

Techno-social: the meaning & examples

AR 4241 – Course 2
Wiwik D Pratiwi

"Science"

is the construction of knowledge and the beliefs inherent in that construction. As ways of knowing, science can take multiple forms across cultures.

This doesn't mean that there aren't clear physical and natural universalities.

Rather, different cultures and societies approach, study, and understand these "realities" in very different ways.

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“Social Science”

- The social sciences are a group of academic disciplines that study human aspects of the world.
- They are different from the arts and humanities as for them **scientific method** is important.
 - The scientific method is the way scientists test out ideas about how the world works. The difference between science and things that are not science (such as pseudoscience) is often defined by whether they use the scientific method.
- http://simple.wikipedia.org/wiki/Scientific_method

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pengertian teknologi

wujud upaya rasional yang digunakan dalam rangka menghasilkan produk yang memberikan tambahan manfaat bagi manusia

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<http://www.ar.itb.ac.id/wdp>

***The more high technology
around us,
the more the need
for human touch***

JOHN NAISBITT

wdpratiwi@ar.itb.ac.id
<http://www.ar.itb.ac.id/wdp>

Kemampuan Teknologi

- *Kemampuan akuisitif*
- *Kemampuan operasional*
- *Kemampuan adaptif*
- *Kemampuan inovatif*

TDRI

Teknologi Konstruksi

Kategorisasi Teknologi Konstruksi (menurut Departemen Pekerjaan Umum) dibagi ke dalam :

- *Pengairan*
- *Transportasi*
- *Permukiman & Tata Lingkungan*
- *Arsitektural, Mekanikal, dan Elektrikal*
- *Khusus*

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Sistem & Teknologi

- | | | |
|---------------------------|---|----------------------|
| ■ <i>Teknologi Sistem</i> | - | <i>efficiency</i> |
| | - | <i>effectiveness</i> |
| ■ <i>Teknologi Sistem</i> | - | <i>produk</i> |
| | - | <i>fungsi</i> |
| ■ <i>Teknologi Sistem</i> | - | <i>what</i> |
| | - | <i>how</i> |

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"Technology"

includes artifacts, techniques, and technical knowledge. Just as we can say that different cultures approach scientific realities in radically different manners, cultures vary in the ways that they put these realities to use.

Again, definitions of science-as-knowing and technology-as-using will break down soon enough when we discuss cultures who view them very differently.

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- Recent work in the study of technology, seeking to move beyond simple assumptions of technological determinism has highlighted in considerable depth the importance of the social dimensions of technology (Mackenzie & Wacjman 1996).

- **Technologies not only influence society in their impact, but technologies themselves are shaped by social, political and economic factors – this much is uncontested.**

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- Descriptions of sociotechnical change have absorbed metaphors and narratives of evolutionary progress to the point where these ideas become invisible.
- Whether or not we view any particular change in technology, social organisation or behaviour as good or bad, progressive or a step backwards, the overall image we employ is that of a linear evolutionary journeying.
 - When we consider changing patterns in transport, sail is succeeded by steam, the paddle wheel by the screw propeller, the horse gives way to the bicycle and the motor car, the ox-cart to the lorry.

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<http://www.designforhomes.org/hda/2000/>
- Illich, Ivan (1973) Tools for Conviviality London: Calder & Boyars
- Illich, Ivan (1974) Energy and Equity London: Calder & Boyars
- Leonard, Eileen (2003) Women, Technology and the Myth of Progress Upper Saddle River NJ: Prentice Hall
- Mackenzie, Donald & Wajcman, Judy [eds.] (1996) The Social Shaping of Technology [Second Edition] Buckingham: Open University Press

Sociotechnology

Following MacKenzie and Wajcman's (1985) approach, technologies are defined here as comprising both the objects, human activities and the 'know how' to engage and complete the activities. Hence, the use of the term as a synonym of **socio-technology**.

