

How we lived then and now?

TECHNOLOGY AND
ENVIRONMENT INTRODUCTION
M4X01974

Architecture

- Whether we are aware of it or not architecture is part of everybody's personal history.
- The chances are that it is in a building that we are born, make love, and die:
- that we work and play and learn and teach and worship;
- that we think and make things;
- that we sell and buy, organize, negotiate affairs of state, try criminals, invent things, care for others.

Architecture

- Most of us wake up in a building in the morning, go to another building or series of buildings to pass our day, and return to a building to sleep at night.
- *'The place where one lives permanently, especially as a member of a family or household.'*
<https://en.oxforddictionaries.com/definition/home>
- Simply from living in buildings, we all possess sufficient expertise to embark on the study of the story of architecture.

Architecture

- But before we can do so there is one fundamental point that we have to note, which makes architecture both different from the many other arts and more difficult to judge .
- It has to be practical as well as attractive, useful on the one hand and beautiful on the other.

Introduction

- The primary aim of a building/domestic dwelling is to provide shelter for human activities.
- It is to achieve this aim that building design and technology is applied.
- All built structures have to withstand the forces to which they are subjected and inhabited structures should provide a comfortable internal environment which is protected from the external elements.

Hermitage, Khumbu, Nepal



Basic Shelters : overview

- Basic shelters have developed from the need to protect oneself from the natural environment, be it the sun, cold, wind or rain.
- Depending on the climate demands on the shelter are different to support life: in hot countries protection is needed from the sun, while in cold countries one needs protection from the rain, wind and cold temperatures.
- Shelter can be provided from natural structures (e.g. trees provide shade, stone wall provides protection from wind, rain etc) and through the ages humans have built increasingly sophisticated structures to serve their needs.

COMMODITY, FIRMNESS AND DELIGHT

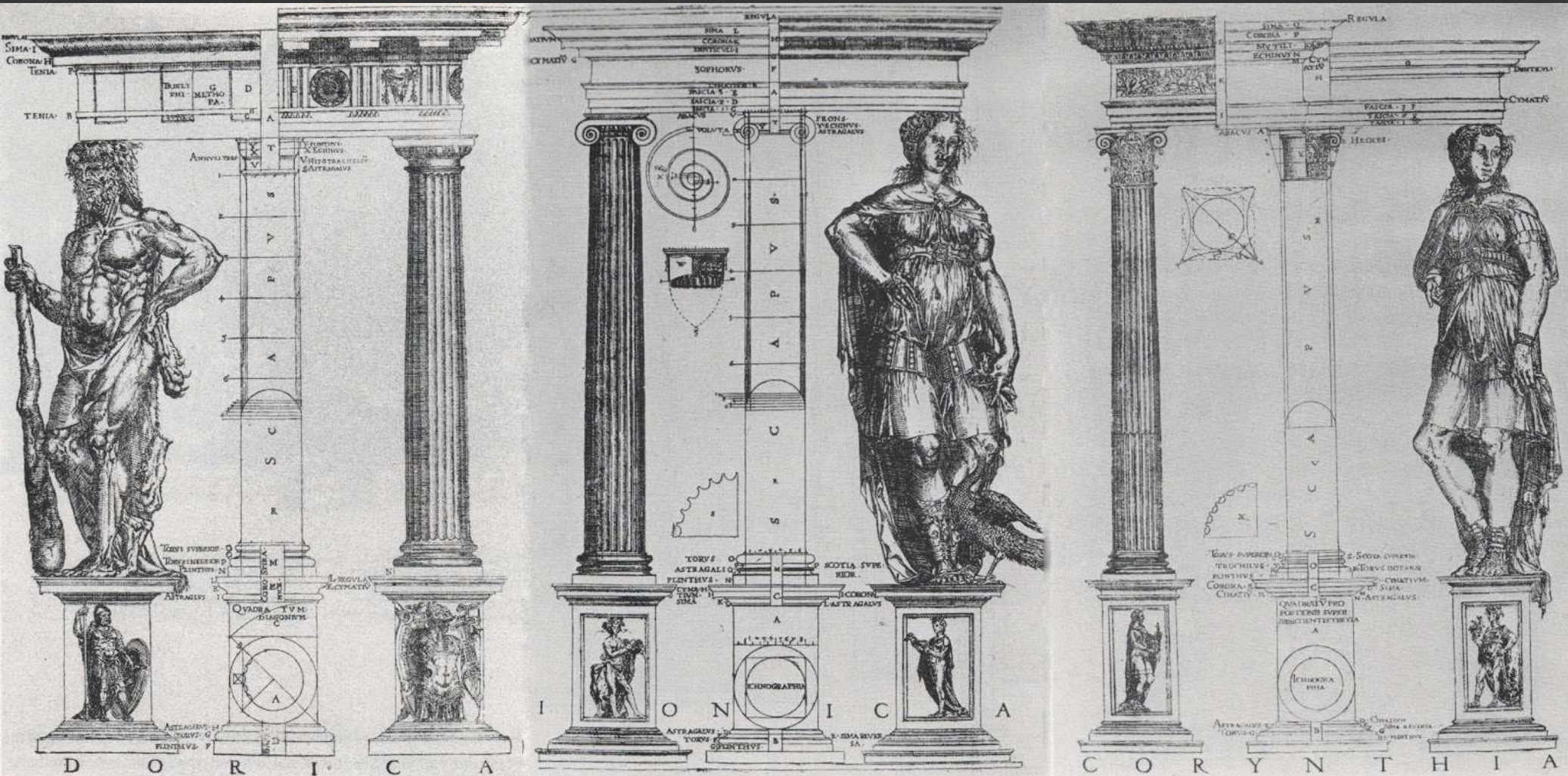
- In the early seventeenth century Sir Henry Wotton, author and diplomat, adapting the maxim of an earlier theorist, the first-century Roman architect Vitruvius, wrote that;
- **'Well-building has three conditions: commodity, firmness, and delight.'**
- This has become the most commonly cited 'definition' of architecture.

COMMODITY, FIRMNESS AND DELIGHT

- His first two conditions are concerned with the down-to earth side of architecture; his third with its aesthetic aspect.
- Commodity covers what the building is for: are the spaces formed by the building suitable for the purpose for which it is being built?

COMMODITY, FIRMNESS AND DELIGHT

- Firmness concerns whether it is structurally sound: are the materials and the construction right for that particular building in that particular place, in that climate?
- Delight includes the aesthetic pleasure and satisfaction that both viewer and user derive from a building: and that involves a multiplicity of personal judgements.



- Vitruvius saw architecture as the imitation of nature. Just as birds and bees nests, so humans construct housing from natural materials to shelter them against the elements.

PRIMITIVE HUT



The idea of the primitive hut stems from Vitruvius' *Ten Books of Architecture*, but owes its place in architectural theory to the *Essay on Architecture* published by the Abbé Laugier in 1753. Advocating the 'honest' structural use of the Classical Orders, Laugier proposed a cleansing of architecture by returning to its origins.



- The Doric temples at Paestum in southern Italy feature the most generous – *entasis* - of any surviving ancient Greek buildings much admired by Neoclassical architects. Whatever its elaboration, the post and lintel is the fundamental form used in buildings all over the world.

Grotte du Vallonnet, France

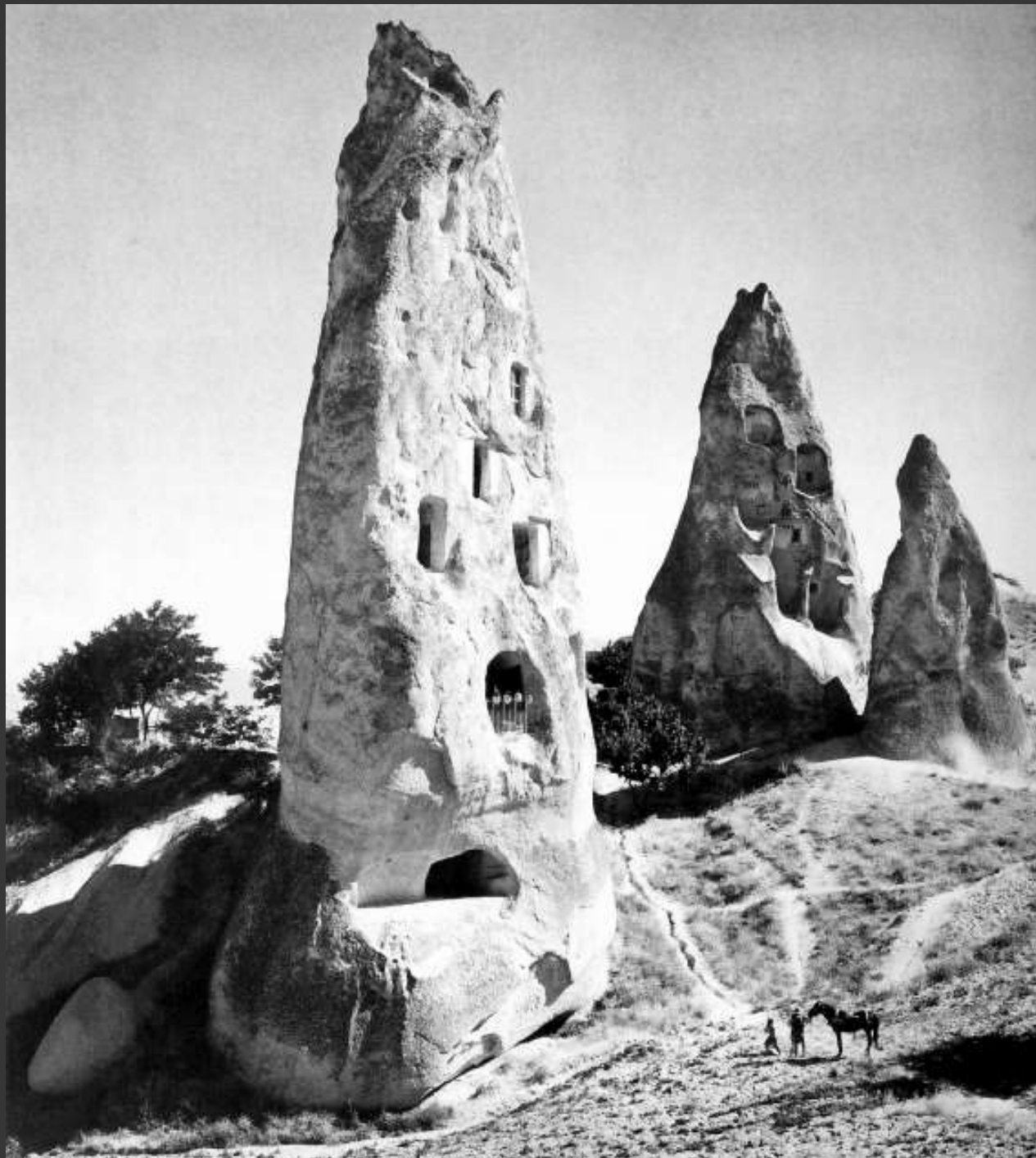


First discovered in 1958- Stone tools found at the site have been dated around a million years old, making it one of the earliest sites of human settlement known in Europe



Tufa- Pinnacle Houses

Tufa-Pinnacle Houses
Located in Cappadocia in
Central Turkey in an area
remarkable for its
volcanic rock formations.
The tufa has eroded to
leave a landscape of
eccentric phallic
obelisks.



Some Basic Facts about Architecture:

- Throughout history until our own century (in which we have revolutionized many techniques of building) there have been only two basic ways of building –
- one could either put one block upon another
- or make a frame or skeleton and cover it with a skin.

Some Basic Facts about Architecture:

- Almost everywhere in the world people have built by assembling blocks-of dried mud or clay bricks or stones.
- They piled one upon another, inventing ways of turning corners, leaving holes so as to get in and out, and let light in and smoke out.
- Finally they covered the whole structure for shelter.

