now predominately a country of urbanites who have only occasional contact with wilderness or pastoral nature.



Our understanding of what constitutes “sanctioned” urban nature in cities is shaped by culturally dominant metaphors of nature.

These metaphors valorize urban nature that is either deliberately cultivated in parks and gardens or formally protected as remnants of native landscapes obliterated by the creation of the city in preserves, sanctuaries, and refuges.





In American cities, we perceive nature in the urban landscape filtered through concepts that prejudge its ecological and cultural value.

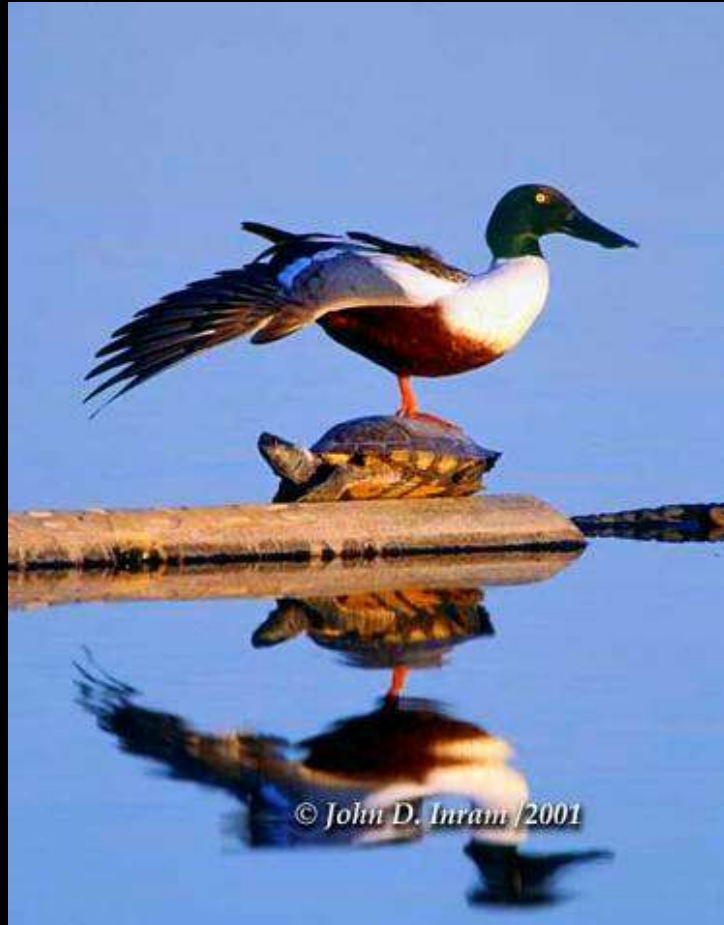
By restricting our discourse of nature to these traditional concepts, we fail to come to terms with a new kind of nature that has emerged in the city.



This new nature flourishes through its own agency in neglected urban wastelands and margins like vacant lots, garbage dumps, sewage ponds, unmaintained roadway and railway verges, old industrial tracts, abandoned buildings, overgrown urban creeks, crumbling walls, and other urban waste spaces.

Agency of Nature

Non-humans do unexpected things and defy our expectations of what nature should be and how non-humans should behave



Human Agency and the Agency of Nature

I like very much a little piece by Michel Callon which is about the problem with scallop fishing in Saint Briene Bay. It seems like a very conventional piece of sociological analysis talking about the various agents at work, until you come to the final agent, which is the scallops.

Now at that point most people freak out: they say 'scallops? Agents?!' Now this struck me too at first as strange, but then I thought, 'Yeah, he's right, he's dead right'. I mean why do we say that the scallops have no agency in this.

It does seem to me that one of the transgressive points that Donna (Haraway) feels very strongly about is to try to dissolve that divide between nature and culture, and I think I would want to try to do that too, although it's extremely hard to do and this is where the language comes back and gets you again and again. We don't have, as it were, the discursive strategies that allow us to talk freely about the production of nature...