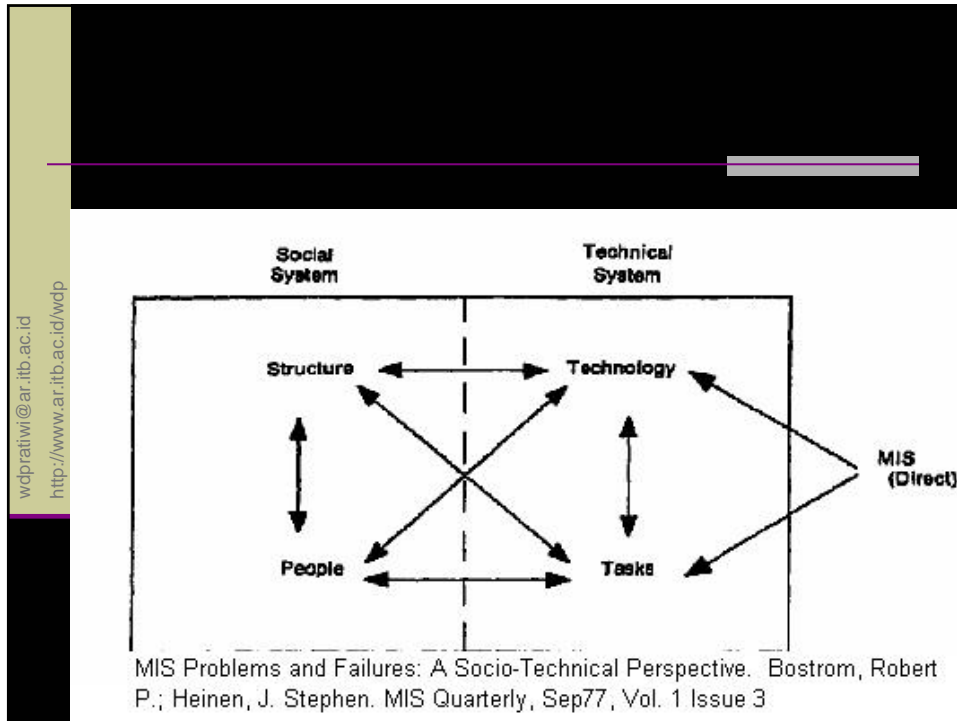
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Sociotechnology

<http://www.sasked.gov.sk.ca/docs/social20/unitiii.html>

Know that **sociotechnology** is a social process in which knowledge created by science and technology is put at the disposal of people who may not understand these knowledge bases and may use them for narrow personal purposes.

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Public Policy Objectives are to generate:

- Safe, connected and confident communities, enabled by the
- Best use of new communications technology and learning, including:
- Integrated services for rapid reaction extending to
- Incident prevention and management

These policy objectives sit within the context of improvements and development in communications within communities, in the form of education, informal and social links between people - **'sociotechnology'**.

They also increasingly cover security concerns on a personal, community, regional, business, national and international basis.

(Computer) System categories

- Socio-technical systems
- Systems that include technical systems but also operational processes and people who use and interact with the technical system. Socio-technical systems are governed by organisational policies and rules.
- Technical computer-based systems
- Systems that include hardware and software but where the operators and operational processes are not normally considered to be part of the system. The system is not selfaware.

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(Computer) Socio-technical system characteristics

- Emergent properties
- Properties of the system of a whole that depend on the system components and their relationships.
- Non-deterministic
- They do not always produce the same output when presented with the same input because the system's behaviour is partially dependent on human operators.
- Complex relationships with organisational objectives
- The extent to which the system supports organisational objectives does not just depend on the system itself.

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Sociotechnology of Folk landscapes

- Seek in folk architecture the traditional, the conservative, and the functional
- Expect from it a simple beauty
 - Harmony with the physical environment
 - A visible expression of folk culture