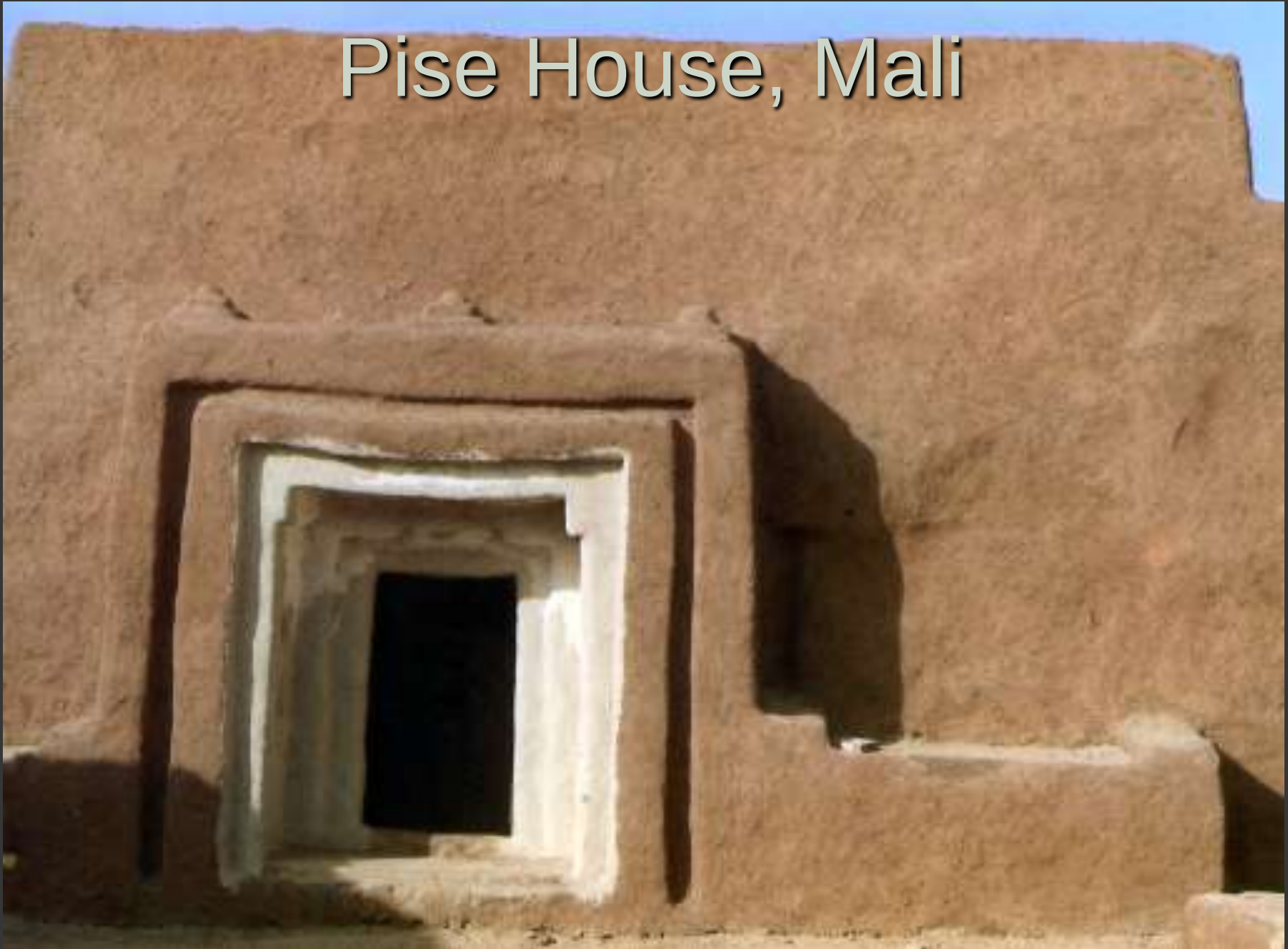
A pueblo in New Mexico forming a group of basic single roomed dwellings built of mud



Ginna



Pise House, Mali



Some Basic Facts about Architecture:

- That was the simplest and most obvious dwelling.
- In some parts of the world the availability of materials led people to follow a different system.
- They built by making a skeleton of wood or rushes in bundles (and later iron and steel) and covering it with skins of many kinds - animal hides, cloth and canvas, mud and straw (and later many kinds of slab).

Roof Structure

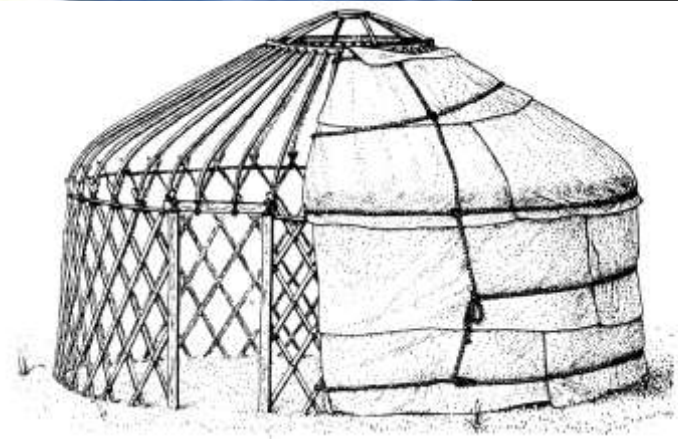
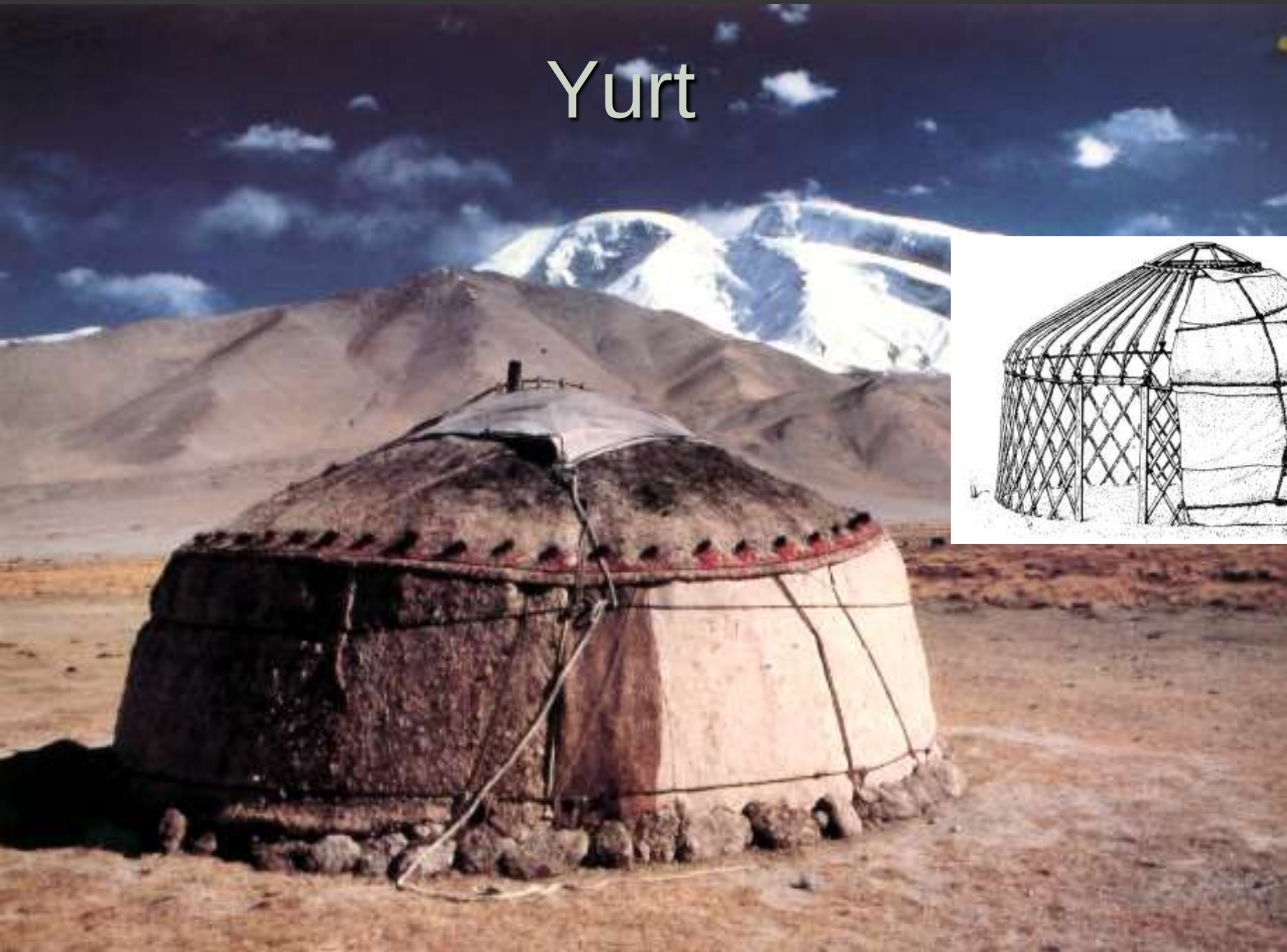
Blackfoot Tipi 'dwelling'



Of the skeleton and skin type of structure, the North American Indian tipi is the classic example, with poles overlapping, and wrapped round with animal skins.



Yurt



Some Basic Facts about Architecture:

- Blocks can be made from almost anything: from alluvial mud, sometimes bound with straw to make it more cohesive and lasting, as in ancient Mesopotamia or Egypt; from kiln-dried bricks, as in most of Europe and the Middle East; from stone, dressed or undressed: even ice, as in the Eskimo igloos of Arctic regions.



Igloo

Some Basic Facts about Architecture:

- Of all the materials used, the most adaptable, permanent and expressive is stone.

Galician Celts, Palloza



Of all the materials used, the most adaptable, permanent and expressive is stone .

Some Basic Facts about Architecture:

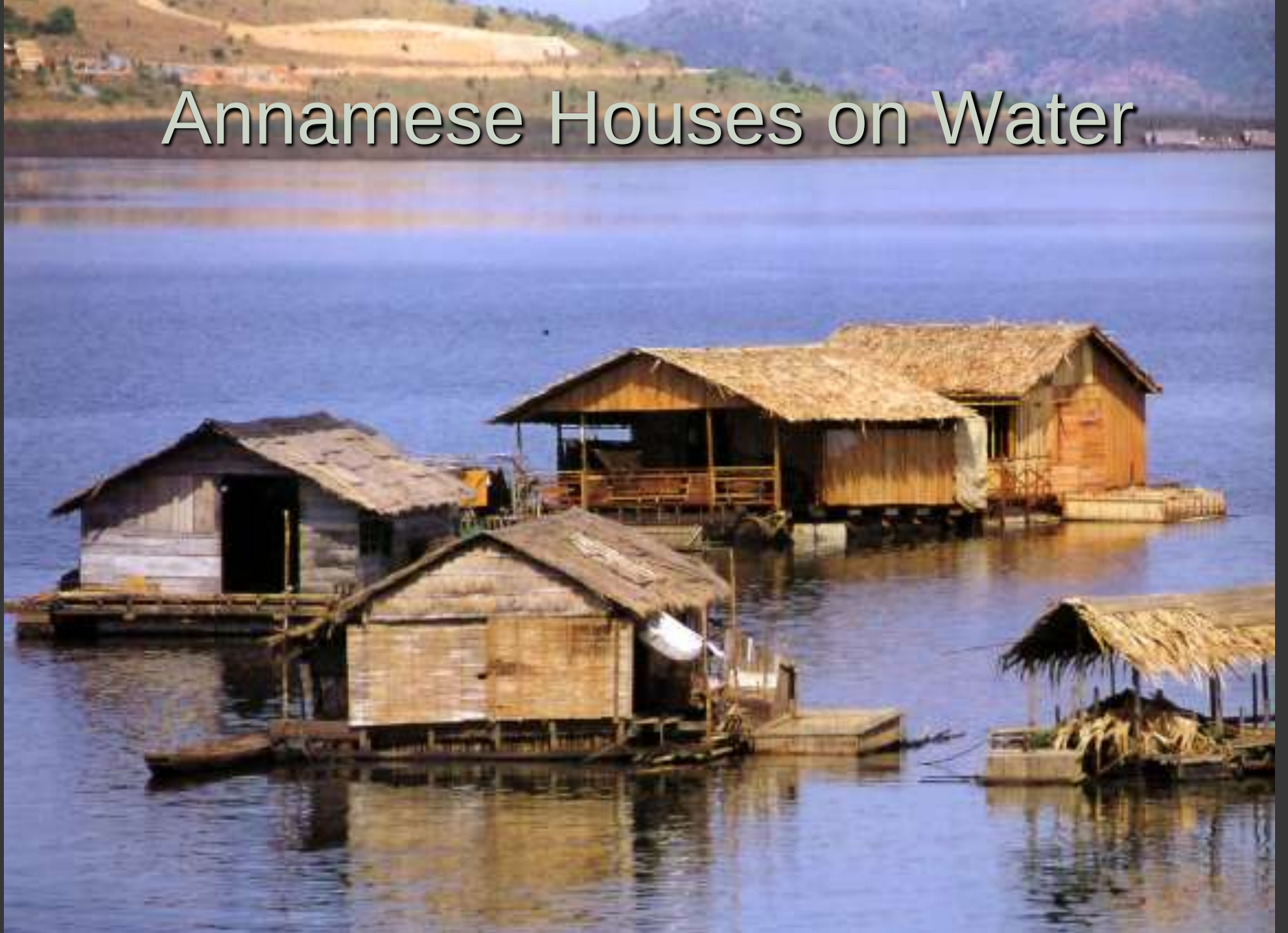
- And there are many variations - the skin tents of Lapland, structures made of brushwood, of clay and reed, and the wood and paper houses of the Japanese.
- They are the precursors of the nineteenth-century frame structures of iron and glass and the steel and glass of our own time.

Yayoi tent-house Japan



(200 BC-200 AD) is the Yayoi tent-house of the Japanese, which is sunk into the ground and has a roof of sticks and turf.

Annamese Houses on Water



Some Basic Facts about Architecture:

- Against that background and recognizing the basic types of structure, we must now look further and discuss some of the immediate practical problems.
- To the person originally thinking it out and facing the architectural challenge, the great problem from the start was not so much how to leave holes in the sides (central as those are to the character of a style of architecture, as we shall see later) as how to finish the building at the top.

Some Basic Facts about Architecture:

- Again, there are two ways of doing that. The commonest is one of - making a frame of wood, either flat or sloping, and covering it with some material which will keep out the sun and rain and wind, and maybe fastening it down so that it does not blow away.
- But the most primitive (and in the end the architecturally most exciting) is to lay the stones of the walls on one another so that the upper ones project enough gradually to curve the walls inwards and ultimately meet at the top. Such corbelling, as it is called (can lead to a tunnel, or, if it runs all round a building, to a dome).

