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na•ture noun \nā-chər\

- An organic environment where the majority of ecosystem processes are present (e.g. death, reproduction, relationships between species) and can include any single element of the natural environment (e.g. plants, animals, air, water, soil) as well as geological, biophysical, biochemical, and evolutionary process that have occurred throughout time. (Maller et al., 2006)
- The unbuilt environment, its functions, and parts
- The uncontrolled functions of biology (e.g. pregnancy and death)







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#### **Human Benefits from Nature**



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## **Human Benefits from Nature**

Shinrin-yoku (Forest Bathing)



Phytoncides – produced by plants in response to insect attacks increased:

- Cancer fighting cells
- Lowered blood pressure
- Decrease heart rate
- Decrease sympathetic nerve activity
- Lowered cortisol levels
- Decrease anxiety ٠
- Decrease fatigue •
- Decrease confusion •
- Decrease depression
- Improve hypertension prevention

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## **Human Benefits from Nature**

Attention Restoration Theory



Improved concentration and length of concentration by:

- **Providing motion** ٠
- Increasing soft fascination
- Eliminating monotony
- Providing a landscape for imagination

• Providing a landscape for imagination at heart APA - WI Annual Planning Conference September 22

## **Urban Ecosystem Services**

- Green Space
  - Parks
  - Urban forest
  - Vacant lots
  - Gardens and yards
- Blue Space
  - Streams
  - Lakes and ponds
  - Swales
  - Stormwater retention
- Daylight
- Sense of Place major driver of environmental stewardship

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## **Economic Benefits of Nature for Downtowns**

- Higher Property Value
- Improved Image
- Lower Crime
- Pedestrian Safety
- Public Health
- Environmental Benefits
  - Heat island effect
  - Stormwater management
  - Air quality
- Longer Pavement Life
- Stronger Businesses



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## **Economic Benefits of Nature for Business**

Methodology



Kathleen L. Wolf

Enclosed Sidewalk



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## **Economic Benefits of Nature for Business**

Business and Visitor Preference



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#### **Patron Behavior**

- **Travel Time**
- **Travel Distance**
- Length of Visit
- **Frequency of Visits**
- Willingness-to-Pay for parking



## **Place Perception**

- Place Character
  - Amenity and comfort rating 80% higher
- Products and Merchants
  - Quality of product rating 30% higher
  - Interaction with merchants 15% higher



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## **Economic Benefits of Nature for Downtowns**

- Increase Sales
- Higher Profitability
- Longer Stay
- Quality
- Greater Draw
- Willingness to Pay for Parking
- Longer travel Distance
- Travel Time
- Frequency of Visits
- Programmable Spaces





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## **Value Increases**

- Goods & Services
  - Forested Business District
    - Small Cities 9%
    - Large Cities
  - Landscaped Strip Mall
  - Adjacent to Vegetated
    Freeway R.O.W

- 11 to 12% 9% 7 to 11%
- Commercial Office rentals
  7%
- Home Value
  - Large Trees3% to 15%
  - ¼ mile of Prime Commercial Corridors 23%
  - Potential to increase property tax revenues in Portland, OR by \$15.3 million

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#### **Value Increases**



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## **Concerns About Trees**

- Signage
- Sidewalk Issues
- Messy
- Costly to Maintain
- Costly to Install Properly



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## **Impact of Green Retail Space on Consumers**

- Place: inert, geographic locales that facilitate exchange activities
- Places: transform and promote well-being
- Healthy places commercial/nonprofit
  - Diners, fitness clubs, video arcades
  - Senior centers
  - Cancer resource centers
  - Shopping malls
  - Why?





## **Attention Restoration Theory**

- William James (1892): people use two types of attention when they respond to environmental stimuli. Involuntary is passive. Voluntary requires focus.
- Voluntary attention enables people to function, requires an internal resource
- Resource depletion leads to mental fatigue







- Resource renewed by person turning off voluntary attention, entering environment that uses involuntary attention
- Nature prime setting for eliminating mental fatigue
- Contains three key stimuli





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## **Natural Stimuli and Human Health**



#### When Nature Meets Retail



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#### **Attention Restoration Theory**



## A Shopping Mall's Restorative Area

- An actual mall installed a grassy area
- Do shoppers sense it's restorative potential?
- If so, impact on managerial outcomes
- Is a restorative environment a profitable environment
- Link ART to managerial outcomes











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## **Restorative Shopping Centers**

A restorative setting contains 5 environmental stimuli: Stimuli evoke feelings of: Fascination Being-Away Coherence (organization) Scope (understandable) Compatibility (place and person congruency)





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## Methodology

- 400 mall shoppers
- 25% in the designated age groupings of 18–25 years, 26–35 years, 36–45 years, and 46 and older. In terms of gender, 60% of the respondents were women and 40% were men
- Perceived Restorativeness Scale
- 29 items and measures perceptions of the five restorative qualities (i.e. fascination, being away, coherence, scope, and compatibility).

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# Methodology

- The statements of the short version PRS follow, with the corresponding ART factor in parentheses:
  - 'This mall is fascinating. It is large enough for me to discover new things and place and to be curious about different things' (fascination).
  - 'The mall is a place that makes me feel like I am far from everyday thoughts and concerns. When I'm at the mall, I'm able to relax and think about things that interest me' (being away).
  - 'This mall is a place where the activities, the stores, and things in the mall are ordered and organised' (coherence).
  - 'The mall feels like a whole world of its own, which is very large, and a place in which I can easily move around' (scope).
  - 'The mall draws my attention without effort and easily interests me' (compatibility).

