الدراسات الإنسانية في العمارة و العمران

HUMAN STUDIES IN ARCHITECTURE

الإدراك البيئي

Environmental Perception
It all happens in the mind
Neurology / psychiatry / brain study

Sigmund Freud
1856-1939 (83yrs)

Neurologist

Part of the brain & their functions

وظائفهم

أجزاء المخ و

Neurology

أعصاب و المخ

Acerbellum

controls balance
and coordination

Brainstem
regulates basic
body functions

Frontal lobe

problem solving
reasoning

Parietal lobe

motor

Sensory

Temporal

language

speech

Occipital

vision
**Environmental Perception**

Human activities are dependent on our ability to perceive accurately the varied environments in which we live.

In order to understand, navigate and effectively use the physical environment, we must first perceive it clearly and accurately.
A better understanding of environmental perception should help us design environments that are more congruent with people’s psychological needs.
1. Which is more beautiful, architecturally?

أيهما أجمل معمارياً وأعمراً؟

2. Which is your first choice as place of residence?

أيهما تفضل أن تسكن فيها؟
نلاحظ المكان بعناصره

المكان ده يبقكرني بكذا وله ذكريات جميلة عندي

بالسلام ، الواحد نفسه يعيش هنا

Environmental Perception

الإدراك البيئي

Keyboardulloh 112011

Environmental Perception

الإدراك الحسي

Environmental Cognition

الإدراك المعرفي

Environmental Attitudes

المواقف البيئية

إستقبال الحواس لعناصر البيئة

تنظيم وفهم المعلومات التي جمعتها الحواس

المشاعر المستحبة أو الغير مستحبه تجاه البيئة
You observe it

Your mind starts working to relate it to something

Like or dislike; comfortable or uncomfortable; etc.

A.

الإدراك الحسي

Environmental Perception
On the Nature of Environmental Perception

Object Perception
### Object Perception

The dog is better perceived in the more coherent surrounding.

### On the Nature of Environmental Perception

Environment Surround

Sharp Centre for Design, Canada, by ALSOP Architects Ltd. & Robbie/Young & Wright Architects. Client: The Ontario College of Art & Design.
Jurors' Comments

Will Alsop's academic building is an altogether original and welcome enrichment of Toronto's urban fabric: artistically bold and imaginative, and respectful of residents and users in its culturally intense neighborhood. Held high over the mixed Victorian and modern streetscape by colorful legs plunging earthward like thunderbolts, this addition to the Ontario College of Art and Design is cocky and attractively humorous, an element in the urban scene that holds its own with tough urbanity while allowing new public space to open up beneath it.

On the Nature of Environmental Perception

Environment provides abundance of information
Environmental perception involves purposive actions

Active exploration, sorting, and categorizing of environmental cues by viewers

Table: Dimensions of Environmental Stimulation

<table>
<thead>
<tr>
<th>Collative Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novelty</td>
</tr>
<tr>
<td>Complexity</td>
</tr>
<tr>
<td>Surprisingness</td>
</tr>
<tr>
<td>Incongruity</td>
</tr>
</tbody>
</table>

Substantive

On the Nature of Environmental Perception

الإدراك الحسي

الإدراك مرتبط بأنشطة و أفعال لها غرض

المشاهد يبحث عن عناصر البيئة بإيجابية

Dimensions of Environmental Stimulation

عناصر المنبهات البيئية

خصائص مجموعة

الجديد

التعقيد

المفاجأة

تعارض، تنافر
Novel environments are generally positively perceived

Complexity
Highest preference at medium complexity

Degree of Complexity

Complexity

Additional features -> complexity
Simplification becomes a differentiator

Basic features and simplicity
Simplicity becomes commonplace

Time

Complexity
### Psychological Functions of Environmental Perception

<table>
<thead>
<tr>
<th>موجه للأنشطة كالتوجيه</th>
<th>موجه للأنشطة كالتوجيه</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directing activities, such as orientation</td>
<td>موجه للأنشطة كالتوجه</td>
</tr>
<tr>
<td>Coping with novel environments</td>
<td>موجه للأنشطة كالتوجه</td>
</tr>
<tr>
<td>Contextual influences our way of perceiving the environmental (Culture)</td>
<td>موجه للأنشطة كالتوجه</td>
</tr>
</tbody>
</table>

### THEORIES of Environmental Perception

<table>
<thead>
<tr>
<th>نظريات الإدراك الحسي</th>
<th>نظريات الإدراك الحسي</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gestalt Theory</td>
<td>نظرية الجيشتالت</td>
</tr>
<tr>
<td>2. Ecological Theory</td>
<td>النظرية الإيكولوجية</td>
</tr>
<tr>
<td>3. Probabilistic Theory</td>
<td>النظرية الإحتمالية</td>
</tr>
</tbody>
</table>
Gestalt Theory
Gestalt Theory

