



27 July 2009

human DIMENSIONS

The study of human body measurements on a comparative basis is known as anthropometrics. Its applicability to the design process is seen in the physical fit, or interface, between the human body and the various components of space

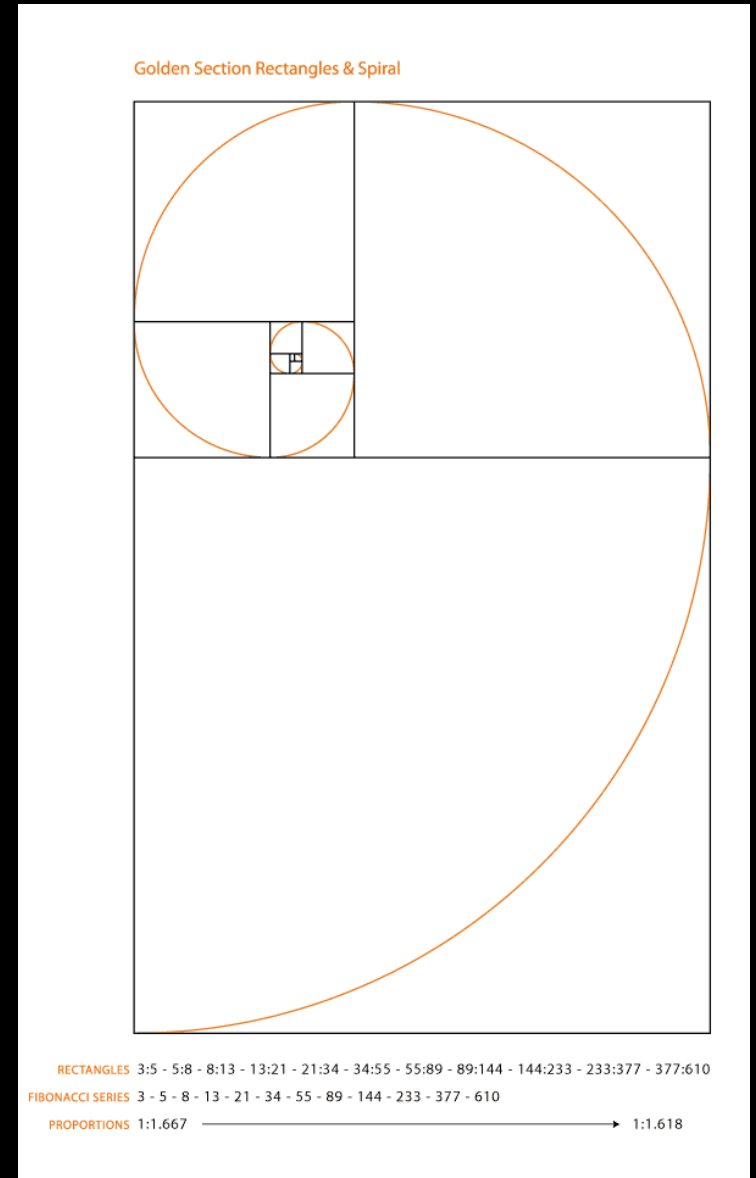
Ar Mohd Najib Salleh

Some theories already exist -
proportion theory which is :

1. Golden Section
2. Greek and Roman Order
3. Renaissance Theory
4. Modulor System
5. Ken System
6. Anthropometric

Golden Section

- The Golden Section is a Law of Proportionality. It is a Law that occurs frequently in nature and its use is particularly useful in Art. First developed by **Vitruvius**, it is most famously known from Leonardo Da Vinci's 1509 drawing 'The Divine Proportion' (see above).
- Essentially the law states that two unequal parts of a whole must be in relationship to each other to create a satisfactory image to the eye.
- Numerically Golden Section is approx. 1.618034 or 38% to 62%. This proportion reoccurs throughout our lives and can be said to create an ideal proportion between two objects or two parts of a whole.