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Item	N=287 (72%)	Shoppers N=113 (28%)
Fascination	6.55 (.56)	5.48 (1.05)***
Being-away	6.53 (.57)	5.43 (.96)***
Coherence	6.52 (.58)	5.03 (1.11)***
Compatibility	6.64 (.49)	5.29 (.98)***
Scope	6.61 (.55)	5.42 (.91)***
Gender (n.s.)		
Male	112 (39%)	48 (42%)
Female	175 (61%)	65 (58%)
Age (years, n.s.)		
18–25	66 (23%)	34 (30%)
26–35	73 (25%)	18 (24%)
36–45	78 (27%)	22 (19%)
46-55	48 (17%)	20 (18%)
56 years and older Monthly	22 (8%)	10 (9%)
Income (**)		
<500,000 pesos	49 (17%)	17 (15%)
500,001–1 million pesos	124 (44%)	67 (62%)
1,000,001–2 million pesos	79 (28%)	14 (13%)
2,000,001+million pesos	32 (11%)	11 (10%)
Labour status (n.s.)		
Full-time employment	148 (52%)	69 (61%)
Part-time employment	74 (26%)	20 (18%)
Student	21 (7%)	12 (10%)
Housewife	41 (14%)	11 (10%)
Retired	3 (1%)	1 (1%)
Marital status (n.s.)		
Single	108 (38%)	44 (39%)
Married	93 (32%)	29 (26%)
Partnership (living together)	69 (24%)	31 (27%)
Widow(er)	12 (4%)	6 (5%)
Divorced/separated	5 (2%)	3 (3%)
*** <i>p</i> <.001;		
** n< 01		

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Cluster characteristics and managerial outcomes.

Item	Cluster 1 Restorative Shoppers N=287 (72%)	Cluster 2 Non-Restorative Shoppers N=113 (28%)					
Managerially outcomes:							
Shopper satisfaction	6.47 (.47)	5.73 (.63)***					
Intention to recommend the mall to others (WOM)	6.36 (.50)	5.83 (.59)***					
Loyalty	6.32 (.55)	5.69 (.54)***					
Net Promoter Score (1=not at all likely; 10=extremely likely)							
Score	9.00 (1.03)	8.25 (1.35)***					
Planned expenditures (day, USD\$)	40.57 (155.00)	37.69 (77.30)n.s.					

All items measured on a scale (1=strongly disagree; 7=strongly agree).

\*\*p<.01.

\*\*\* *p*<.001;

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## 1. Plan the retail core as a landscape district

- Compatible lights, trash, benches, etc.
- Sufficient sidewalk widths for visibility to store, room for trees, and room for planting.



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- 2. Set Goals
  - Urban forestry cover
  - Daylight
  - Stormwater control
  - Amount of Nature
  - Gathering space



#### 3. Give Nature Space

Plant Type and Condition	Soil Volume (Cubic Feet)		Ideal Soil Depth (Feet)	
	Min	Max	Min	Max
LARGE TREES: DECIDUOUS OR EVERGREEN				
Single Tree	800	1400	3	4
Trees, In the Street and Pavement, Shared Root Zone	600	1000	3	4
Trees in a Plant Bed	500	800	3	4
Trees in a Container	600	1000	3	4
MEDIUM TREES: DECIDUOUS OR EVERGREEN				
Single Tree	600	1000	3	4
Trees, In the Street and Pavement, Shared Root Zone	600	1000	3.5	4.5
Trees in a Plant Bed	400	800	3	4
Trees in a Container	600	800		
SMALL TREES: DECIDUOUS OR EVERGREEN				
Single Tree	400	800	3	3.5
Trees, In the Street and Pavement, Shared Root Zone	400	600	3	3.5
Trees in a Plant Bed	400	800	3	3.5
Trees in a Container	400	600	3	3.5
SHRUBS: DECIDUOUS OR EVERGREEN				
Plant Bed	100	200	2	2.5
Container	150	200	2	2.5
GROUNDCOVER AND LAWNS				
Groundcover	100	200	1.5	2
Lawns	150	200	1.5	2
HERBACEOUS				
Perennials			1.5	2.5
Prairies and Meadows			4	6

#### Adequate Soil Volumes

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#### 3. Give Nature Space



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## 4. Get a Little Wild



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## 4. Get a Little Wild



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## 5. Plan for Habitat



## 5. Plan for Habitat



- 6. Connect the urban green district to greenways
- 7. Educate and Present
  - Yourself
  - Business Members (Chamber)
  - Community
- 8. Collect data as you implement changes
- 9. Use natives
  - These are the hardiest species with the greatest habitat value
- 10. Sign the benefits

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## For More Help ...

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- Commercial settings can be restorative settings
- Green areas in malls may offer shoppers restorative benefits
- ART is linked to positive managerial outcomes
- ART is a driver of satisfaction, loyalty, and spending
- Move ART into commercial and not-for-profit settings
- ✓ Offer a means for malls to survive e-commerce





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The restorative potential of shopping malls

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