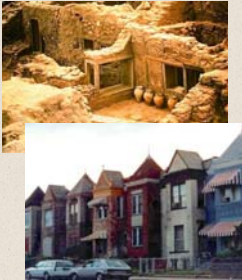


ENVIR 202: Lesson No. 8



Housing & Health

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Lecture outline:

1. Why is housing important to health?
2. Traditional/vernacular housing
3. Modern housing
4. Sick houses and houses on life support
5. Home/environment interactions
6. CASE STUDIES
 - > Housing health and Katrina
 - > The sustainable housing movement
 - > Traditional housing examples

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Definitions of "Shelter"

- ❖ House as a "third skin"
- ❖ A shielding or screening structure, especially against weather
- ❖ A place of refuge, retreat, or temporary lodging in distress
- ❖ Asylum
- ❖ Protection

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Many animals build homes:

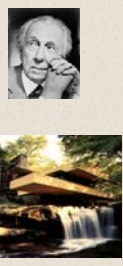
- ❖ Paper wasps
- ❖ Prairie dog towns
- ❖ Chimpanzee leaf-and-stick shelters



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Frank Lloyd Wright ...

"What is architecture, anyway? Is it the vast collection of the various buildings which have been built to please the varying tastes of the various lords of mankind? I think not. No, I know that architecture is life, or at least it is life itself taking form and therefore it is the truest record of life as it was lived in the world yesterday, as it is lived today or ever will be lived. So architecture I know to be a Great Spirit. It can never be something which consists of the buildings which have been built by man on earth...Architecture is that great living creative spirit which from generation to generation, from age to age, proceeds, persists, creates, according to the nature of man, and his circumstances as they change. That is really architecture."




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Emilio Ambasz...

"Architecture is not the answer to the pragmatic needs of man but the answer to his passions and imagination."


Ambasz Planetario



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Nietzsche...

"In architecture the pride of man, his triumph over gravitation, his will to power, assume a visible form. Architecture is a sort of oratory of power by means of forms."
(1888)



F. Nietzsche, philosopher

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Healthy Housing

❖ Healthy housing must address at least 3 kinds of wellbeing:

1. Mental
 - Stressful environments can disrupt physical health
2. Physical
 - Reactions to mold, toxic chemicals, heat, cold...
3. Social
 - Supports cultural traditions, mores, family interaction

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What is a "healthy" house?

❖ Various cultures may have different interpretations

❖ Homes may be energy intensive or low energy, but all seek to accomplish the same health goals:

- Regulate temperature
- Keep out insects, rodents, other pests
- Protect from rain/sun/snow/etc
- Protect occupants from predators/hostile outsiders
- Provide a haven for beneficial social interaction

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House Problems:


❖ All houses, traditional or modern/technical have some potential for the following problems:

- Rodents, insects, etc.
- Degeneration—leaks, structural damage over time
- Dust
- Mold/other allergens
- Too hot/cold
- Catastrophic instantaneous collapse (in floods, fires, hurricanes)

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POTENTIAL PROBLEMS

Example: An Edwardian House:



Leaky roof Fumes from chimney

Damp, mildew Cold in winter

Electrical/gas heating and cooling = expensive and hard on the environment

Rats and mice, roaches

Crumbling foundation

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Other housing problems:

❖ Crowding—how much space does an individual need?

❖ Inadequate toilet facilities

❖ Lack of light—depression, vitamin deficiencies

❖ Fragile materials, or those inappropriate for the climate

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Traditional style housing: (pre-industrial)

- ❖ Built from mostly locally available materials
- ❖ Earth, stone, wood, grasses, animal bones...
- ❖ Mostly built by the owners/residents



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What is “traditional”?

- ❖ Necessarily “vernacular”—built to suit the local environment and individual needs
- ❖ Unique local architectural styles tended to evolve slowly over many generations, becoming increasingly suited to specific local needs and opportunities.
- ❖ “Form follows function” ideology. House style is based on climate, geology, available materials and social/cultural needs

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Living with Nature




- ❖ Homes were traditionally a compromise between environmental constraints and cultural values.
- ❖ Use what materials are locally available
- ❖ Comfort/ease of maintenance may be sacrificed to status displays
- ❖ Must build to climate constraints—the Palace of Versailles couldn't have existed in the arctic.

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Vernacular Housing

"The vernacular is a communal art, not produced by a few intelligences or specialists, but by the spontaneous and continuing activity of a whole people with a common heritage, acting under a community of experience."

(Pietro Belluschi)




Ndebele painted house, South Africa

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Traditional vs. "Modern"

❖ Advantages of traditional housing and local materials as compared to modern industrial materials.

- > Usually cheaper to build
- > Low energy costs
- > Small environmental "footprint" (impacts)
- > Usually abundant materials
- > Few toxic volatile organic compounds (VOC's)
- > Very well adapted to specific environments
- > Some natural materials last longer



Indonesian traditional housing, Sarawak

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Disadvantages to traditional housing

- ❖ Can be more pest-ridden than modern houses (Modern houses have chemicals, sealants, easy access to hot water, and other amenities to keep out bugs and rodents.)
- ❖ No electricity = no modern refrigerator or t.v.
- ❖ Not as much temperature control ability
- ❖ Some natural materials may decay quickly (grasses)
- ❖ "Status" concerns. Many cultures now think of a modern western style house with all amenities as a sign of prosperity

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More traditional vernacular housing:

The NW longhouse:



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Longhouse characteristics:

- ❖ Cedar
- ❖ Multi family

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Industrialization


- ❖ 3 changes to housing brought by the Industrial Revolution:
 1. Specialization—new materials, technology, and design require specialized training and equipment
 2. Standardization—factory pieces allow for a high degree of sameness—end of the locally-adapted tradition
 3. Commodification—houses rarely built solely by owner. Homes and parts frequently bought and sold

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Modern Homes: Advantages

- ❖ "Better living with chemicals"—sterile surfaces, fewer pests
- ❖ More temperature control
- ❖ Electricity for heat, cooking, refrigeration



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Modern homes: disadvantages


- ❖ Costly (average cost in U-district = \$500,000)
- ❖ Energy intensive
- ❖ Larger environmental impact—uses more natural resources, more waste output.
- ❖ Not well-adapted to local environment—too hot/cold, moldy, dry, etc. without high-tech help
- ❖ Not necessarily well-adapted to individual social needs

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Suburban-style Western Homes:

"A house on the moon"

Unrelated to local environments



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“Houses on Life Support”

- ❖ Require electrical input to maintain healthy atmosphere
- ❖ Electric (or gas) heat, cooling, light, ventilation
- ❖ Very energy-intensive, uses a lot of resources
- ❖ Quickly become damp, moldy, hot, cold without “life support” systems.
- ❖ Inside showers and cooking facilities put a strain on these systems, adding moisture to impermeable walls.

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“Sick Houses”

- Mold
- Dampness/rot
- Rodent/insect feces/viruses
- VOCs
- Never enough ventilation?




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Sick house example: MOLD



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House-Environment-Social Interactions



"One cannot over-emphasize the fact that everything-meaning and value as well as appropriateness of individual human conduct or the energy state of an atom, depends upon the interaction of the thing itself and its environment."
-- Cyril Stanley Smith

Delhi squatter housing


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Poverty and Housing

- ❖ Inadequate materials = inadequate houses
- ❖ Inadequate heat, cooling, ventilation
- ❖ The poor are more likely to live in "sick houses" and be unable to afford to fix them.
- ❖ Hence, it is more likely that the poor will contract house-related illnesses

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"Slums":



Hong Kong Columbia


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Slums continued...

- ❖ "Warehouses" of the poor and marginalized
- ❖ Not usually government sanctioned
- ❖ Lack of adequate sanitation facilities—open sewers, no waste disposal
- ❖ Crowding
- ❖ Inadequate materials
- ❖ No or little electricity
- ❖ No local materials adaptation—people have to take what they can get.

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Some Solutions



to high costs and resource depletion:

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Modern "Sustainable Housing"

"Architecture, unlike other arts, is not an escape from, but an acceptance of, the human condition, including its many frailties as well as the technical advances of its scientists and engineers."

-- Pietro Belluschi


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Sustainable housing movement

- ❖ LEEDs designation
- ❖ "Green Building"
- ❖ Sustainable Communities
- ❖ Health benefits of the new "sustainable" houses

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New sustainable housing



the adobe house . . .

- ❖ Built on an ancient pattern
- ❖ Requires little lumber
- ❖ Thick walls insulate from heat and cold extremes
- ❖ Clay is cheap, locally available, and durable
- ❖ But don't get it wet! This kind of house will melt and mildew--it only works in the desert.

Adobe house, New Mexico

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Pietro Belluschi...

❖ "Architecture, unlike other arts, is not an escape from, but an acceptance of, the human condition, including its many frailties as well as the technical advances of its scientists and engineers."

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Case Studies 1: Katrina


❖ Hurricane Katrina's effects on housing and health:

- > Mold
- > Heat
- > Mass destruction
- > Severe damage = dangerous conditions

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Case Studies 2: Traditional Housing

Bantu House



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Different ideals:



"While Western civilization with its enormous technical achievements in building long ago succeeded in making the house independent of climate changes, in the Buddhist world nature has never been considered as something to be fought against, conquered, and mastered."

-- Heinrich Engel
The Japanese House, 1964

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The Japanese House

- ❖ (Previous quote might be a little idealistic)
- ❖ Nature is mastered, but in different ways
- ❖ Movable paper screens allow air ventilation
- ❖ Raised platform foundation minimizes dampness, rodent access
- ❖ Gardens promote mental wellbeing
- ❖ Local materials

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Final quote: Calvino says...

"Where is the plan you are following, the blueprint?"

"We will show it to you as soon as the working day is over, we cannot interrupt our work now", they answer.

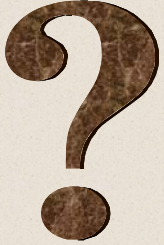
Work stops at sunset. Darkness falls over the building site. The sky is filled with stars.

"There is the blueprint", they say.

-- Italo Calvino, *Invisible Cities* (1974)

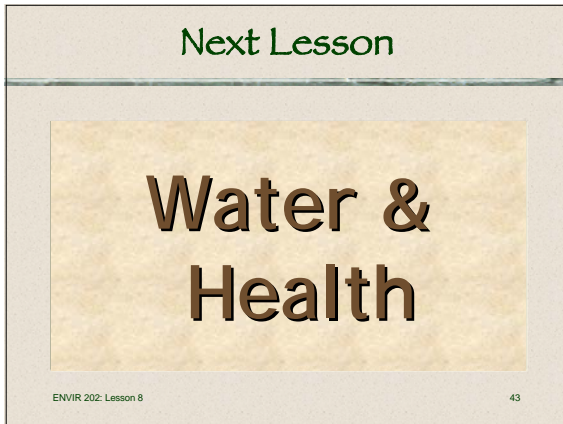
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Questions



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Next Lesson



Water & Health

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