Some Basic Facts about Architecture:



- The most attractive examples that still remain are in Apulia in southern Italy-the *trulli* at Alberobello
- Although most of the stone-domed houses are probably no older than the sixteenth century, it is known that they are replacements in a tradition that goes back to primitive times, merely becoming more decorative with the centuries.



Other areas of Apulia have dry stone huts that were used as temporary shelters by peasants; the photographs show some examples of these in the National Park of Alta Murgia



TECHNOLOGY IN DOMESTIC ARCHITECTURE PART 2

OVERVIEW

- I must immediately explain that my view of architecture is coloured by the fact that I was trained as an architect, to design buildings.
- That may be a different view from that taken by an art historian, because I have to try to understand the problem in my own way, which means to imagine what the designer was thinking as he/she approached the problem.

OVERVIEW

- So the question I am constantly going to ask about a building is: why is it like that? There are many and various reasons.
- If we can discover some of them, such as the influence of site, climate, history, politics, religion and social aspirations, we may be able to see more clearly why a certain designer thought the way he/she did and why a particular way to build was chosen.
- For not only is there no single reason for a building, there is also no single solution to its needs. Ultimately the designer has a choice.
- What we have to ask is why he/she made that particular one.

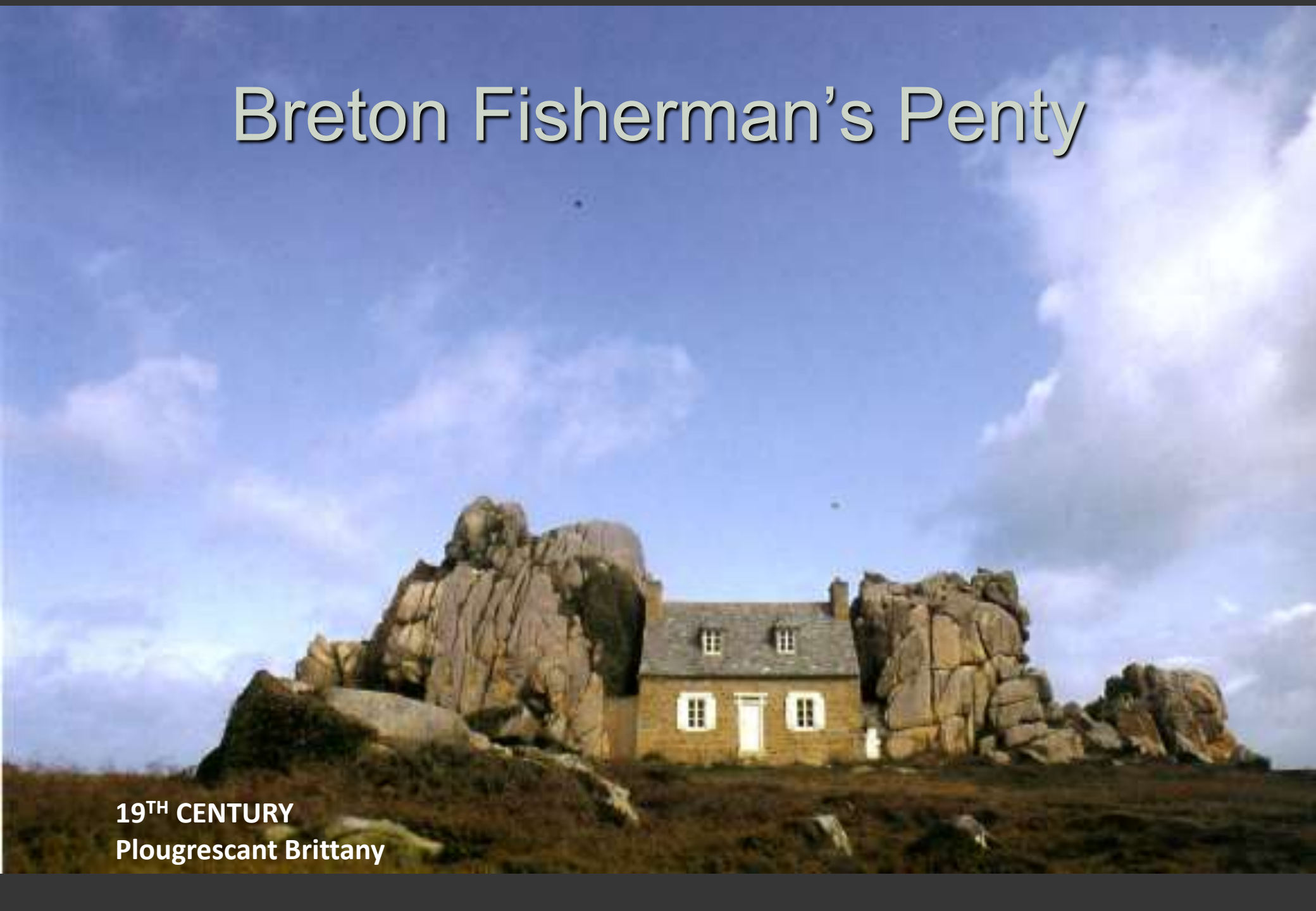
Sod-Roofed Cabin



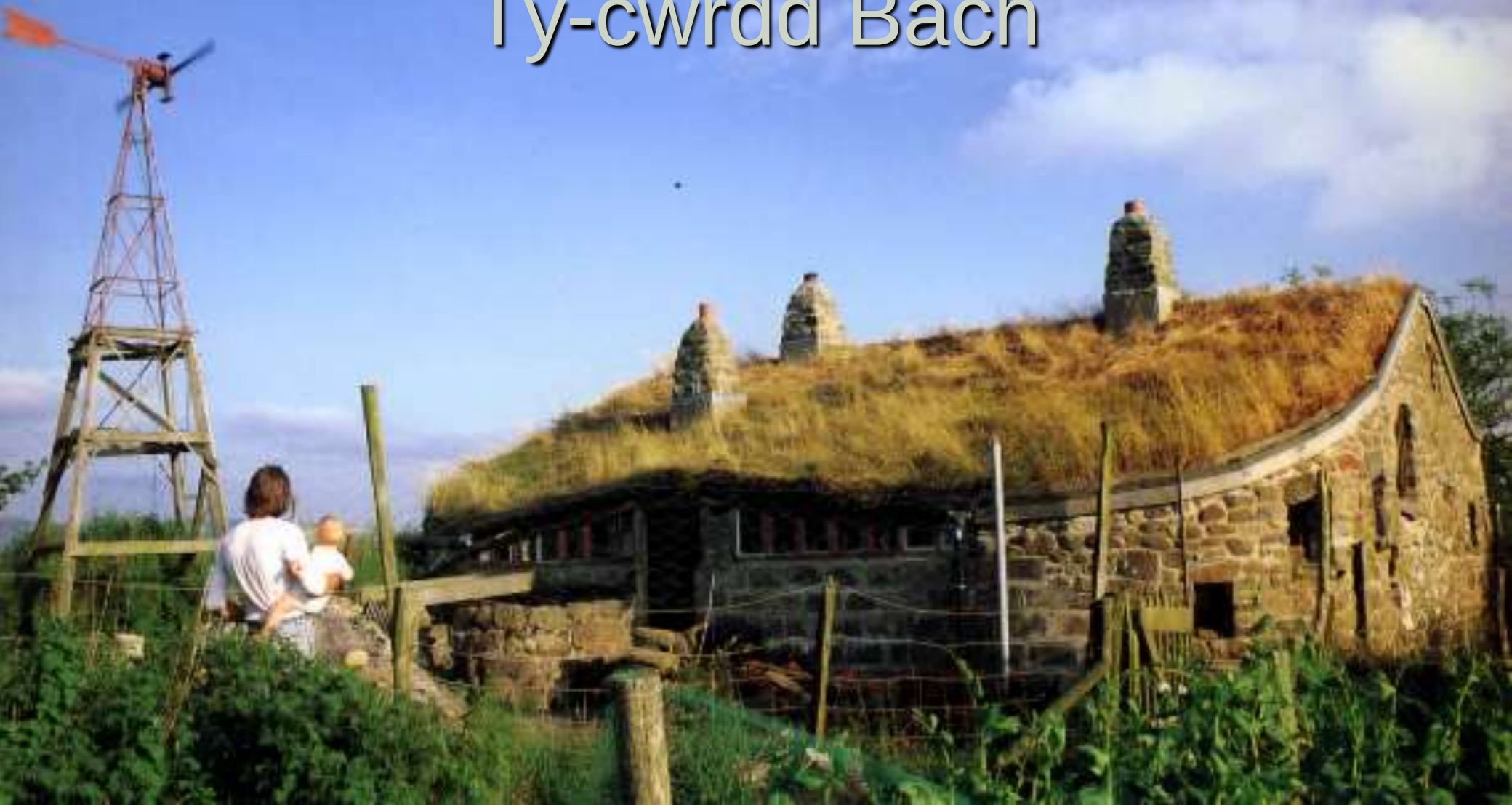
17TH -19TH Century
Antrim labourers

Breton Fisherman's Penty

19TH CENTURY
Plougrescant Brittany



Ty-cwrdd Bach



Architect Christopher Day 1971-74 self build with friends
Anti-consumer culture



Project 222
1994
Architect-
Future Systems



Malator House in Pembrokeshire, Future Systems,
Project 222 – 1998 CE

House in Nipponbashi

Osaka Japan built 1990-92
Architect Waro Kishi

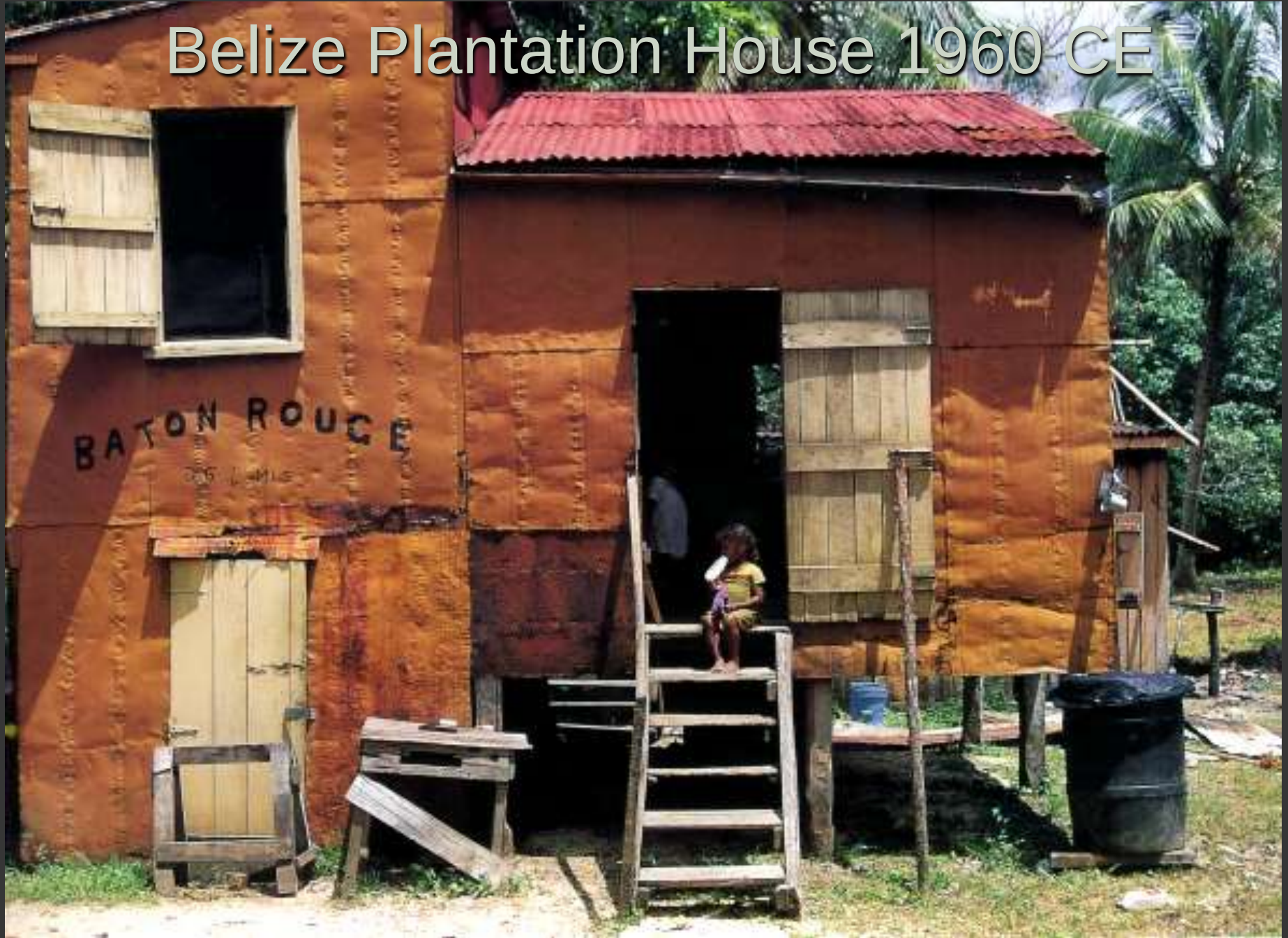


Modern Speculative Housing UK

**Speculative mass build housing
by developer Barratts Ltd
2004**

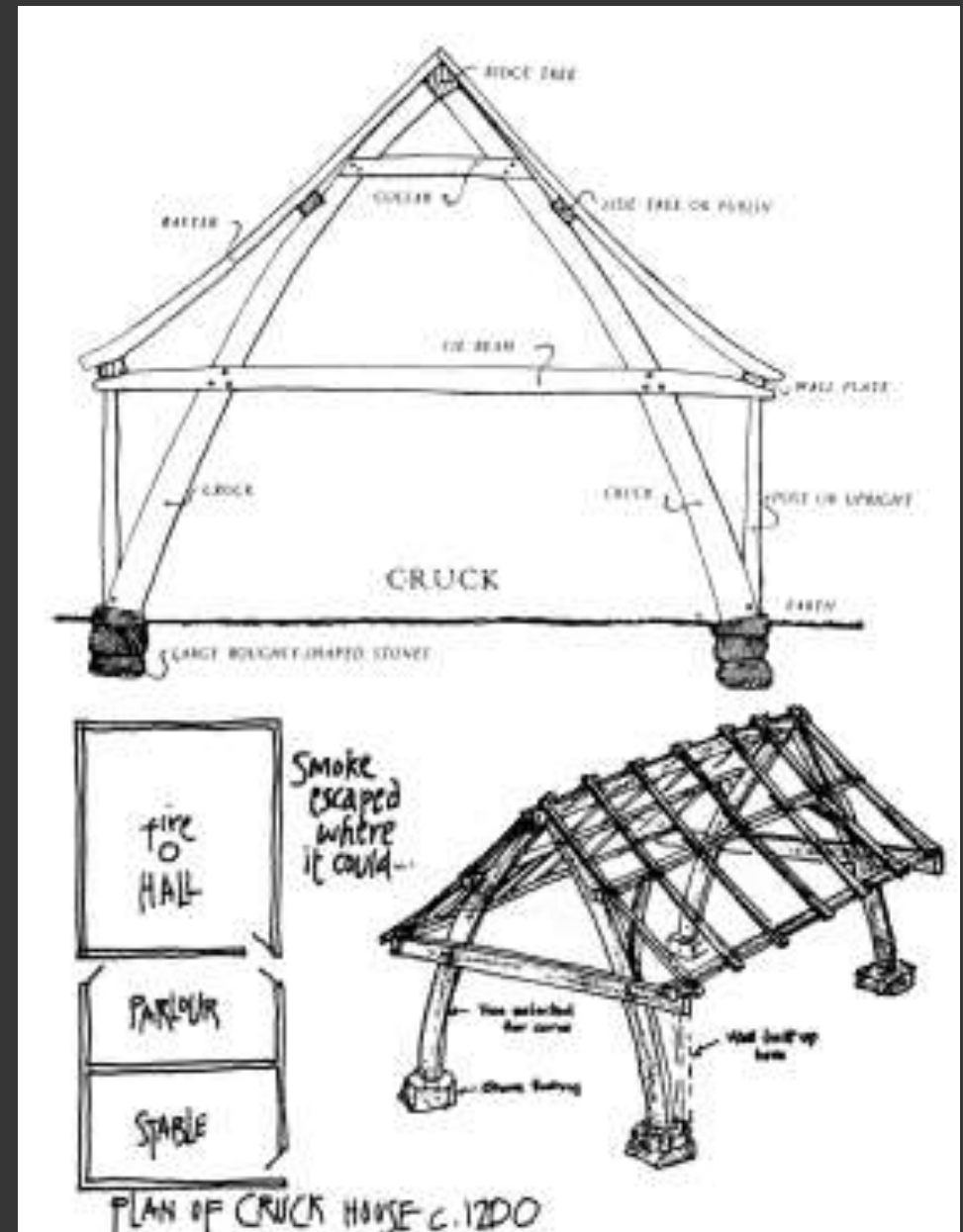
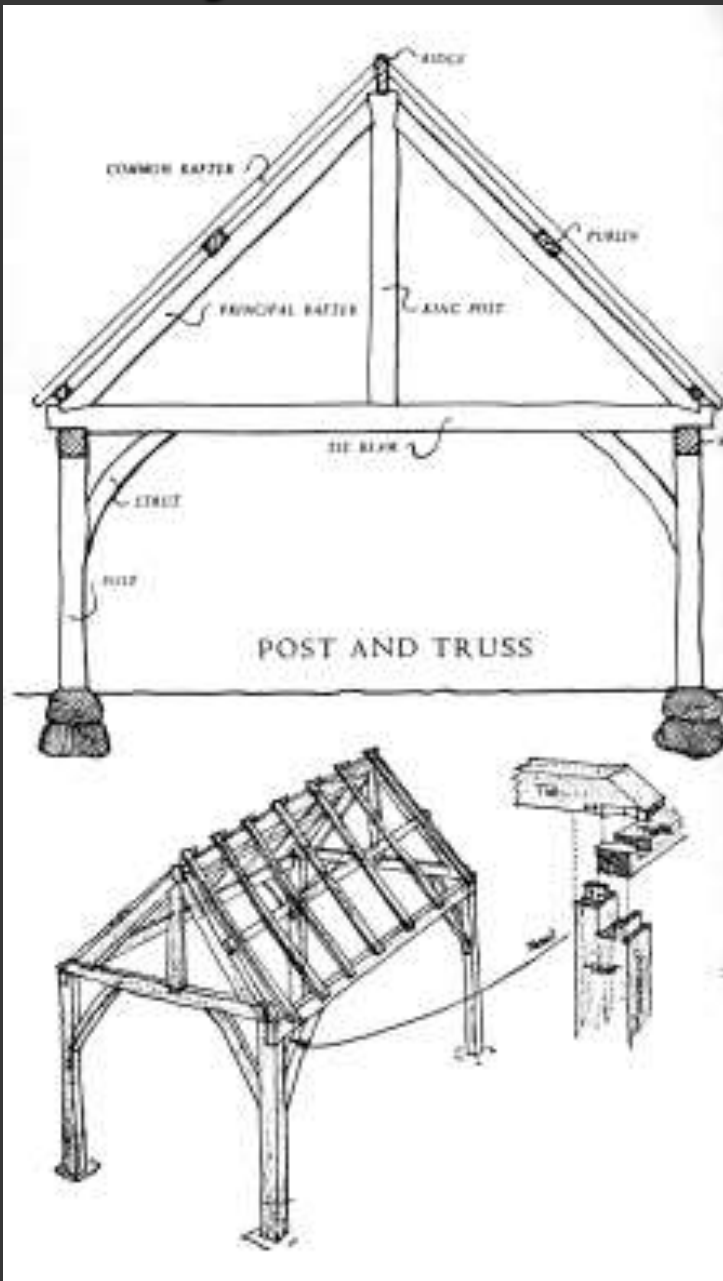


Belize Plantation House 1960 CE



1960s tea and tobacco plantation workers 'campesinos'.

Early Timber Frame Construction





Little Hall Lavenham 1390CE

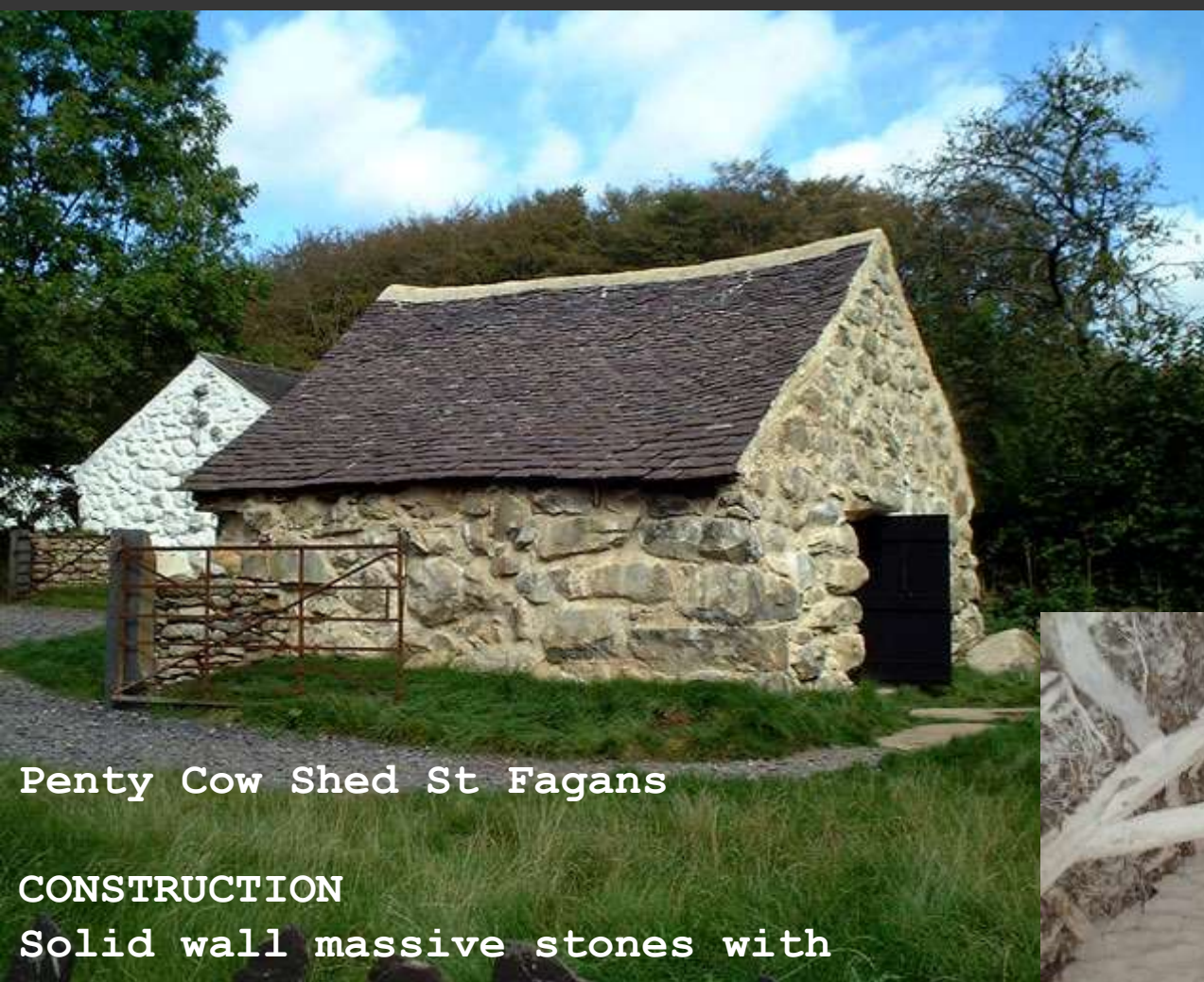
Little Moreton Hall 1450-1550CE



Abernodwydd Farmhouse Reconstructed at St Fagans 1678 CE



Penty, St Fagans



Penty Cow Shed St Fagans

CONSTRUCTION

Solid wall massive stones with
branches at roof level covered
with
Heather coloured slate fixed to
the branches.

