

## Climate as Context



When it's five below in New York, it's 78 in Los Angeles,  
And when it's 110 in New York, it's 78 in Los Angeles.

There are two million interesting people in New York—  
And only 78 in Los Angeles.

—Neil Simon

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Why are there climatic differences?



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Global Property	Consequence
Tilt and motion around sun	Seasons
Spheroid shape	Climate zones
Rotation on axis	Wind patterns
Surface materials	Climate modification

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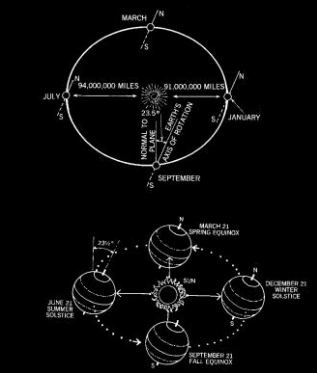
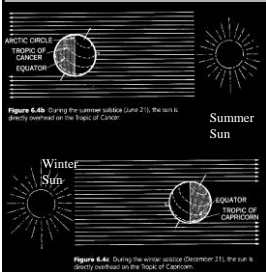
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# Seasons: Earth Tilt and Motion Around Sun



Tilt and motion around sun

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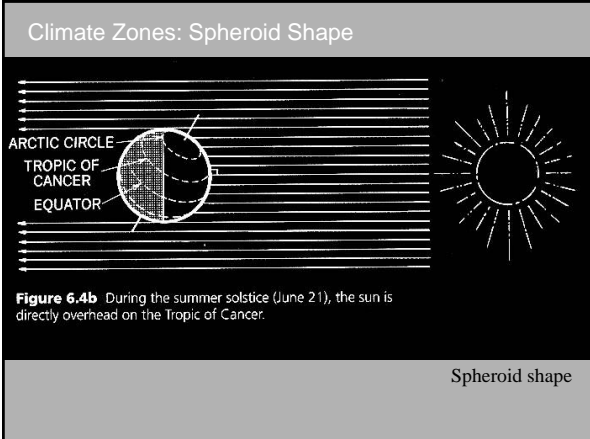
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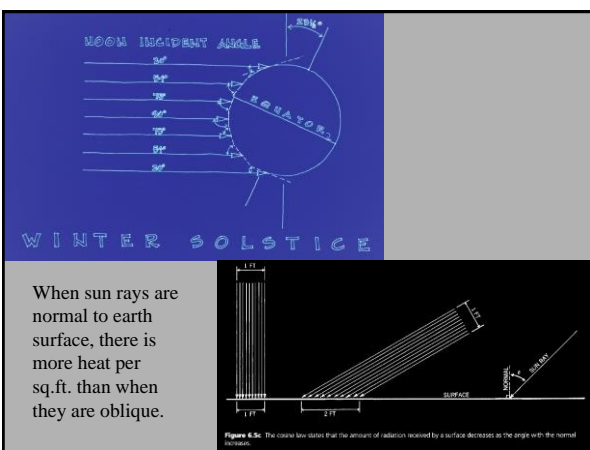
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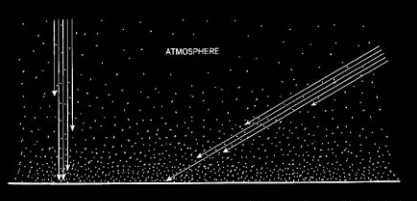
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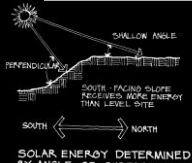
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**Atmosphere and Sun Angle:**  
oblique rays pass through more air



**Figure 6.5b** The altitude angle determines how much of the solar radiation will be absorbed by the atmosphere.

**and Surface Angle:**  
Sloped surface normal to sun rays is more intensely heated.



SOLAR ENERGY DETERMINED BY ANGLE OF SURFACE

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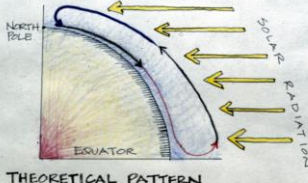
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**Rotation: Wind Patterns**