Visual Illusion

Principles of Organization

Proximity

Similarity

Closure

Continuity

Symmetry
Gestalt Theory

Similarity
Proximity
Good continuation
Symmetry

Principles of Organization

Application

De Styl, Rietveld, Schroeder House, Utrecht, Holland
Art

The Bauhaus, Walter Gropius
Fagus Shoe Factory, Walter Gropius
<table>
<thead>
<tr>
<th>Theory</th>
<th>النظرية الإيكولوجيه</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Ecological Theory</td>
<td>النظرية الإيكولوجيه</td>
</tr>
<tr>
<td>James Gibson</td>
<td>جيمس جيبسون</td>
</tr>
<tr>
<td>Environmental perception as a direct product of environmental stimulation</td>
<td>خصائص البيئة تدرك مباشرة ولا ضرورة لتعلمها بل إن معانيها موجودة بها ولا يمر المشاهد بمراحل لترجمة وتحليل المعلومات من البيئة</td>
</tr>
<tr>
<td>Characteristics of the environment does not have to be learned</td>
<td></td>
</tr>
<tr>
<td>Meaning is already embedded in environmental stimulation, no info professing required</td>
<td></td>
</tr>
<tr>
<td>Holistic. People perceive meaningful patterns environmental stimulation rather than separate points of stimulation</td>
<td></td>
</tr>
</tbody>
</table>
Egon Brunswik Lens Model of Perception (1938)

Perceived is never perfectly correlated with real

3. Probabilistic Theory

Applications to Environmental Perception

1. Design for perceptual clarity
   تصميم للوضوح

2. Designing for optimal visual complexity
   تصميم للتعقيد البصري المريح

3. Planning for natural disasters
   تخطيط للكوارث الطبيعية
1. Design for perceptual clarity

In hospitals

1. Design for perceptual clarity

In airports
2. Designing for optimal visual complexity

تصميم للتعقيد البصري المريح

Robert Venturi, Learning from Las Vegas

3. Planning for natural disasters

تخطيط للكوارث الطبيعية

Understand how people perceive and choose to live in areas susceptible to natural disasters
B. الإدراك المعرفي

Environmental Cognition

<table>
<thead>
<tr>
<th>Cognitive maps CONFLICTS</th>
<th>تعارض الخرائط الذهنية</th>
</tr>
</thead>
<tbody>
<tr>
<td>“To explain what I mean by the cognitive map, I always refer to the celebrated anecdote, whether real or apocryphal, about Marie Antoinette, the Austrian royal princess living in the lap of luxury in total isolation from the outside world, who became queen of France (before the French Revolution broke out). It is said that some guards found a peasant who had fainted of hunger. When they brought him to her and told her about his condition, she felt genuine pity for him, and said, &quot;You should not follow this severe diet, monsieur!&quot; In another version, they told her that the peasant had not been able to find any bread to eat for a week, and so she responded in surprise, &quot;But why monsieur, you did not eat gateaux?&quot; As the phenomena of poverty and hunger were not part of her cognitive map, she could not perceive them. She thus removed the phenomenon of hunger from its real context (poverty) and related it to the reasons she knew (diets, and gateaux instead of bread). That is, she forced her own (subjective) cognitive map on what she saw with her own eyes (material objectivity), and it was her cognitive map that determined her vision.”</td>
<td></td>
</tr>
</tbody>
</table>

## The Nature of Environmental Cognition

<table>
<thead>
<tr>
<th>1. The image of the city</th>
<th>صورة المدينة</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Maps</td>
<td>الخرائط العمرانية</td>
</tr>
<tr>
<td>Legibility</td>
<td>الوضوح</td>
</tr>
<tr>
<td>Elements of the Mental Map</td>
<td>عناصر الخريطة الذهنية</td>
</tr>
</tbody>
</table>

| 2. Cognitive Mapping     | الخرائط الإدراكية |

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*Kevin Lynch: The Image of the City*
Elements of the Mental Map

عناصر الخريطة الذهنية
The Nature of Environmental Cognition

2. Cognitive Mapping

Representation

Visual and non visual aspects of maps

Active process

Examples of Cognitive Maps
### Psychological Functions of Environmental Cognition

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Spatial problem solving</td>
<td>Problem solving, Adaptive value, Cognitive distance vs. perceived distance</td>
</tr>
<tr>
<td></td>
<td>(visibility of object judging distance to)</td>
</tr>
<tr>
<td>2. Communication</td>
<td>Communication and communication</td>
</tr>
<tr>
<td>3. Personal identity</td>
<td>Personal identity</td>
</tr>
</tbody>
</table>
### Psychological Functions of Environmental Cognition

<table>
<thead>
<tr>
<th>Substantive</th>
<th>مضمون</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal identity</td>
<td>ترتيب هويتنا الشخصية</td>
</tr>
<tr>
<td>Personalized maps</td>
<td>شخصه الخرائط الذهنيه لدليل</td>
</tr>
<tr>
<td>Variations</td>
<td>اختلاف الخرائط حسب اختلاف الأفراد</td>
</tr>
<tr>
<td>Unique neighborhood maps</td>
<td>اختلاف الخرائط الذهنيه للمجاورات حتي</td>
</tr>
<tr>
<td>Social class &amp; gender</td>
<td>اختلاف الخرائط الذهنيه حسب خصائص</td>
</tr>
<tr>
<td></td>
<td>المجموعات الاجتماعية و الثقافيه</td>
</tr>
</tbody>
</table>

Two brothers living in the same house drew different cognitive personal maps of their neighborhood.