Ca' d'Ora, Venice 1421-36CE

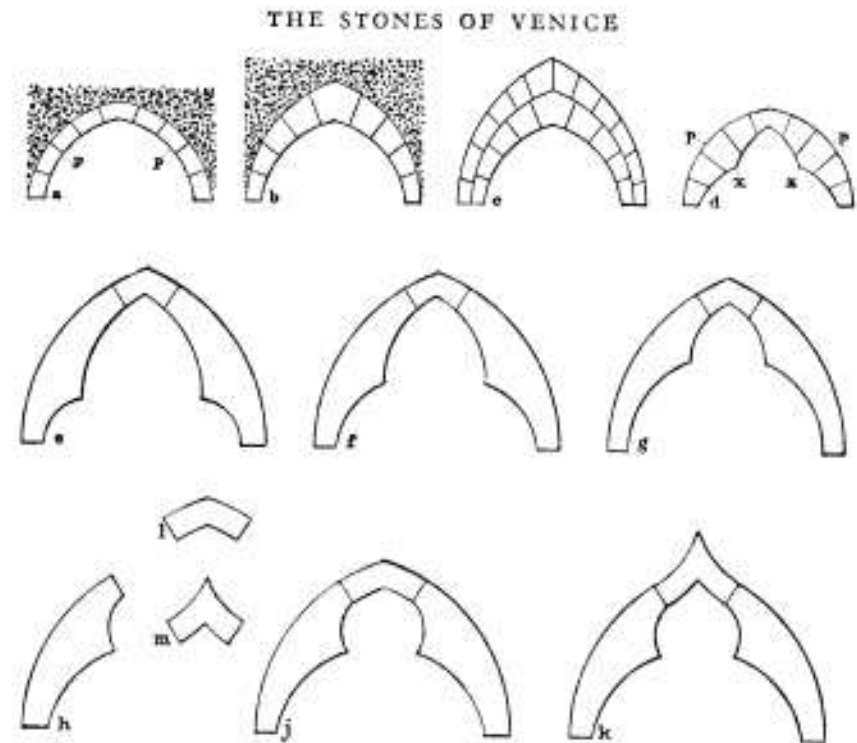
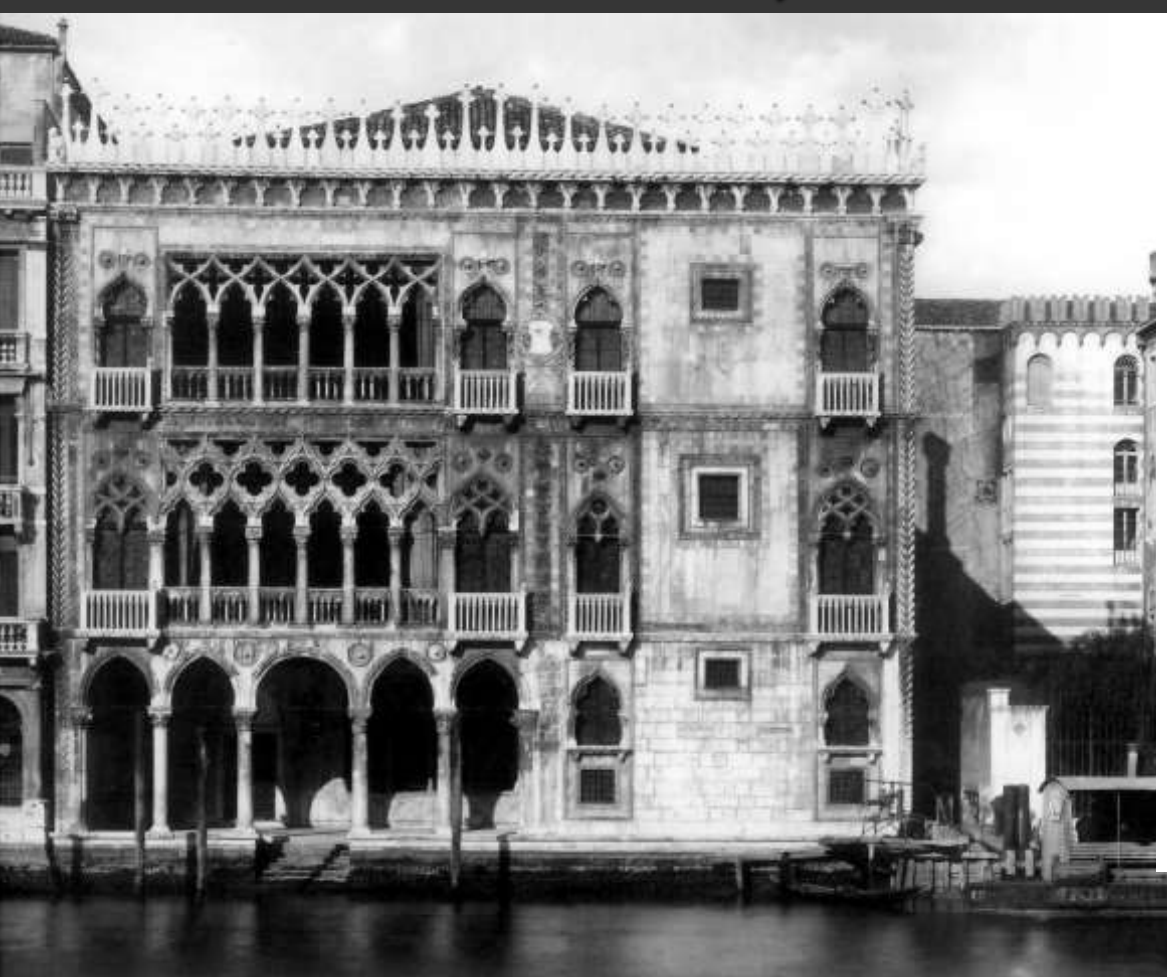


FIG. XIV

Venice- Gothic Architecture/Byzantine influence
Built 1421-36

Chiswick House 1726CE



Chiswick House- Lord Burlington 1726/7-9

Palladian style in architecture set in the English Picturesque tradition



Castell Coch Red Castle 1875 – 91
Architect William Burgess
Restored medieval ruin as summer house
for Lord Bute
Gothic style / revival

CONSTRUCTION

Solid wall mass masonry stone work
fine quality to form shapes
Heavy timber detailing / highly decorative
interiors

Castell Coch 1875-91CE



Hill House, Helensburgh 1902-03 CE

Architect Richard Buckminster Fuller 1946
Prototype for a mass producible lightweight house

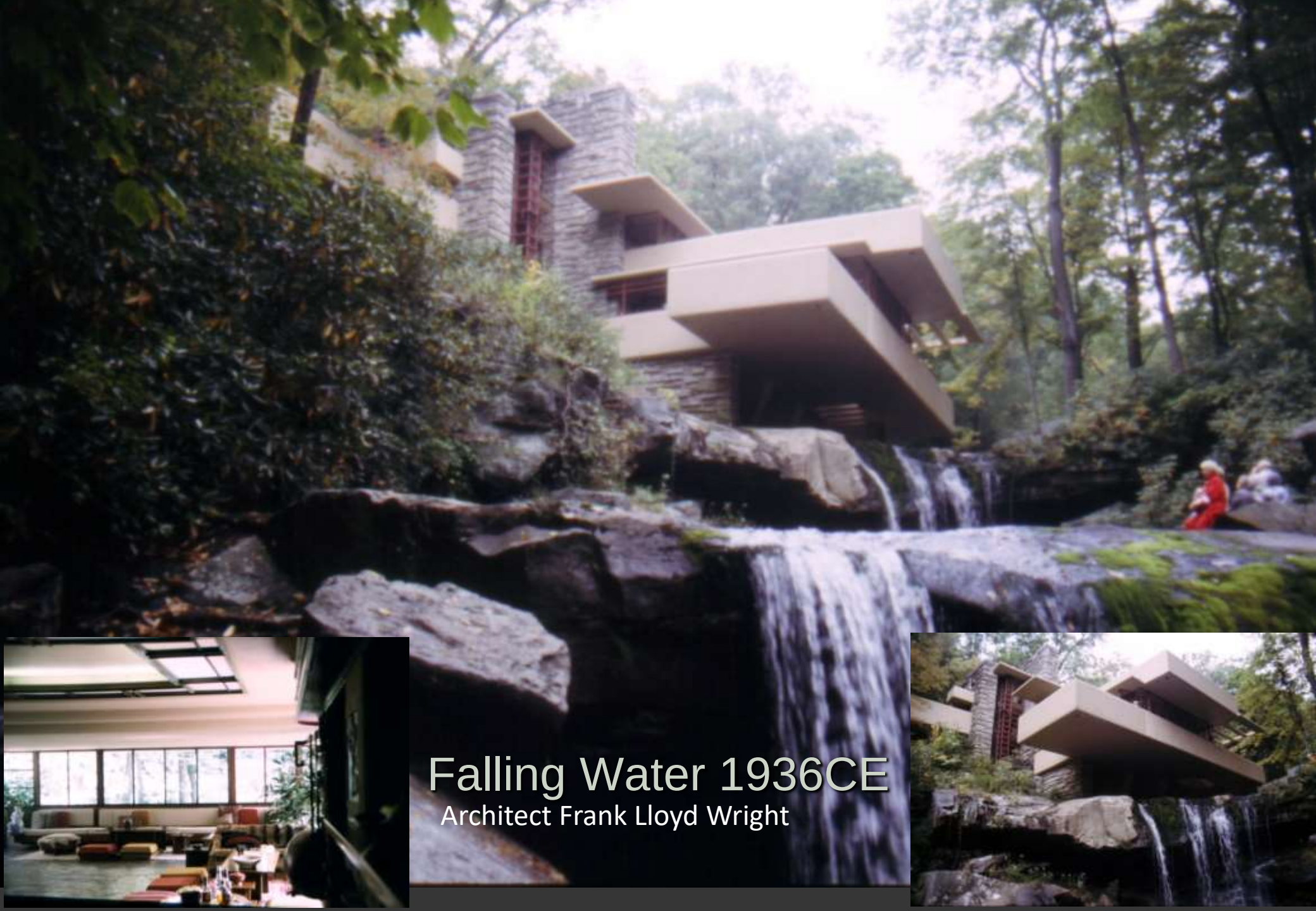
Wichita House, 1946CE



Villa Savoye 1929-31CE



Architect Le Corbusier The Villa
Savoye 1929-31
Icon of functionalist machine age