Rotation on axis



THEORETICAL PATTERN OF WIND CIRCULATION (no rotation)

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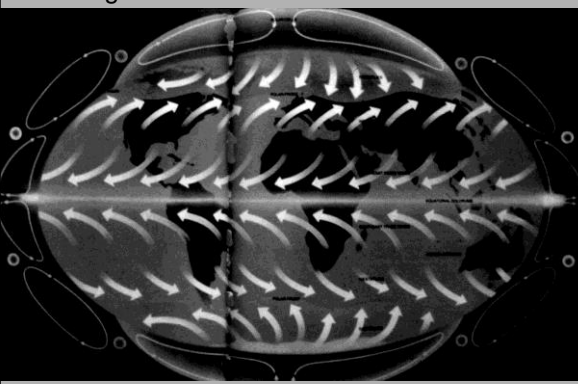
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**Prevailing Winds**



Add a twist...

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## Weather Elements

- Sun
- Wind
- Temperature
- Humidity
- Precipitation

Weather is the moment to moment interaction of sun, wind, temperature, humidity, and precipitation.



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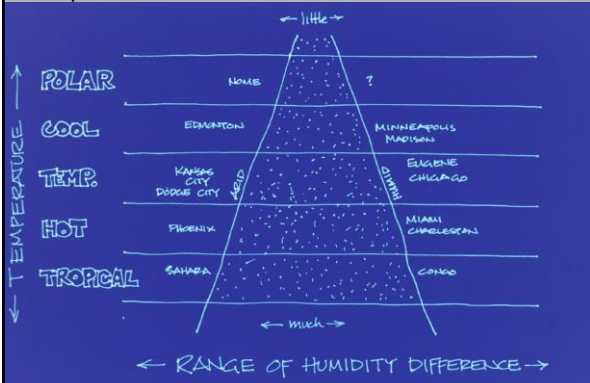
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Climates are characterized by their temperature and moisture



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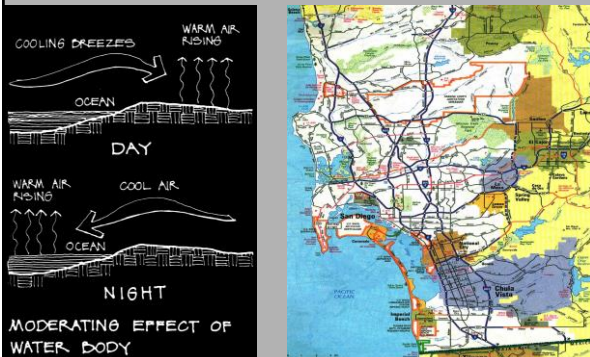
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## Surface Materials