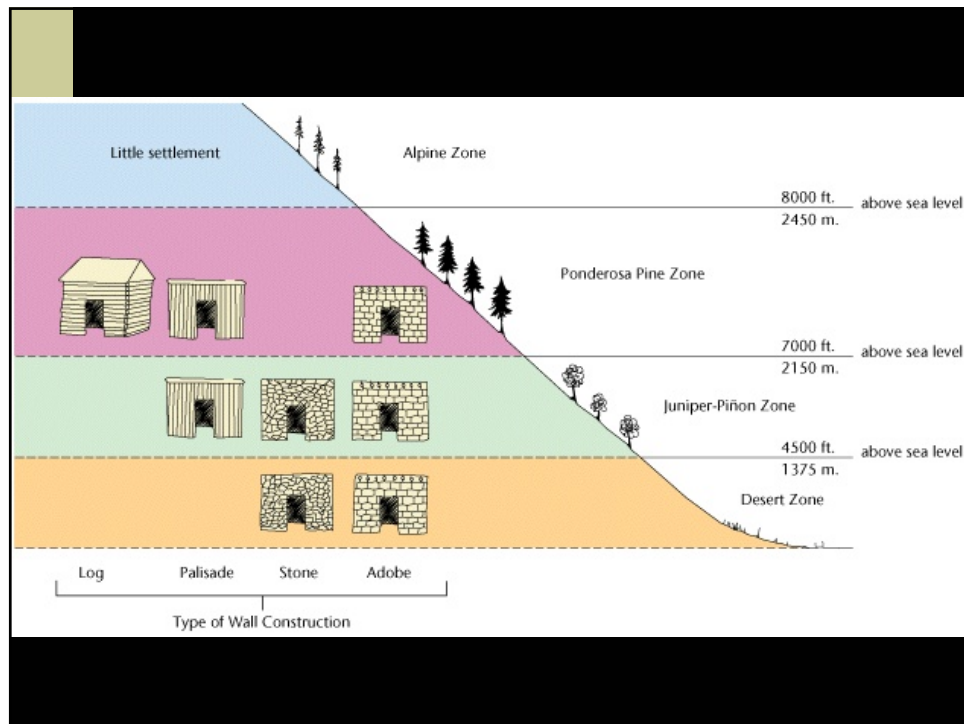
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Building materials > technology > social adaptation > techno-social



- One way to classify folk houses and farmsteads is by the type of building materials used

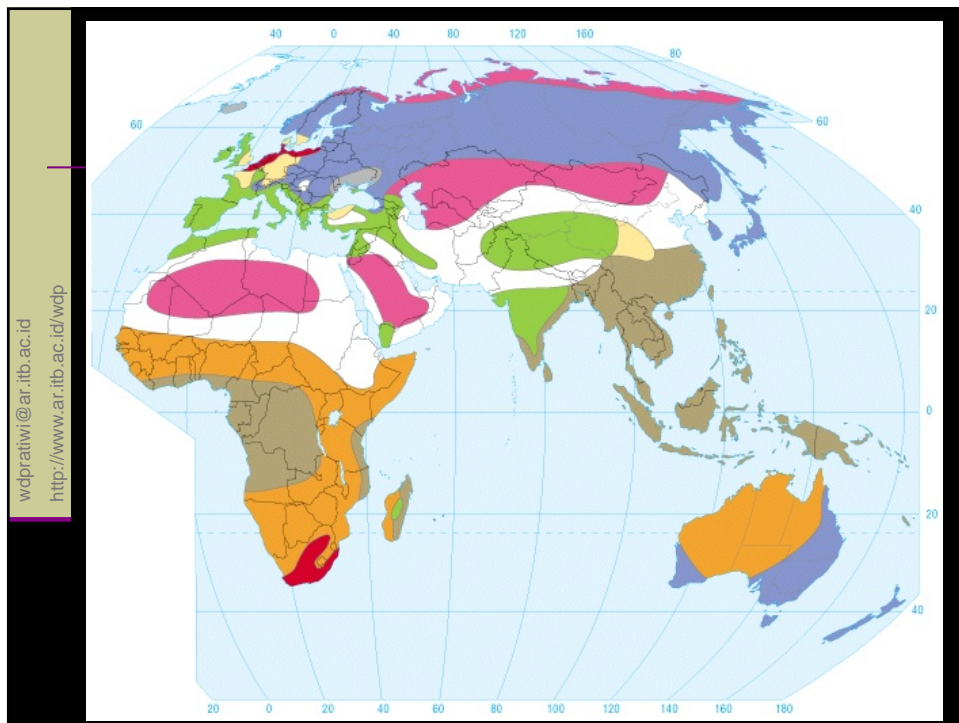
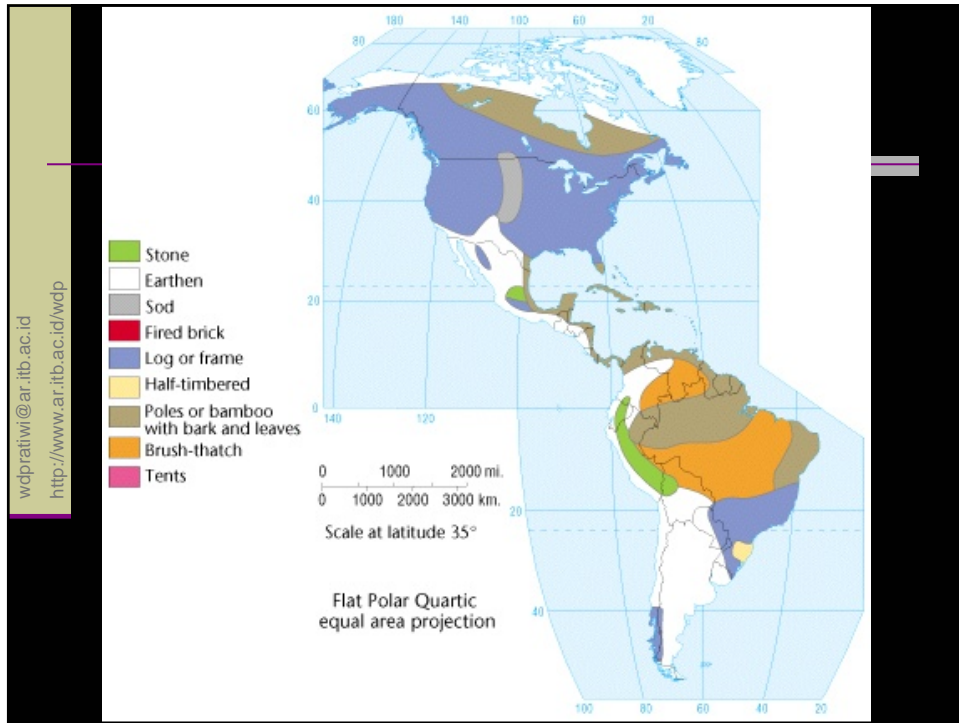
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Building materials