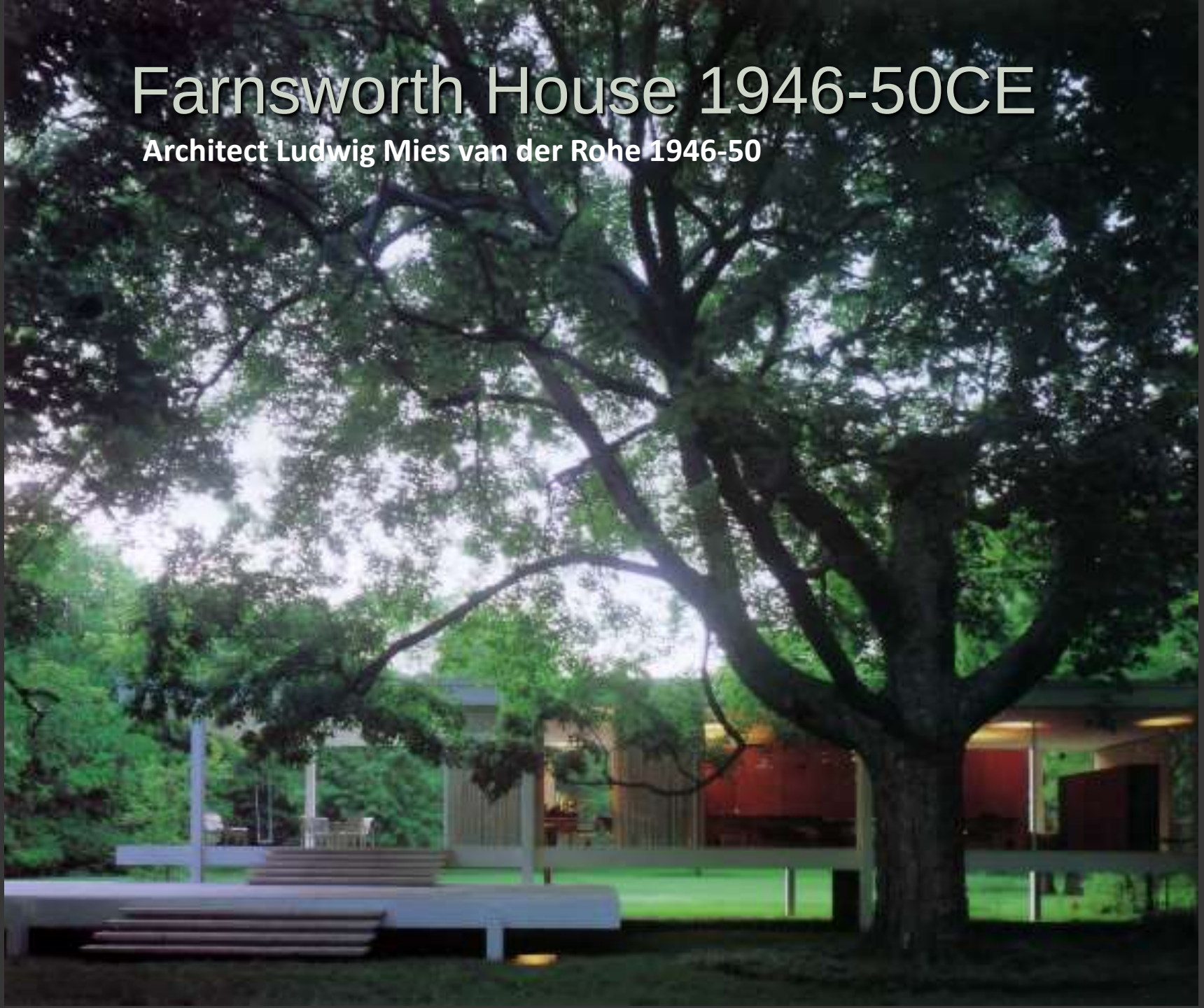


Falling Water 1936CE
Architect Frank Lloyd Wright



Farnsworth House 1946-50CE

Architect Ludwig Mies van der Rohe 1946-50



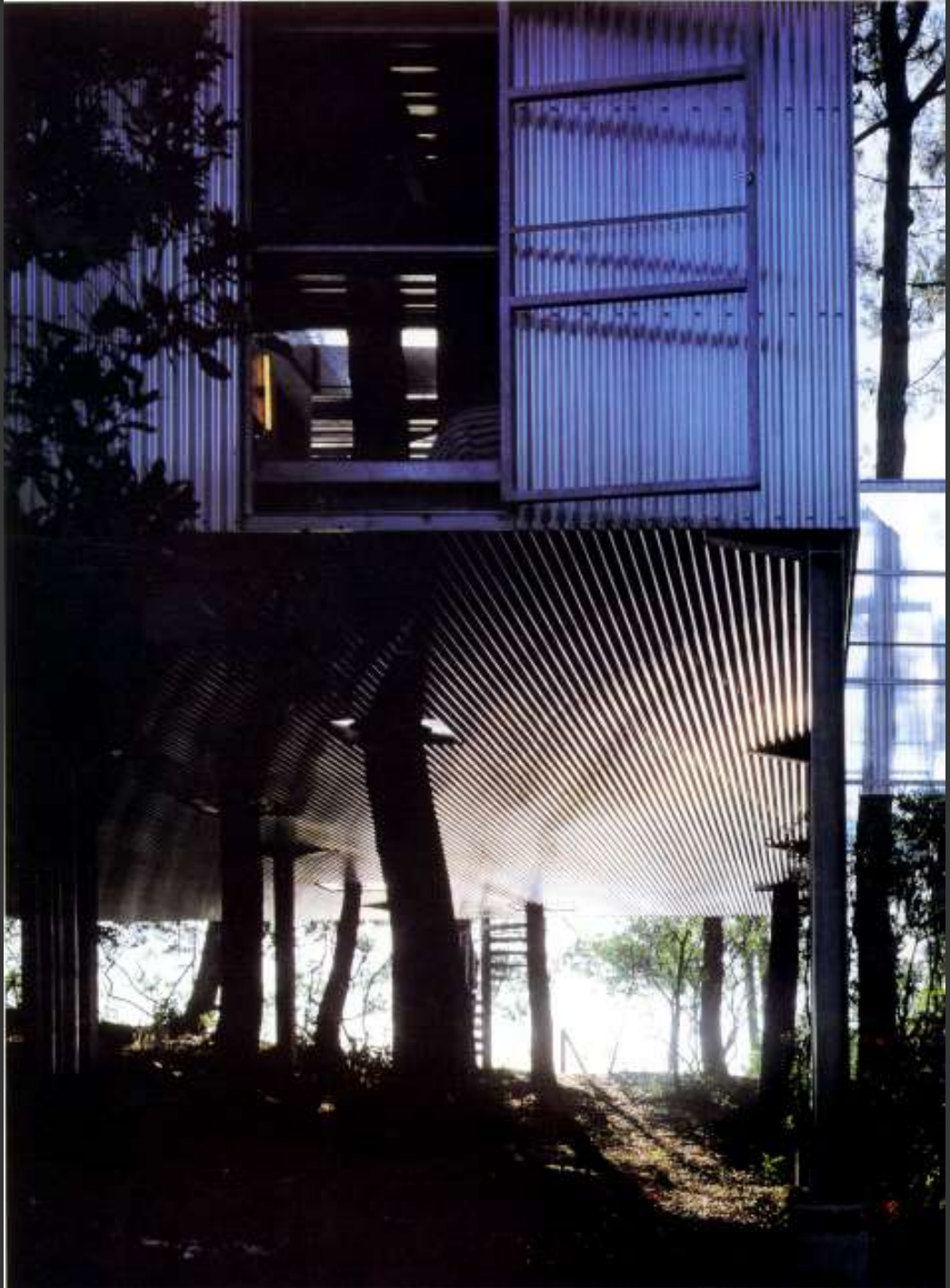
Crescent House 1997CE

Architect Ken Shuttleworth
Family home



House at Lege Cap-Ferret 1998 CE

Architect Lacaton Vassal
Architects 1997-98



House near Bordeaux, 1998CE



Architect Rem Koolhaas- Office for
Metropolitan Architecture 1998

Lawson-Westen House 1993CE

Architect Eric Owen Moss 1988-93
California

Spiralling staircase





Maison d'Anieres, 1972 CE

Architect Daniel Grataloup

The image captures the interior of the Schroder House, a masterpiece of Dutch De Stijl architecture. The space is characterized by its minimalist design, featuring a prominent red floor in the foreground and a deep blue wall on the right. A black metal staircase with a glass railing leads to an upper level. In the center, a white door stands open, revealing a glimpse of the interior beyond. To the left, a red chair with a black frame is positioned on the red floor. The ceiling is white with a large, dark, rectangular skylight that allows natural light to enter the space. The overall atmosphere is one of modernity and geometric harmony.

Architects Gerrit Rietveld and
Truus Schroder
Schroder House, 1924CE

La Maison de
Picassiete 1928-64 CE

Raymond Isodore
1928-1964



Newman House 1991CE

Architects Grose Bradley 1991
House at Balgownie

CONSTRUCTION

Australian tradition
Steel framed, corrugated iron
clad architecture of farm
buildings and sheep stations.
Corrugated sheet good
conductor of heat dissipates
quickly
Cheap, light and durable
Agricultural rotary
ventilators along the roof to
keep it cool.

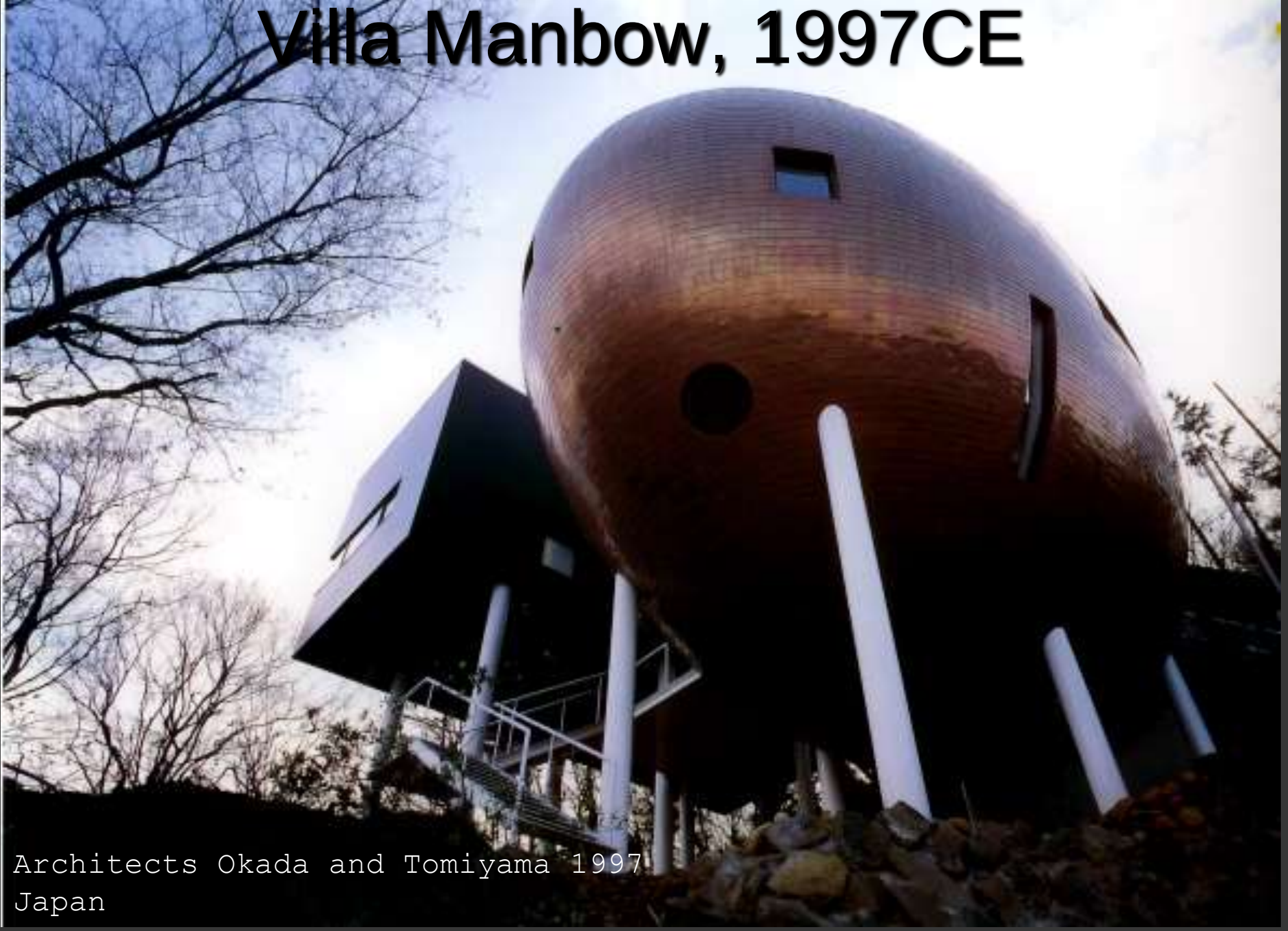


Pascual House 2000 CE

Architect Marshall
Cook 2000
East Tamaki, Auckland
Built on a tight
budget



Villa Manbow, 1997CE



Architects Okada and Tomiyama 1997
Japan

the most expensive house in the USA

<https://www.youtube.com/watch?v=NlnkBpT3Cu8>

PART 3

THE BIG IDEAS and

How we live now?

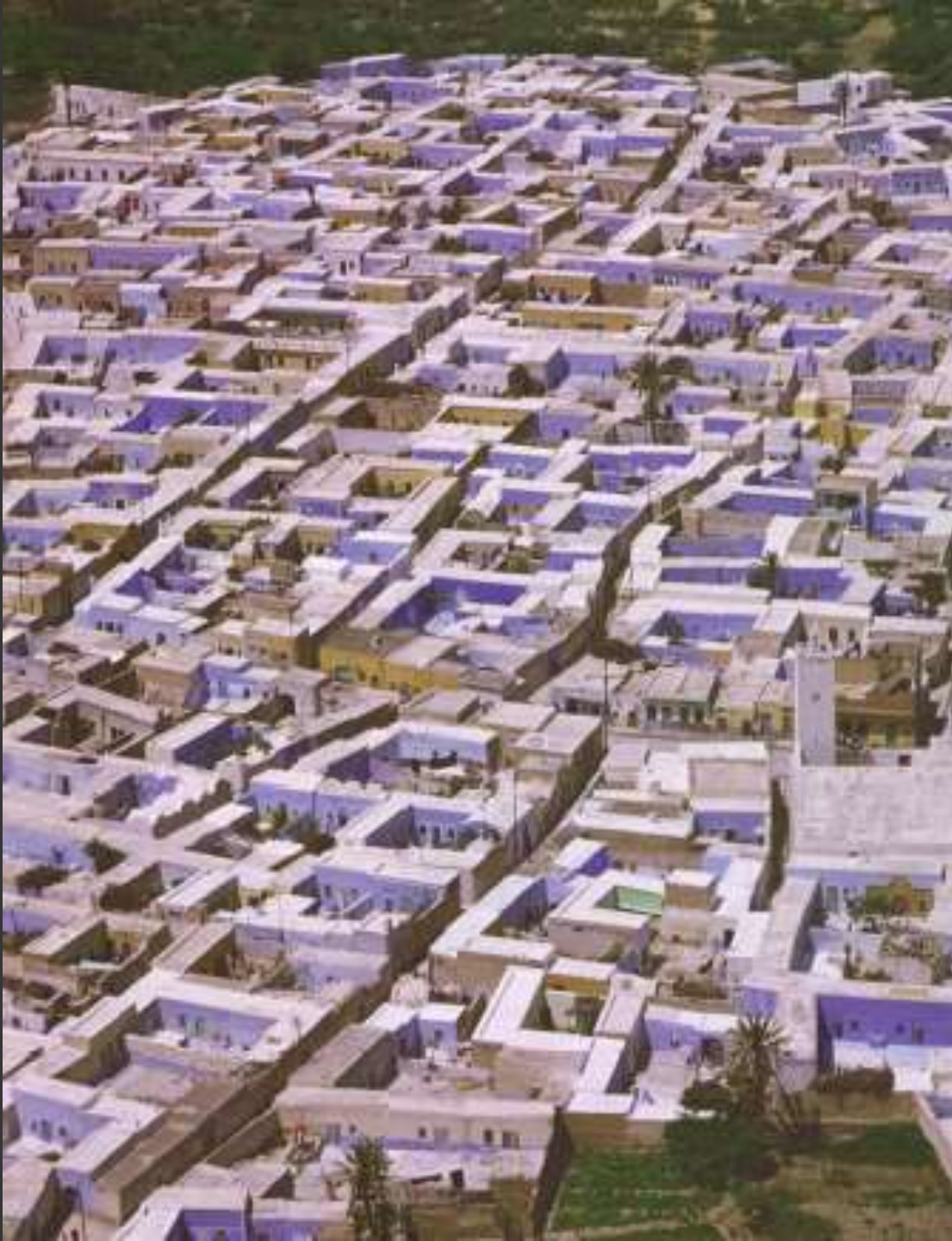
The City

- Only when they started to sow their own crops did the need for permanent shelters arise. Inevitably, people found it advantageous to work together to harness water sources and till the land- and so we have the start of society and the start of a city.

The City

- So intimate is the connection between man's building of the first cities and his development of a civilized way of life that the very word 'civilization' comes from the Latin word *civis*, which means citizen, or dweller in a city.
- Kenneth Clark points out that a sense of permanence is the prerequisite of civilization, and what could more explicitly indicate that a man meant to give up his wandering ways and settle down than his building a city?
- Men, said Aristotle, come together in cities in order to live; they remain there to live the good life.