Water Bodies moderate climate



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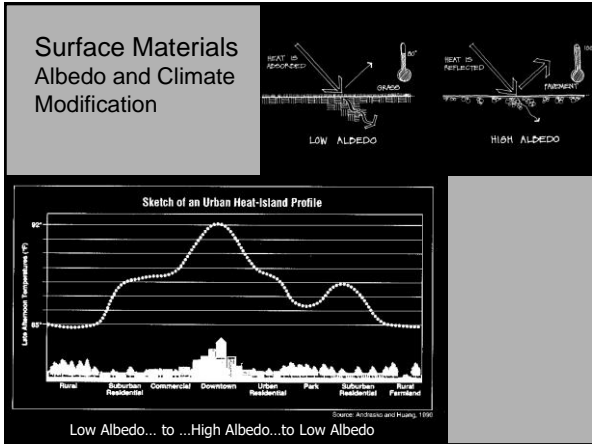
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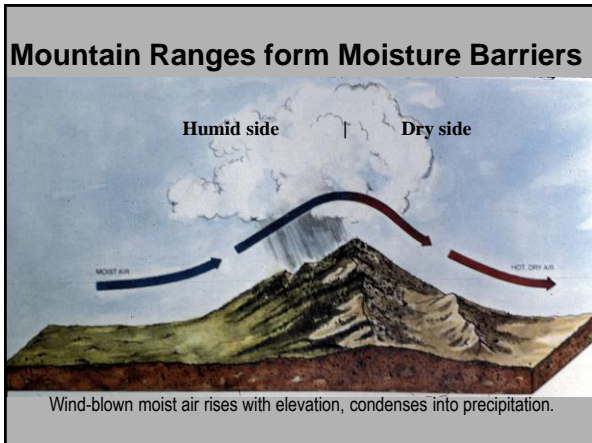
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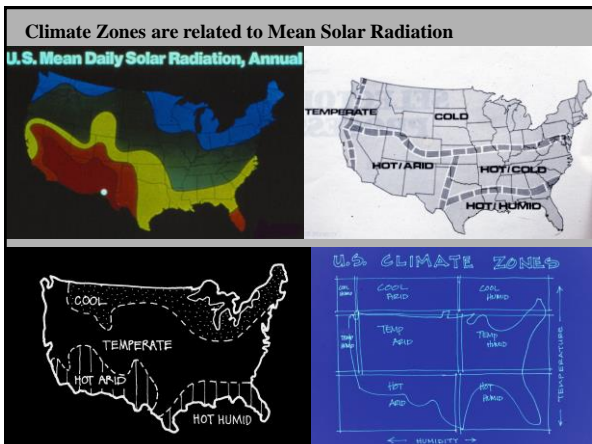
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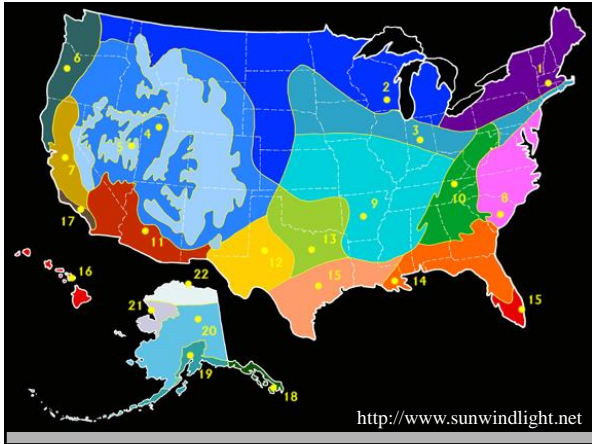
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**THE SPOKESMAN-REVIEW**  
 FRIDAY, July 12, 2009 1976 VOLS., ISSUE 21 807 MAY 19 1980 Spokane, Washington

**WASHINGTON STATE OBESITY** **Climate/Obesity connection**

27.7% OBESITY RATE    17.3% AGES 18-24    28.3% AGES 25-44    31.3% AGES 45-64    26.9% 65 AND OLDER

**State high court deems obesity protected**

Class is protected under anti-discrimination laws; however those who are overweight are not

By Jim Condon THE SPOKESMAN-REVIEW

OLYMPIA — Employers can't refuse to hire someone just because he or she is obese, the state Supreme Court said Thursday. Obesity is a condition covered by the state law against discrimination, the court said in a 7-4 decision, and can't be used as a reason to refuse a job that the applicant is otherwise able to do.

But while obesity is protected under the law, simply being overweight isn't, the court said.

The decision could have far-reaching effects, because more than a quarter of all Washington adults — 27.7% — were estimated to be obese in a 2008 report.

The court ruled on a 12-year legal battle between a King County man, Casey Taylor, and BNSF Railway Company, which initially offered him a job as an electronic technician that refused to hire him after a medical exam said he was obese.

When Taylor applied, he reported that he was 5-foot-7 and weighed 250 pounds, giving him a body mass index of 69.5. He was offered the job contingent on a medical exam, which listed him as 5-foot-6 and 268 pounds, for a body mass index of 61. The railroad required any applicant with an index reading over 40 to get extra medical screening, and the company said Taylor he wasn't medically qualified for the job because of health and performance problems strain on his knees and back.

BNSF officials said they'd reconsider if Taylor paid for expensive medical testing that included a sleep study, blood work and exercise.