- Structures tend to blend nicely with the natural landscape
- Farm dwellings range from: massive houses of stone for permanency, to temporary brush thatch huts

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Building materials

- Environmental conditions influence choice of construction materials)
 - Climate
 - Vegetation
 - Geomorphology
- Shifting cultivators of tropical rain forests build houses of poles and leaves

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Building materials

- Sedentary subsistence farming peoples of adjacent highlands, oases, and river valleys of the Old World zone
 - Rely principally on earthen construction
 - Sun-dried (adobe) bricks
 - Pounded earth
 - In more prosperous regions, kiln-baked bricks are available
- People in the tropical grasslands, especially in Africa, construct thatched houses from coarse grasses and thorn bushes

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Building materials

- Buildings of Mediterranean farmers and some rural residents of interior Indian and the Andean highlands
 - Most live in rocky, deforested lands
 - Use stone as principal building material
 - Create entire landscapes of stone
 - Walls, roofs, terraces, streets, and fences
 - Lends an air of permanence to the landscape

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China

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Folk architecture: China

- The Kazak practice transhumance, spending the summer with their horses, goats, sheep and cattle in high pastures of the Tien Shan (Heavenly Mountains) of northwestern China.
- These yurts have wooden trellis walls and are covered with felt which is pressed animal hair.

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Folk architecture: China

- The top flap can be opened to vent a central fire or closed to keep out rain.
- As winter approaches, the yurt is dismantled and carried by pack animals to lower elevations.
- Many Kazak now winter in Chinese style, mud-brick, sod-roofed houses.
- Yurts are experiencing technological change as wood gives way to plastic and felt to canvas.

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Building materials

- Housing in the middle and higher latitudes
 - Houses made of wood where timber is abundant
 - In the United States, log cabins and later frame houses
 - Folk houses of northern Europe and in the mountains of eastern Australia are made of wood

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Building materials

- Housing in the middle and higher latitudes
 - In some deforested regions — Central Europe and parts of China
 - Farmers built half-timbered houses
 - Framework of hardwood beams with fill in the interstices of some other material
 - Sod or turf houses typify prairie and tundra areas
 - Russian steppes
 - In pioneer times, the American Great Plains
 - Nomadic herders often live in portable tents made of skins or wool

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Floor plan

■ *Unit farmstead*

- Single structure where family, farm animals, and storage facilities share space
- In simplest form is one storied — People and animals occupy different ends of structure
- More complex ones are multi-storied arranged so people and livestock live on different levels

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Floor plan

- Communal unit housing common among some shifting cultivators
 - Multiple families live under the same roof
 - Sleeping and cooking done in separate alcoves
 - Living space is shared

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Floor plan

- Communal unit housing common among some shifting cultivators
 - Example — the Sarawak *longhouse* found on the Malaysian portion of the island of Borneo
 - Accommodates between 5 and 8 nuclear families
 - An elongated dwelling
 - Raised above forest floor on stilts
 - Reflect a clan or tribal social organization