Aerial view of Kalaa Sghrira Tunisia, showing the typical dense pattern of narrow streets and courtyard housing

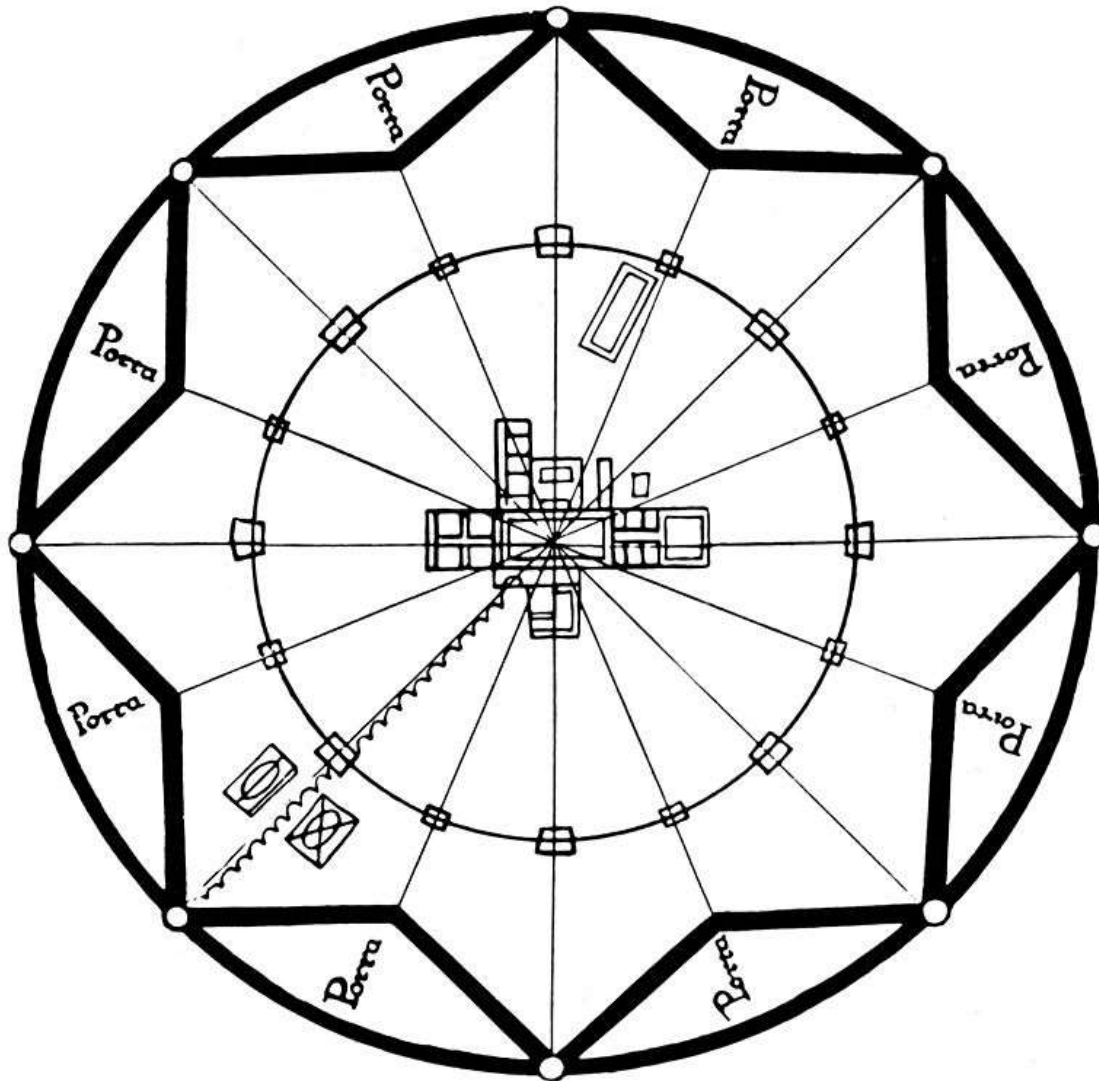


The ideal place



Traditionally attributed to Piero Della Francesca this view of an Ideal City(c.1470) is now thought to be by Leon Battista Alberti, projecting a view of the harmonious Classical Buildings described in his De Re Aedificatoria,

The ideal place

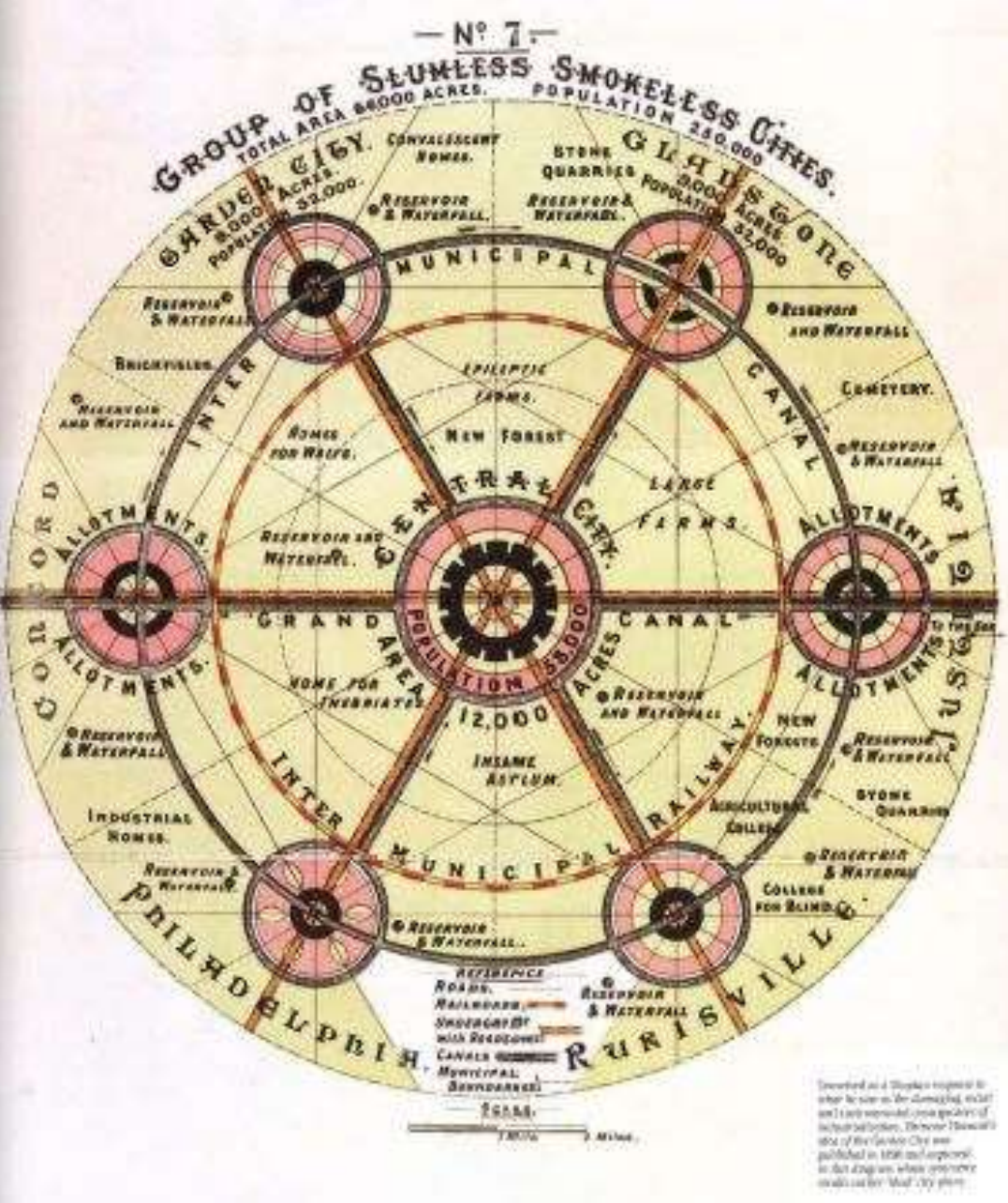


Sforzinda is a visionary ideal city named after Francesco Sforza, then Duke of Milan. It was designed by Renaissance architect Antonio di Pietro Averlino (c. 1400 – c. 1469), also known as "Averulino" or Filarete.



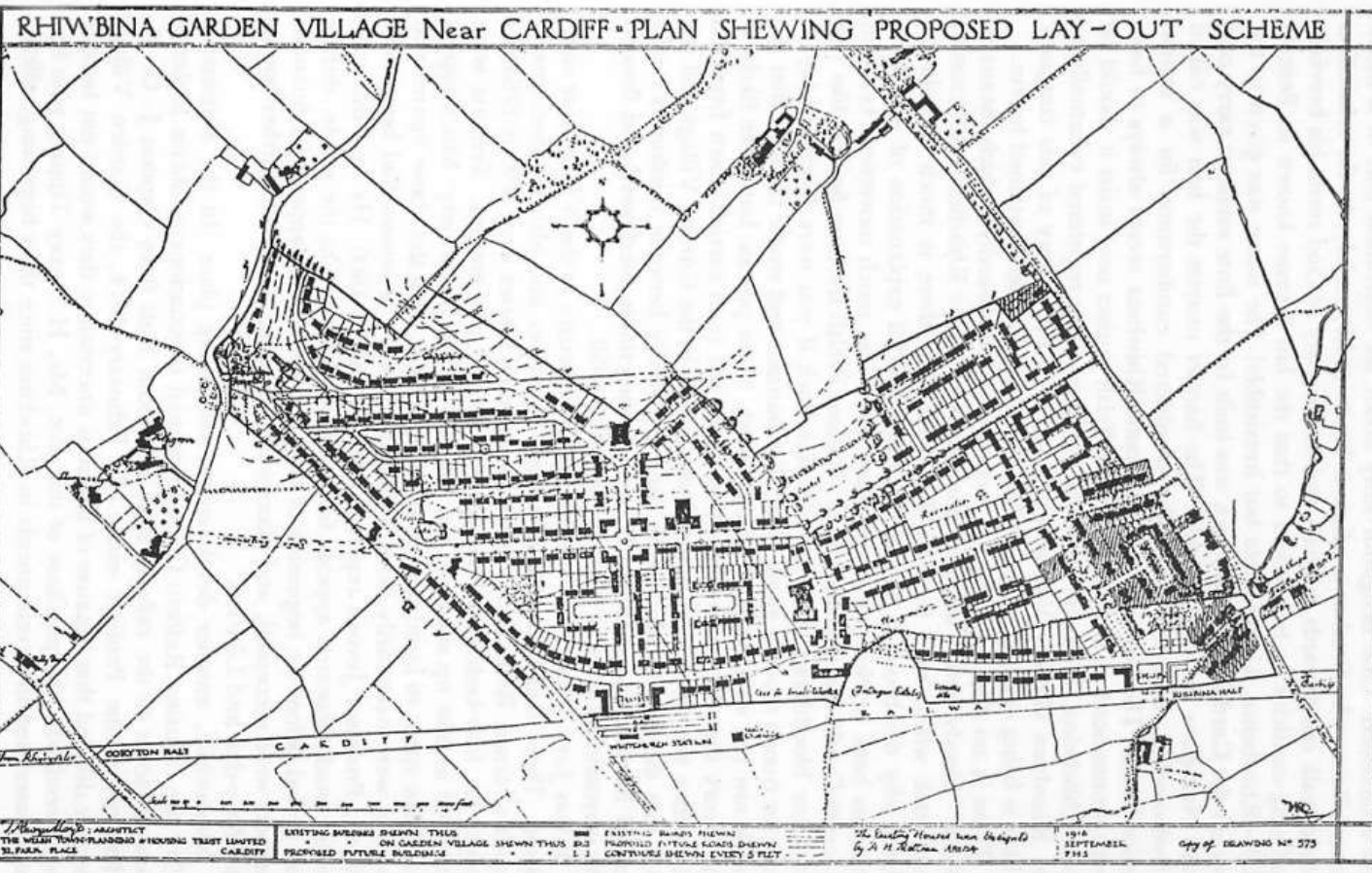
The City – Renaissance Florence

The Ideal Place - Utopia



Formed by combining the Greek words for 'not' and 'place', *Utopia*, was the title of a book written in 1516 by scholar and statesman Sir Thomas More (1478-1535). Modelled on Plato's *Republic*, it described a fictional island where an apparently perfect society flourished. In this sense the word 'Utopia' has come to describe visions of the 'ideal' city.

Conceived as a Utopian response to what he saw as the damaging social and environmental consequences of industrialisation, Ebenezer Howard's idea of the Garden City was published in 1898 and captured in this diagram where symmetry recalls earlier 'ideal' city plans.



A Bird's Eye View, looking from the west side of the Circle, across the main avenue, and over the square "T Green," which is shown plotted in detail in the plan on page 15.

Rhiwbina's Garden Village movement began in the 1890s in response to the industrial revolution's side-effects of slums and poor living conditions. Its rhetoric championed better living conditions for the working class as well as the middle class and by the turn of the century, several Garden Villages existed in Britain. Its principle of co-operative ownership appealed to many and in 1911, a group of Cardiffians met to consider the idea of their own Garden Village.

Rhiwbina Garden Village



The Modern City Singapore

COMMUNITY ARCHITECTURE



Architecture by everyone

- The term 'community architecture' was coined by the journalist Charles Knevitt in 1975 to describe an English housing movement that involved the participation of users in the design of buildings.
- It later came to embrace disparate trends that grew out of the political activism of the 1960s and growing concern about the impact of large scale urban renewal- of which Jane Jacobs' book *The Death and Life of Great American Cities* offered a searing critique.

Designing accessibly for all

UNIVERSAL DESIGN

- Designing to meet the needs of disabled people became a growing concern during the second half of the twentieth century, and by the 1990s had begun to be focused internationally around the idea of universal design.
- This also embraced the concerns of the ageing 'baby boomer' generation, and was influenced by the social model of disability that emerged in the UK in the 1980s, but had its roots in earlier and wider movements for civil and human rights.



SUSTAINABILITY

● *Environmental architecture*

- Making new buildings more energy efficient has led to the growth of passive **design**, but the early focus on running costs is now giving way to a more holistic concern for 'cradle to grave' assessments that address a building's entire lifecycle or 'ecological footprint'.