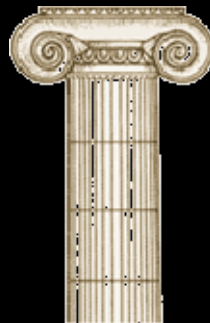


Greek Order

- Greek life was dominated by religion and so it is not surprising that the temples of ancient Greece were the biggest and most beautiful.
- The Greeks developed three architectural systems, called orders, each with their own distinctive proportions and detailing. The Greek orders are: Doric, Ionic, and Corinthian.



The Doric style is rather sturdy and its top (the capital), is plain. This style was used in mainland Greece and the colonies in southern Italy and Sicily.



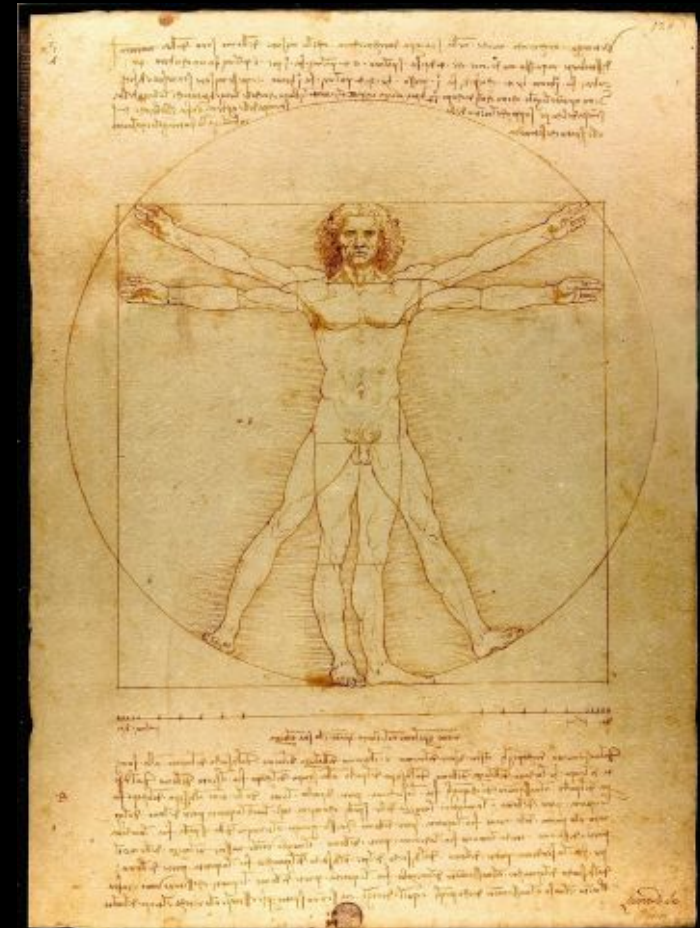
The Ionic style is thinner and more elegant. Its capital is decorated with a scroll-like design (a volute). This style was found in eastern Greece and the islands.



The Corinthian style is seldom used in the Greek world, but often seen on Roman temples. Its capital is very elaborate and decorated with acanthus leaves.

Renaissance Theory

- The word "Renaissance" derived from the term "la rinascita" ("rebirth")
- Renaissance architecture is the architecture of the period between the early 15th and early 17th centuries in different regions of Europe.
- This theory influence by "Special Order" or "Ideal Order".
- "Ideal Order" - pioneered by Vitruvius. It's based on human dimension for produce architecture creation to harmony and beautiful for human and nature.
- The theory divided by 2 :
 - Theory on 7 type of plan for design a room.
 - Theory to determining the height for a room.