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Folk Architecture: Manali, India



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Folk Architecture: Manali, India

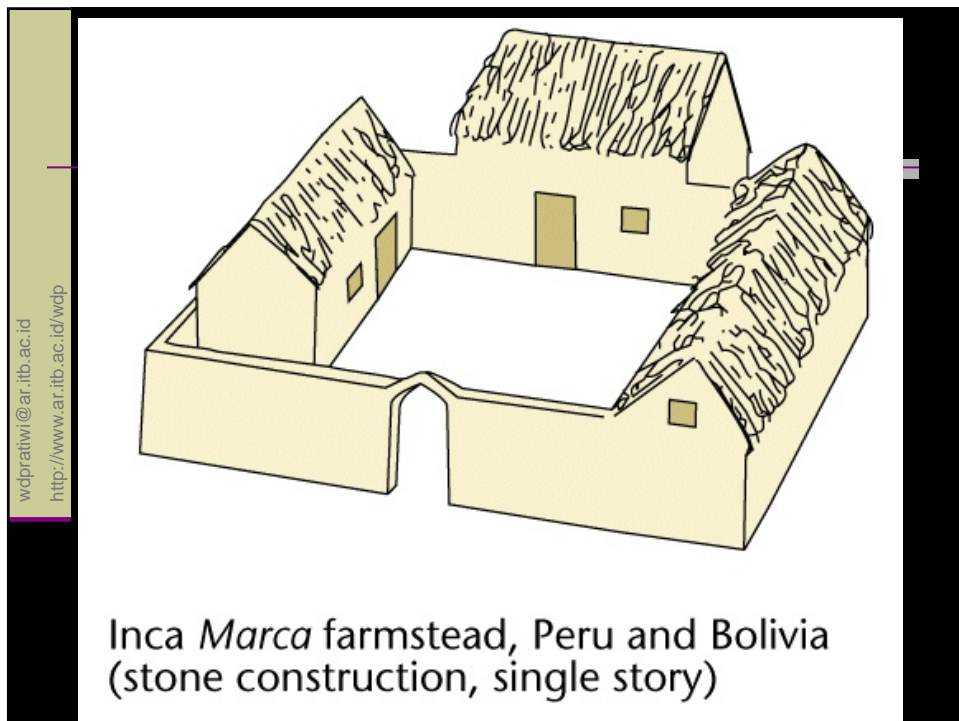
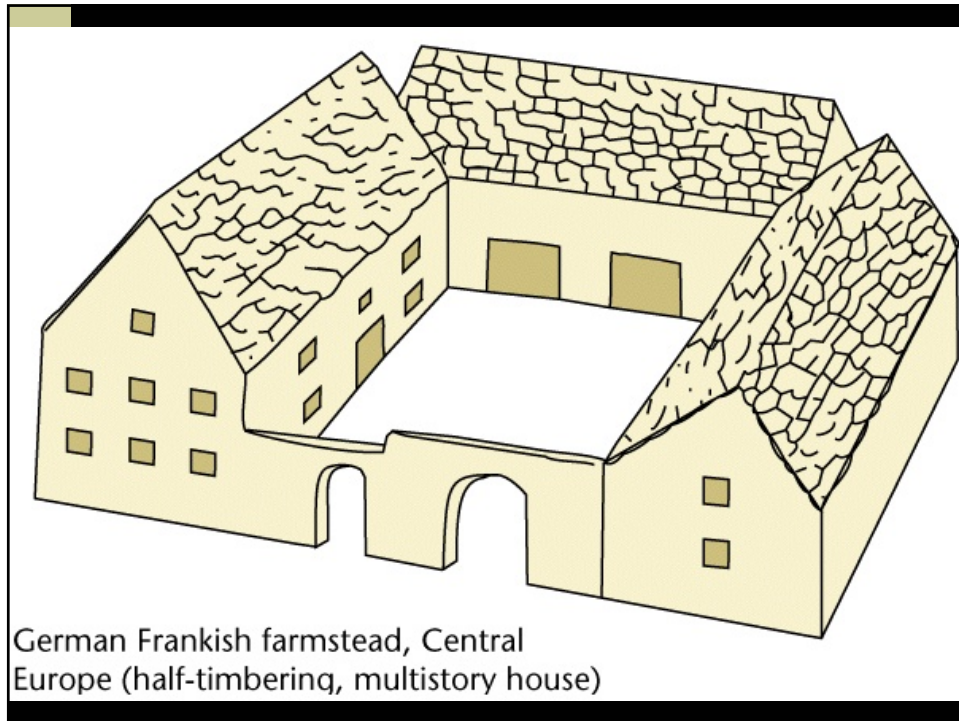
- This house has been constructed by the Kullu people who live in the lower Himalayas of Himachal Pradesh. This is a steeply sloped, rocky and forested area and people make the best use of local materials.
- Noted for their woodwork, the Kullu carve and paint religious and tribal designs to propitiate the gods and ward off evil
- The substantial stone roof will support a heavy winter snowfall.
- Fodder and cattle are kept below the living quarters.