See OBESITY, 5

ADULT OBESITY RATE: Less than 25%    25-29.9%    30-39%    More than 35%

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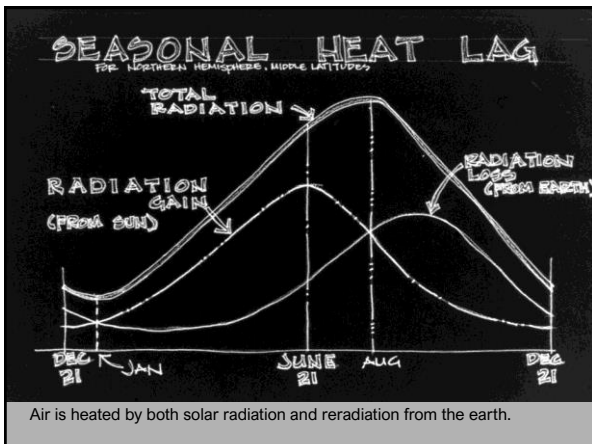
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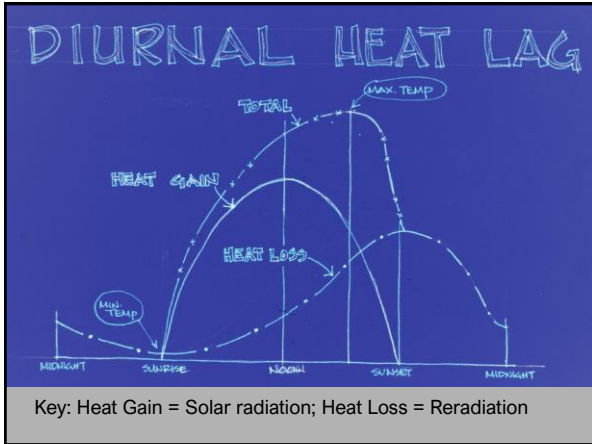
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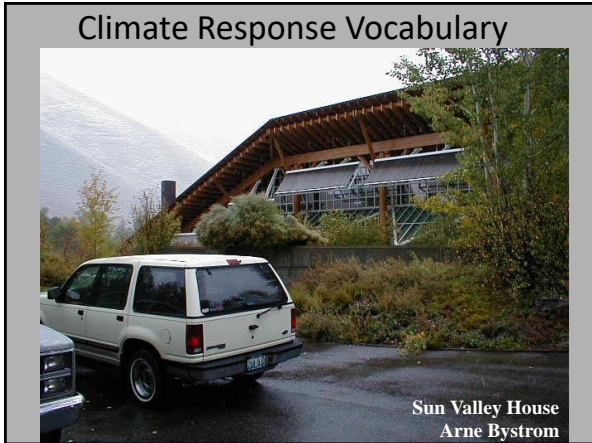
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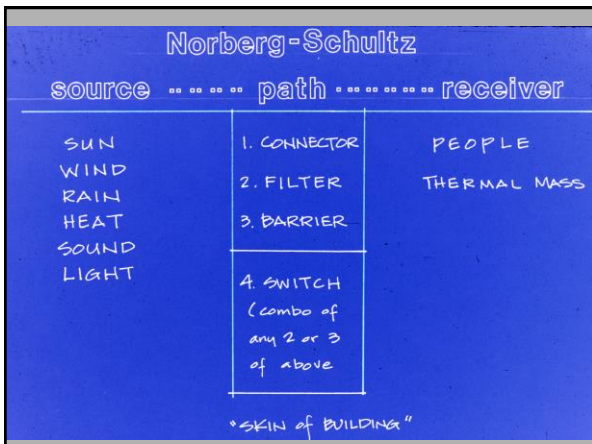
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**Connector Window**  
Connects sun, wind, light



**Filter Window**  
Filters sun, wind, light

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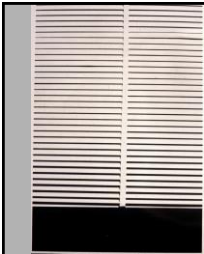
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**Barrier Window**  
Blocks sun, wind, light