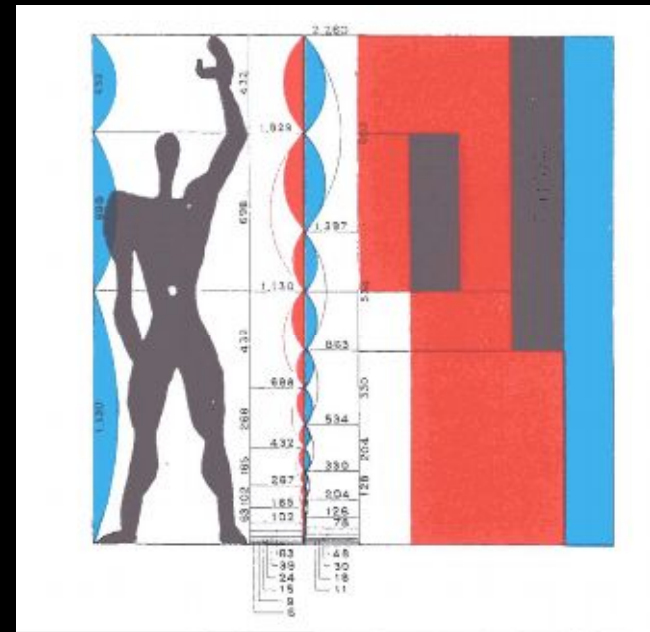


Sistem Modolor

- Le Corbusier developed the Modular in the long tradition of Vitruvius, Leonardo da Vinci's Vitruvian Man, the work of Leone Battista Alberti, and other attempts to discover mathematical proportions in the human body, also known as Golden Ratio and then to use that knowledge to improve both the appearance and function of architecture.
- The system is based on human measurements, the double unit, the Fibonacci numbers, and the golden ratio. Le Corbusier described it as a "range of harmonious measurements to suit the human scale, universally applicable to architecture and to mechanical things."

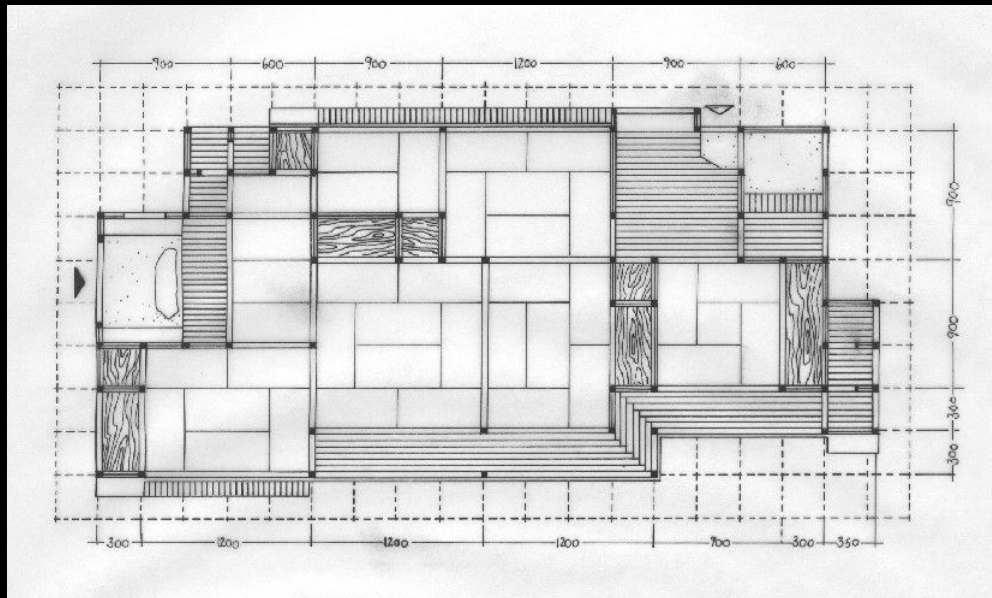
Le Corbusier published *Le Modulor* in 1948, followed by *Modulor 2* in 1955. These works were first published in English as *The Modulor* in 1954 and *Modulor 2* in 1958.

Le Corbusier used his Modular scale in the design of many buildings, including *Notre Dame du Haute* and buildings in Chandigarh. In the construction of the first *Unité d'Habitation* apartment building, in *Marseilles*, a version was cast in concrete near the entrance.