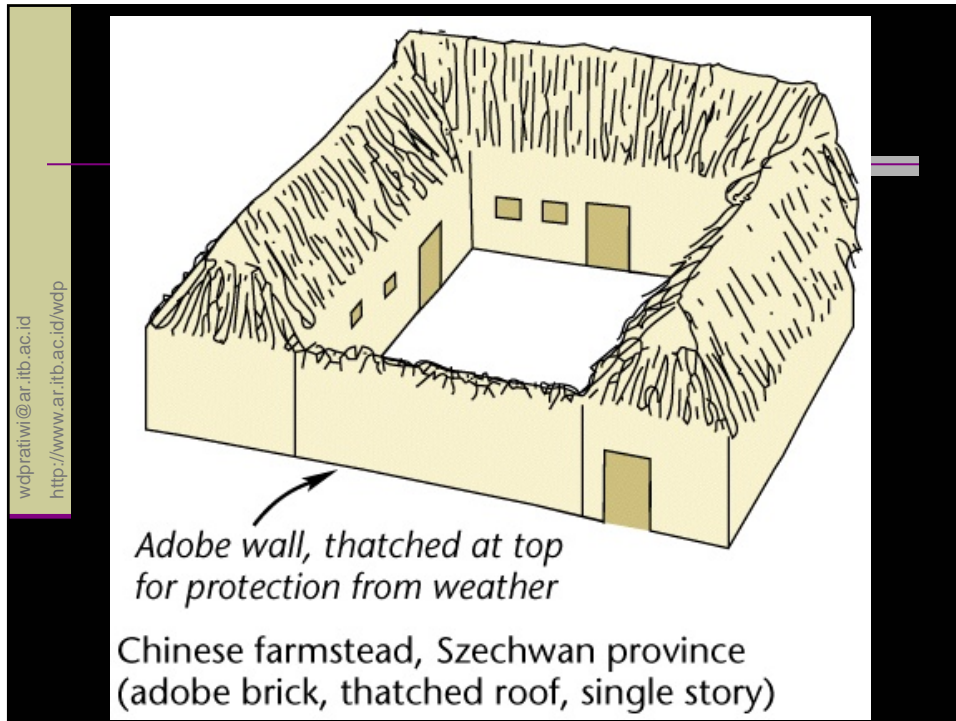
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Floor plan

- Most common are farmsteads where the house, barn, and stalls occupy separate buildings
- Example of the *courtyard farmstead*
 - Various structures clustered around an enclosed yard
 - Appears in several seemingly unrelated culture regions
 - Found in Inca-settled portions of Andes Mountains
 - Also found in the hills of central Germany, and eastern China
 - Have wide distribution — offer privacy and protection

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Floor plan

- *Strewn farmstead* prevails in countries where Germanic Europeans immigrated and settled
 - Anglo-America, Australia, and New Zealand
 - Buildings lie spaced apart each other in no consistent pattern
 - Especially common in zones of wooden construction where fire is a hazard
 - Poorly suited for defense
 - Often associated with rural regions of more than average tranquility
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Irish folk houses