**Switch Window**  
Operates to control sun, wind, light

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## Connectors

No interference between source and receiver



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Connectors are used to take direct advantage of environmental elements



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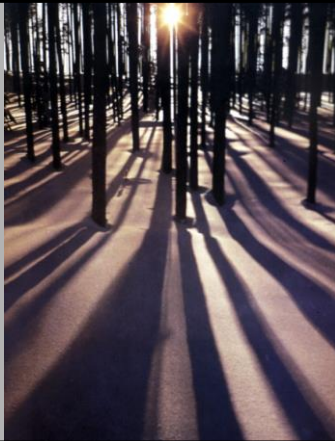
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## Filters

Diffuse the environmental force as it passes through.



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Filter Sun to cool  
a street or a room

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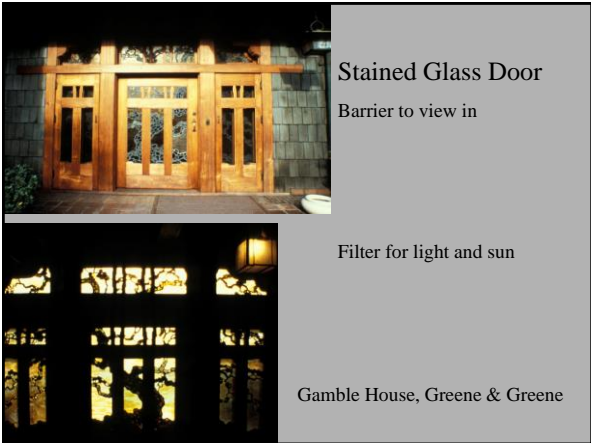
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Stained Glass Door  
Barrier to view in

Filter for light and sun

Gamble House, Greene & Greene

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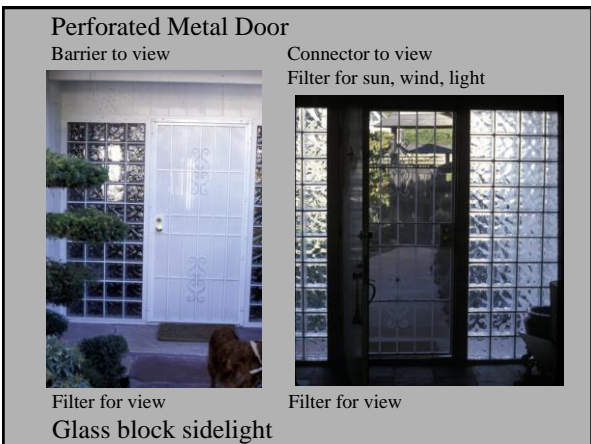
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Perforated Metal Door  
Barrier to view

Connector to view  
Filter for sun, wind, light



Filter for view  
Glass block sidelight



Filter for view

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Filters are used to modify environmental elements.



Toldos @ Kew Gardens

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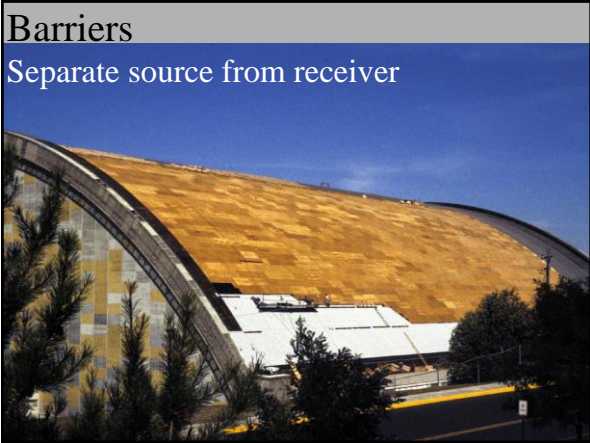
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## Barriers