خرائط ذهنيه لأخوات لنفس المجاره
1. How spatial behavior affects cognitive maps

كيفية تأثير السلوك الفراغي على الخرائط الذهنية

Lifestyle
Familiarity
Social involvement
Social class
Gender differences
A predictive model
R = f (C x D)

The recognizability of an area (A) is a function of its centrality to population flow (C) and its social or architectural distinctiveness

Milgram et.al. (1972)
### Theoretical Perspectives of Environmental Cognition

#### 2. Developmental theories of environmental cognition

*Cognitive mapping over the life span*

Children can develop cognitive maps

*(Jean Piaget)*

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#### 3. Models from experimental psychology

*Information processing*

The brain goes through a process of information processing similar in a way to the one occurring by the computer
### Applications of Environmental Cognition

<table>
<thead>
<tr>
<th>Application</th>
<th>تطبيقات الإدراك المعرفي</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Designing a Legible Cityscape</td>
<td>تصميم بيئات مقروءة و واضحة</td>
</tr>
<tr>
<td>2. Design for Environmental Complexity</td>
<td>تصميم للتعقيد البيئي</td>
</tr>
<tr>
<td>3. A Cognitive Approach to User Participation</td>
<td>مشاركة المستخدم</td>
</tr>
</tbody>
</table>

Wayfinding / Legibility
The role of signs in wayfinding

GPS system & wayfinding
Environmental Attitudes

Have you ever noticed that some environments feel cold and uncomfortable while others feel warm and friendly?

هل لاحظت ان بعض البيئات باردة و غير مريحة بينما بيئات أخرى أكثر دفنا و صديقة للإنسان؟

كيف يكون الإنسان رأيه في هذه المباني و الفضيات و البيئات؟
### On the Nature of Environmental Attitudes

<table>
<thead>
<tr>
<th>Environmental attitudes</th>
<th>المواقف البيئيه</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential satisfaction</td>
<td>رضا السكان بالسكن</td>
</tr>
<tr>
<td>Scenic preference</td>
<td>الأفضليات البصريه</td>
</tr>
<tr>
<td>Attitudes toward conservation</td>
<td>مواقف تجاه الحفاظ</td>
</tr>
</tbody>
</table>

Residential satisfaction

رضاء السكان بالسكن
Scenic preference

On the Nature of Environmental Attitudes

2. Perceived Environmental Quality Indices

Types of PEQIs
Developing PEQI measures
### Psychological Functions of Environmental Attitudes

1. Residential Choice

2. Protecting the environment

### Theoretical Perspectives of Environmental Attitudes

1. How environmental attitudes are learned
   - Classical conditioning
   - Instrumental conditioning

2. How attitudes affect behavior

3. Predicting aesthetic preference
### Theoretical Perspectives of Environmental Attitudes

#### 1. How environmental attitudes are learned

**Classical conditioning**

A neutral stimulus is repeatedly paired with an experience, pleasant or unpleasant. If pleasant then the stimulus will generate pleasant feelings and vice versa.

**Instrumental conditioning**

Responses that are rewarded will be strengthened & maintained, if punished will be weakened & eliminated. Individual acts on the environment. If favorable consequence then favorable attitude (e.g. Car pool & special lane).

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#### Classical conditioning model of attitude formation

<table>
<thead>
<tr>
<th>Step</th>
<th>Event</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conditioned stimulus (CS)</td>
<td>(a new city)</td>
</tr>
<tr>
<td>2</td>
<td>Unconditioned stimulus (UCS)</td>
<td>(illness)</td>
</tr>
<tr>
<td>3</td>
<td>Unconditioned response (UCR)</td>
<td>(negative feelings associated with illness)</td>
</tr>
<tr>
<td>4</td>
<td>Conditioned response (CR)</td>
<td>(negative attitude toward the city)</td>
</tr>
</tbody>
</table>

If (1) & if (2) & if (3) then (4) = (3)

Condition: (1) must happen parallel or immediately after (2)
Instrumental conditioning

Example: A commuter who forms a car pool and is rewarded by special pool lane and free toll pass is likely to develop a positive attitude toward car pooling and maintain car pooling behavior.

Positive reinforcer: an event that tends to increase the probability that earlier behavior will occur again.

Negative reinforcer: an event that tends to decrease the probability that earlier behavior will occur again.

The special car pool lane & the tollfree passage are positive reinforcers.

Applications of Environmental Attitudes

1. User preference in residential design
2. Users evaluation of office designs
3. Users evaluation of outdoor recreational areas
4. Users attitudes in natural resource development
5. Environmental attitudes & conservation programming
2. Users evaluation of office designs
   تقييم المستخدمين لبيئات العمل

3. Users evaluation of outdoor recreational areas
   تقييم المستخدمين لفراغات الترفيه الخارجية