I prefer to talk about socioecological projects in which it's not simply the social that's the activating unit but also, scallops and mice and all the rest of them.

"Nature, politics, and possibilities: a debate and discussion with David Harvey and Donna Haraway", *Environment and Planning D: Society and Space* 1995, Volume 13, p. 515.

Animal Geography – Wolch, Philo, Whatmore, etc.



Perceptions of Non-Human Urbanites

Urban Wildlife – Sanctioned and Unsanctioned

Urban fauna is judged favorably when it in some way fulfills our expectations of wild or pastoral nature or condemned as pestilent when it fails to follow the narrative for good fauna in the city.

This narrative of urban wildlife declares that everyday non-charismatic house sparrows, grackles, and pigeons are urban pests that further degrade the city...



but nesting red-tailed hawks and peregrine falcons are redemptive wild additions to the urban scene.



Nonhumans and Urban Habitat

the individual nonhuman subject
actively creating its home in the
urban habitat



Pale Male the famous red-tail hawk
Performs wingstands high above midtown Manhattan
Circles around for one last pass over the park
Got his eye on a fat squirrel down there and a couple of pigeons
They got no place to run they got no place to hide
But Pale Male he's cool, see 'cause his breakfast ain't goin' nowhere
So he does a loop t loop for the tourists and the six o'clock news
Got him a penthouse view from the tip-top of the food chain, boys
He looks up and down on fifth avenue and says "God I love this town"
But life goes on down here below
And all us mortals struggle so
We laugh and cry
And live and die
That's how it goes
For all we know
Down here below

Pale male swimmin' in the air
Looks like he's in heaven up there
People sufferin' everywhere
But he don't care
But life goes on down here below
And all us mortals, struggle so
We laugh and cry



- Steve Earle, "Down Here Below", song on Washington Street Serenade (2007)

Perceptions of Urban Nature

“I’ll learn’em to steal my house!” he cried. “I’ll learn’em, I’ll learn’em!

“Don’t say ‘learn’em,’ Toad,” said the Rat, greatly shocked. “It’s not good English.”

“What are you always nagging at Toad for?” inquired the Badger, rather peevishly. “What’s the matter with his English? It’s the same what I use myself, and if it’s good enough for me, it ought to be good enough for you!”

“I’m very sorry,” said the Rat humbly. “Only I think it ought to be ‘teach’em,’ not ‘learn’em.’”

“But we don’t want to teach’em,” replied the Badger. “We want to learn’em – learn’em, learn’em! And what’s more, we’re going to do it, too!”

- Kenneth Grahame, *The Wind in the Willows*



Summary

In American cities, we perceive nature in the urban landscape filtered through concepts that prejudice its ecological and cultural value.

By restricting our discourse of nature to these traditional concepts, we fail to come to terms with a new kind of nature that has emerged in the city.



What emerges in this wasteland is a hybrid ecosystem both weedy and wild - the unintended product of human neglect and Nature's unflagging opportunism, which I call Marginal Nature.

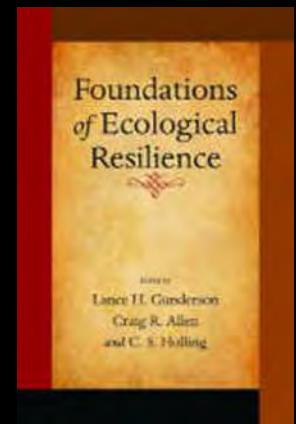
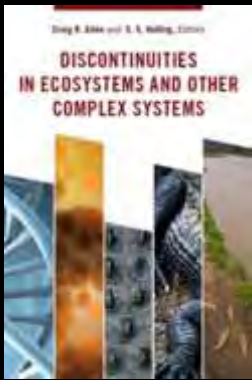


Marginal nature in the urban landscape is neither pristine nor pastoral, but rather it is a new kind of nature whose ecological and cultural meaning is an open question.

New Myth of Nature

Novel Ecosystems and Resilience Ecology

Holling, C.S. (1973). "Resilience and stability of ecological systems"



2005



2007



2009



2012

Applause