Separate source from receiver



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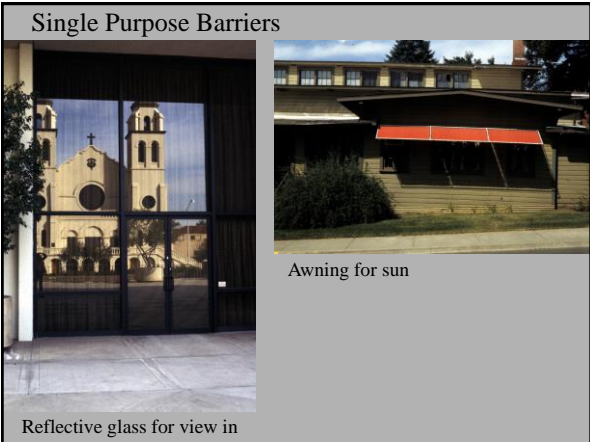
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## Single Purpose Barriers



Awning for sun

Reflective glass for view in

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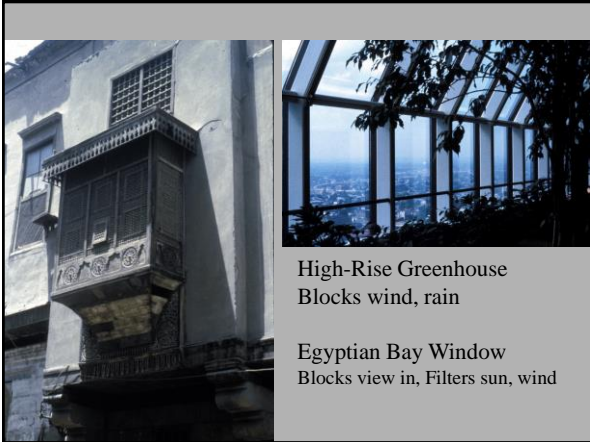
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High-Rise Greenhouse  
Blocks wind, rain

Egyptian Bay Window  
Blocks view in, Filters sun, wind

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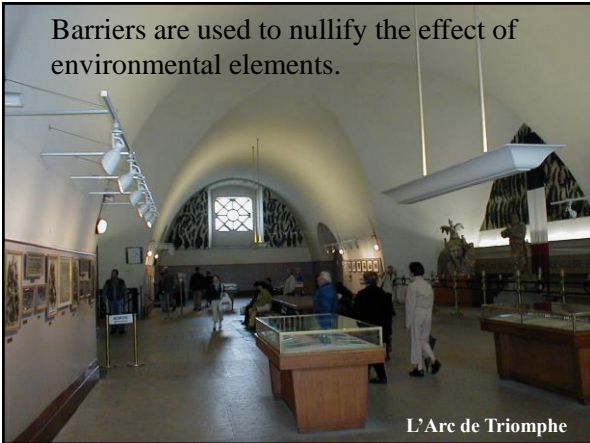
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Barriers are used to nullify the effect of environmental elements.

L'Arc de Triomphe

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### Switches

Control source dynamically

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Operable windows offer multiple switches



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Night Insulation

Barrier to nighttime heat loss

Connector to daytime heat gain



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Vines act as an automatic seasonal switch



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What's the difference between a roof window and a skylight?



The former is a switch...

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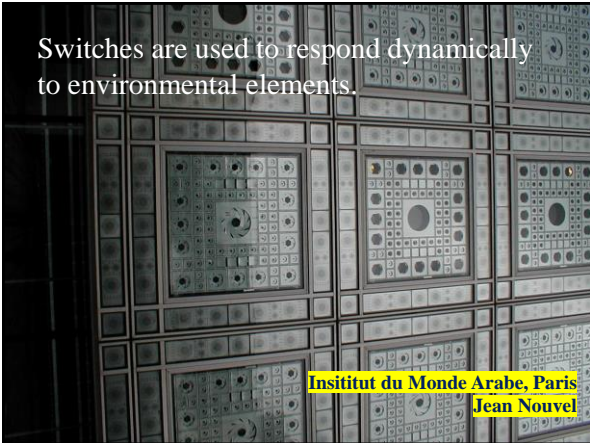
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Switches are used to respond dynamically to environmental elements.



Institut du Monde Arabe, Paris  
Jean Nouvel

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