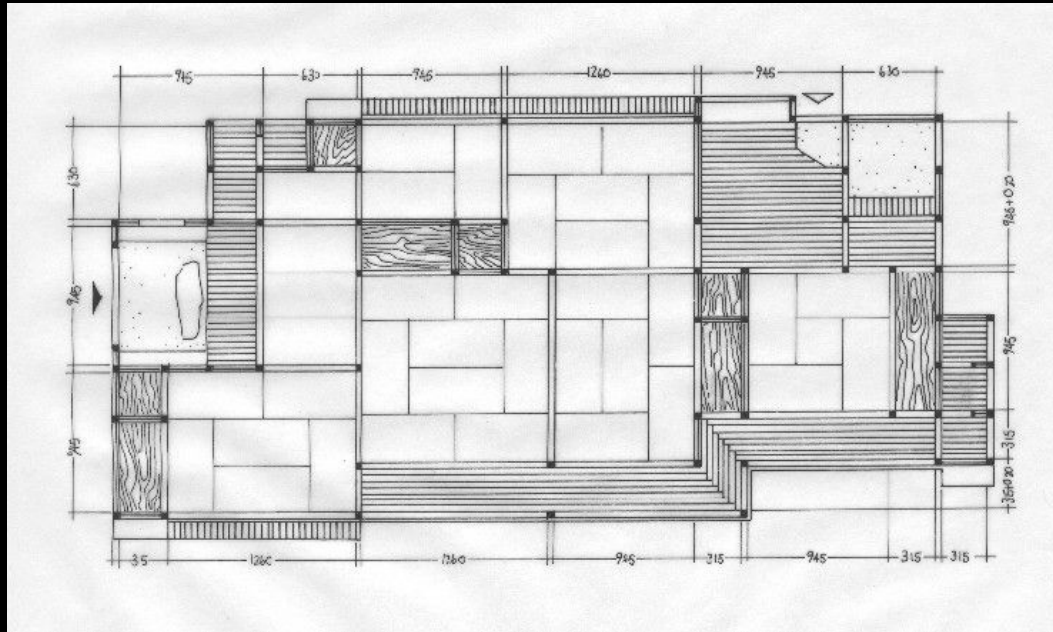
Ken System

- This measurement unit used in Japan
- Same measurement – based on human body
- Main function – distance determination between 2 column
- It's based on rectangle measure ratio 1:2
- This system have 2 measurement :
 - Kyo-ma method
 - Inaka-ma method



In the kyo-ma system all the structural members are designed around the one standardized unit, the tatami floor mat (6.3 x 3.15 shaku, or 1,909 x 954.5 mm).

The use of the tatami mat brings a more intimate human scale to the Japanese home, because its dimensions are roughly that of a human body lying down.



Conversely, in the inaka-ma method, the tatami mat is subordinate to the ken grid (6x 6 shaku or 6x 6 feet) that determines the placement of the internal columns.