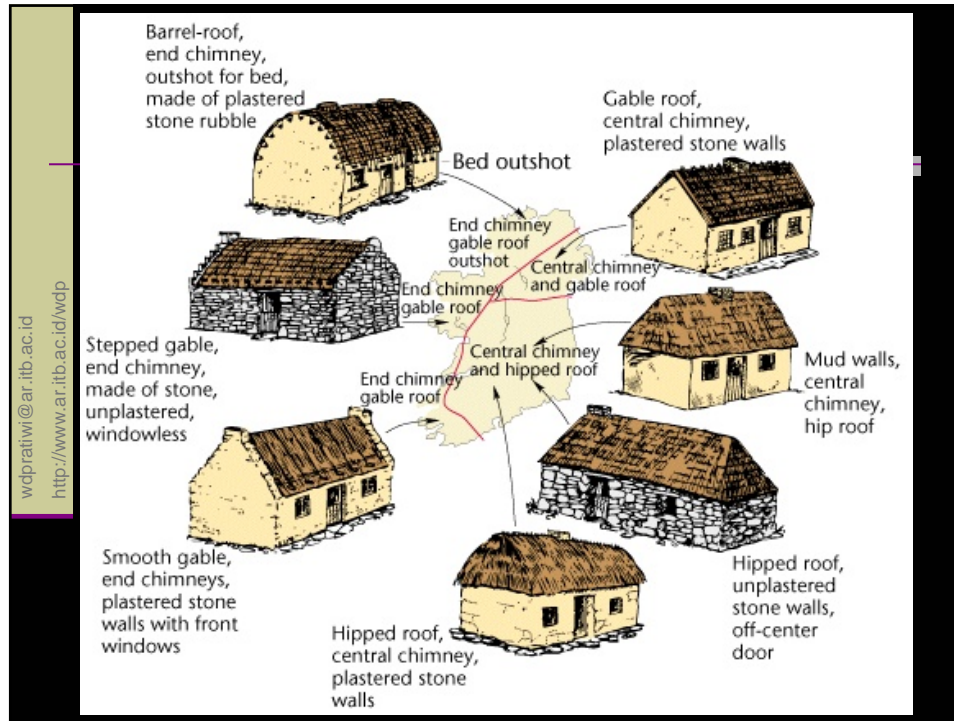
- Other characteristics that help classify farmsteads and dwellings
 - Form or shape of roof
 - Placement of chimney
 - Details such as number and location of doors and windows
- Estyn Evens
 - Used roof form and chimney placement, among other traits, in classifying Irish houses
 - Determined three major folk-housing culture regions

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Irish folk houses

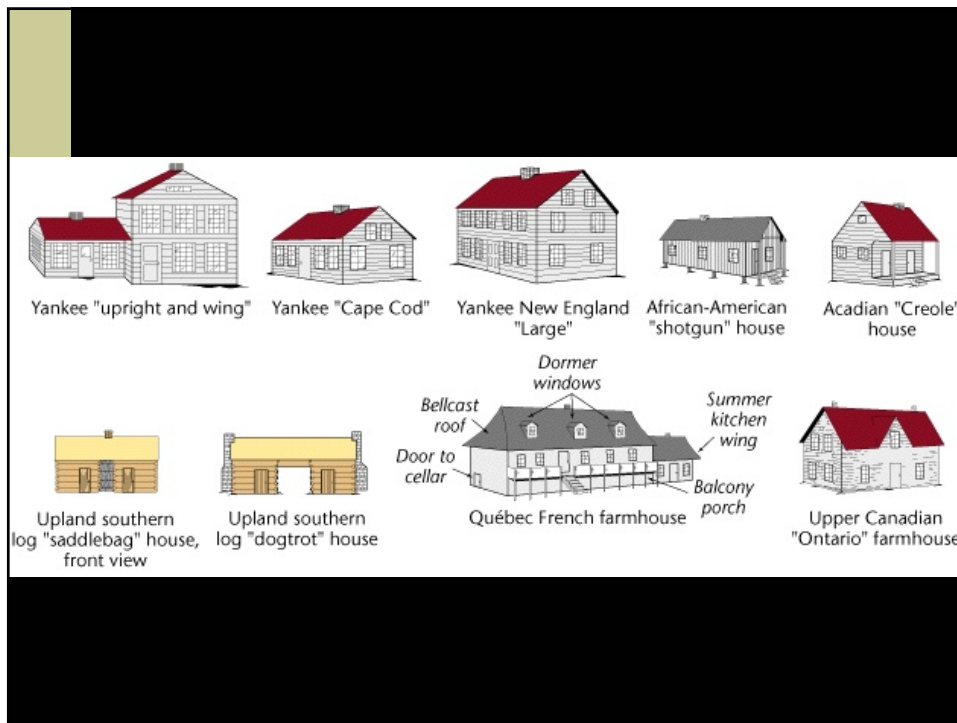
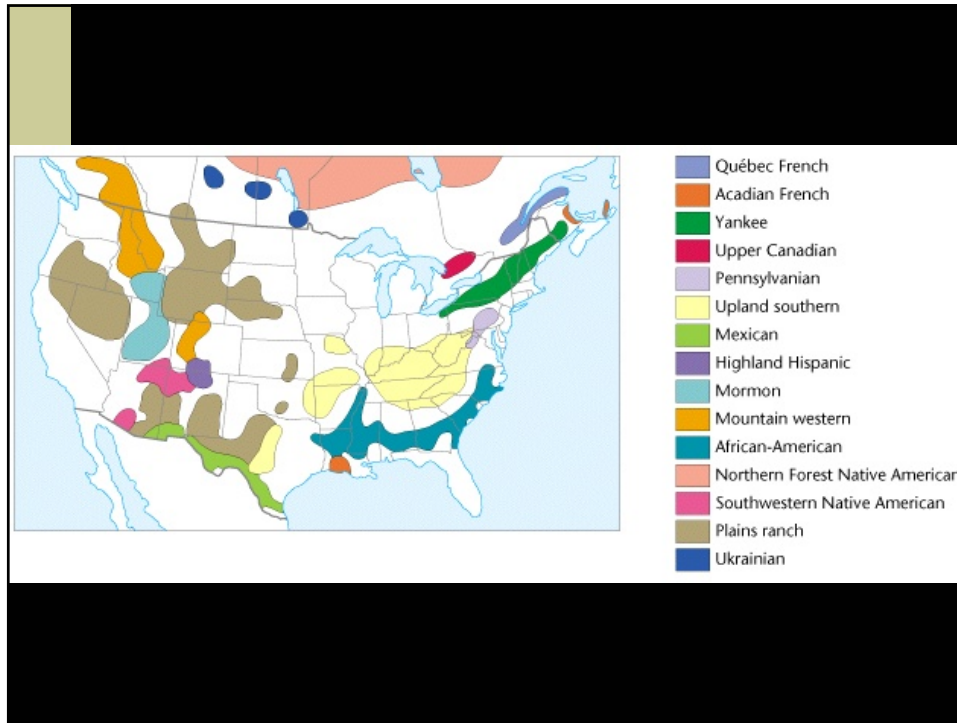
- If floor plan and material composition had been included, more regions would have been identified
- Other features such as the bed outshot of far north Ireland, mud wall constructions of interior counties, and off-center door found in several districts