Completed in 2002, the Beddington Zero Energy Development (now Known universally as BedZED) is one of the most widely visited low-energy, sustainable housing developments in the UK. Situated in Hackbridge, south London, it was designed by Bill Dunster Architects



SUSTAINABILITY

● ***Environmental architecture***

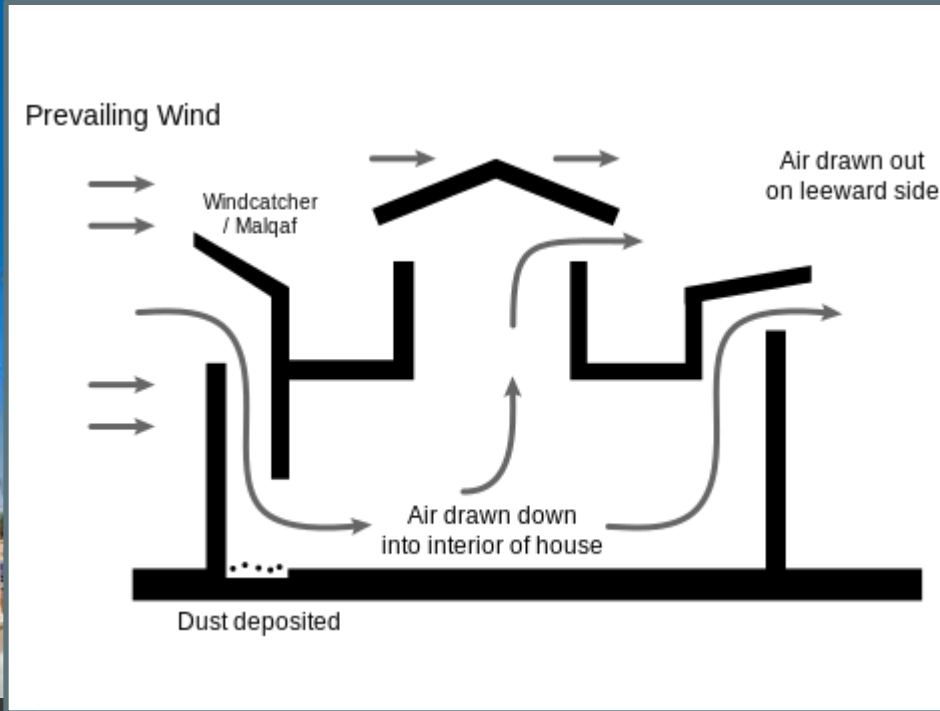
- Global concern about the capacity of the planet to sustain a rapidly rising population without drastic environmental degradation came into sharp focus in 1987 with the publication of 'Our Common Future', the report of the World Commission on Environment and Development (now generally referred to as the Brundtland Commission).
- Its suggestion that 'sustainable development' was the key to ongoing prosperity launched the idea of 'sustainability' into the global consciousness.
- The consumption of natural resources grew exponentially in the last century, and with this came a growing scientific awareness of the interdependence of life, which led to the emergence of ecology as a separate discipline.

SUSTAINABILITY



'The fundamental principles of passive design have been practised in vernacular buildings throughout history.'

Towards zero-energy architecture



Architects
Rolf Disch, Housing
Freiburg Germany

PASSIVE DESIGN

- Passive design describes an approach to achieving the required environmental conditions with the least possible use of 'active', energy-consuming systems.
- In particular, it aims to reduce dependence on artificial lighting, mechanical ventilation and air conditioning.
- Although computer software is now used to model a building's performance, based on a sophisticated mathematical understanding of climate, heat transfer and fluid dynamics, the fundamental principles have been practised in vernacular buildings throughout history.

Discussion/ review

PART 4

How do you see the future
for the way you or we live?

FASHION AND TECHNOLOGY



FASHION AND TECHNOLOGY



Always Home.
Train delayed? Let your friends in from Platform 2.

With the Yale Conexis® L1 Smart Door Lock, your smartphone is now your key.
Find out more at yale.co.uk/smart-living

Yale smart Living

Never come home to a cold house again.

Warmup Smart thermostats take care of your heating.

Using **SmartGeo™** your home will always be warm when you arrive, whenever that may be, and never waste energy, no matter how hectic your lifestyle.

AutoSwitch™ will always put you on the lowest energy tariff available every year. Warmup Smart thermostats are easy to use for everyone and save up to £378 on energy bills.

www.warmup.co.uk/thermostats/smart

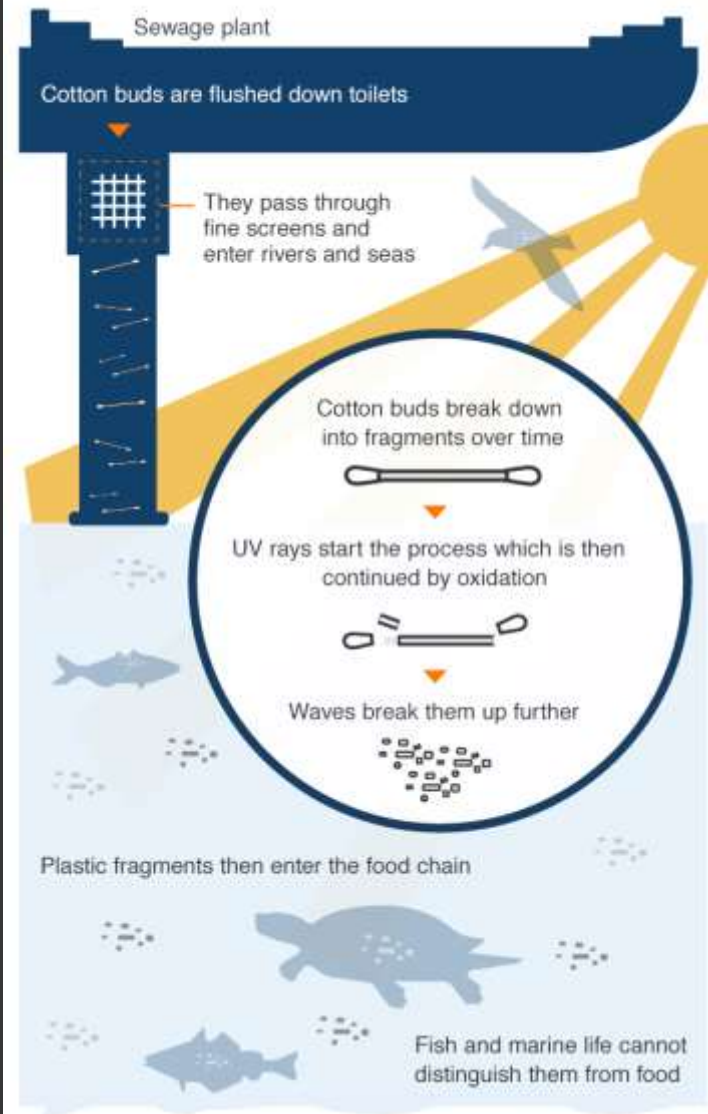


0345 345 2288
uk@warmup.com
www.warmup.co.uk/thermostats/smart

Warmup
The world's best-selling floor heating brand.

MASS CONSUMPTION POLLUTION?

What can happen to your cotton buds



Source: The Cotton Bud Project



What kind of waste appears on UK beaches?

Items found per 100m



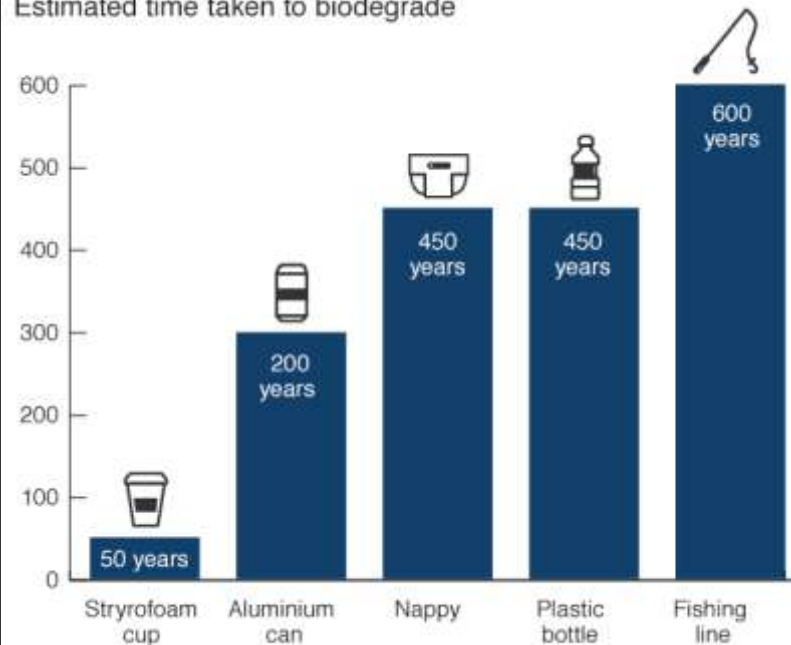
Source: Based on a Marine Conservation Society survey of 339 beaches across the UK



MASS CONSUMPTION POLLUTION?

How long til they're gone?

Estimated time taken to biodegrade

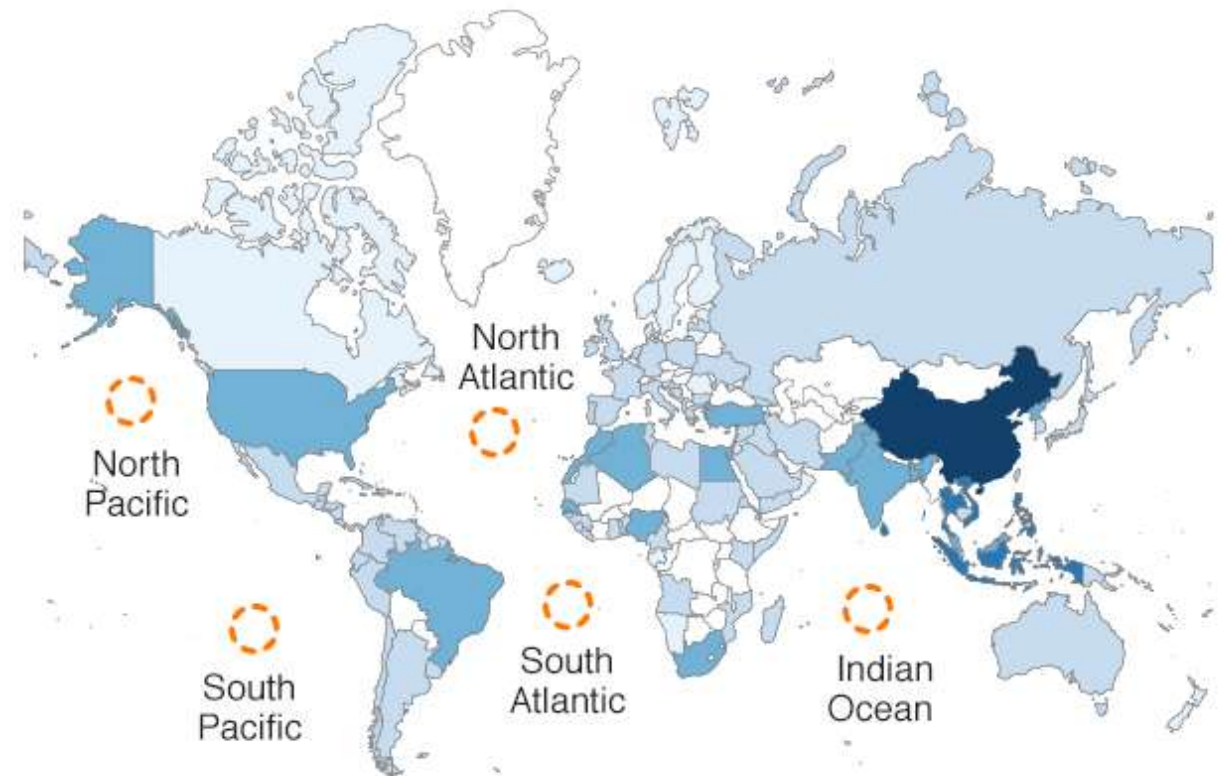


Exact time will vary by product type and environmental conditions

Source: NOAA / Woods Hole Sea Grant

BBC

Ocean plastic



Mismanaged plastic waste, tonnes

0  > 5 million

 Gyres - Whirlpools of water which trap huge collections of waste in their currents

Source: Jambeck et al, Science Feb 2015, UNEP, NCEAS

BBC

MASS CONSUMPTION POLLUTION?

Drinks bottles

A rising tide of plastic



Source: Euromonitor

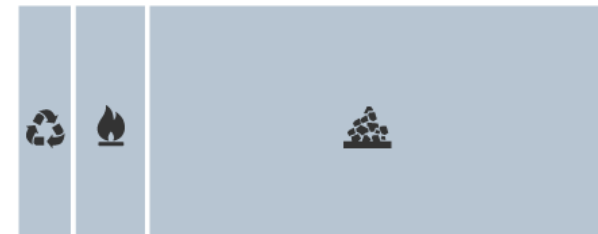


How much plastic is there?

An estimated **8.3bn tonnes** of virgin plastic has been produced to date



As of 2015, approximately **6.3bn tonnes** of plastic waste had been generated



9% recycled

12% incinerated

79% accumulated in landfills or the natural environment

If current production and waste management trends continue, roughly **12bn tonnes** of plastic waste will be in landfills or the natural environment by 2050.

Source: Science Magazine