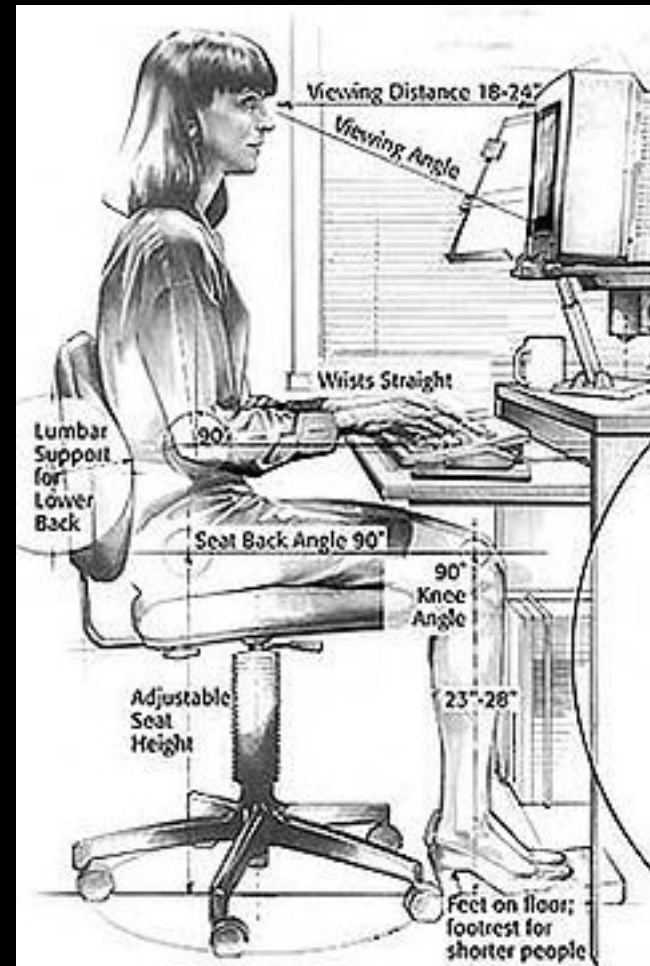
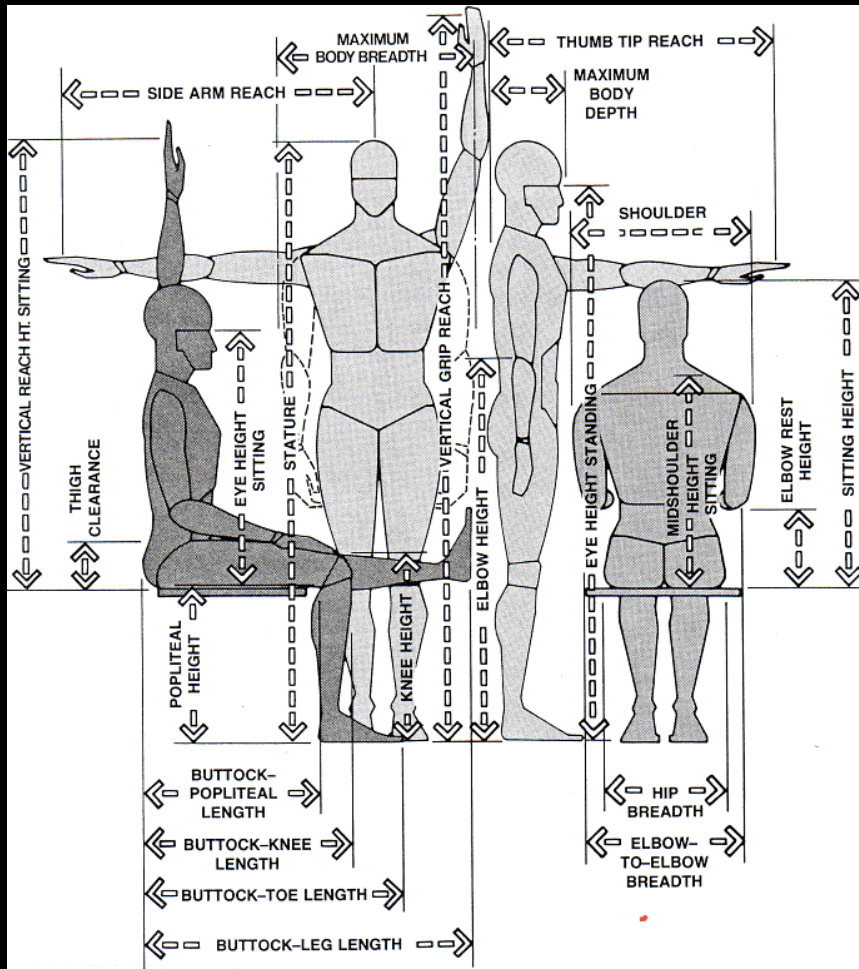
If we compare two houses of the same design but each under the different modular systems, we can see that there is a significant amount of difference in terms of the square footage, spaces under the inaka-ma method are on average 15% smaller than spaces created under the kyo-ma method.

Anthropometric

- The term **anthropometric** refers to comparative measurements of the body.
- Anthropometric measurements are used in nutritional assessments.
- Those that are used to assess growth and development in infants, children, and adolescents include length, height, weight, weight-for-length, and head circumference (length is used in infants and toddlers, rather than height, because they are unable to stand).
- Individual measurements are usually compared to reference standards on a growth chart.
- Anthropometric measurements used for adults usually include height, weight, **body mass index (BMI)**, waist-to-hip ratio, and percentage of body fat.
- These measures are then compared to reference standards to assess weight status and the risk for various diseases.
- Anthropometric measurements require precise measuring techniques to be valid.

Anthropometric

Anthropometric measurements also used to develop standards for human clearances and maneuvering space between pieces of furniture or equipment.



Ergonomics is the science of adapting the job and/or the equipment and the human to each other for optimal safety and productivity



PERSPECTIVE

The pessimist sees difficulty in every opportunity; the optimist sees the opportunity in every difficulty.

WISDOM, COMING