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Folk housing in North America

- Few folk houses are being built today
 - Popular culture with its mass-produced, commercially built houses has overwhelmed folk traditions
 - Many folk houses survive in refuge regions
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Folk housing in North America

- Yankee or New England folk houses
 - Wooden frame construction
 - Shingle siding often covers exterior walls
 - Have a variety of floor plans
 - New England large house — huge two-and-a-half stories, built around a central chimney and two rooms deep
 - As Yankee folk moved west, they developed the *upright and wing dwelling*
 - Houses are often massive because of cold winters

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Folk housing in North America

- Upland Southern folk houses
 - Smaller and built of notched logs—colonial Scandinavian settler technique
 - *Saddlebag* house--two log rooms separated by a double fireplace

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Folk housing in North America

- Upland Southern folk houses
 - *Dogtrot* house-two log rooms separated by an open roofed breezeway
 - Shotgun house-African-American, one room wide, but two to four rooms m depth
 - Creole cottage-half-timbered with a central chimney and built-in porch, found in Acadiana, a French-derived folk region in Louisiana

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Folk housing in North America

- Canadian folk houses
 - House type found in French speaking Quebec
 - Main story atop a cellar, attic rooms beneath a curved, bell- shaped roof
 - Balcony porch with railing extends across the front, which is sheltered by overhanging eaves
 - Summer kitchen sealed off during the long cold winters
 - Houses often built of stone

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Folk housing in North America

- *Ontario* farmhouse—occurs frequently in the Upper Canadian folk region
 - One-and-a-half stories tall, usually built of brick
 - Has distinctive gabled front dormer window
- Interpretation of folk architecture is not a simple process
 - Problem of independent invention versus diffusion is raised repeatedly
 - Folk cultures rarely leave behind many written records, making landscape artifacts all the more important

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Kuliah berikutnya

- Pengertian-pengertian aspek sosial, budaya, ekonomi, pranata dan teknologi dalam perancangan lingkungan binaan
- Mengenal pengertian-pengertian aspek sosial, budaya, ekonomi, pranata dan teknologi dalam perancangan lingkungan binaan

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Terima kasih

- Rumah petani di Indonesia (?)
- Arsitektur vernakular Indonesia (?)

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