

|         |           |       |               |          |
|---------|-----------|-------|---------------|----------|
| ALBERTI | 1 : 1     | 1     | 233 : 233     | TOKHROMA |
|         | 4 : 3     | 1.333 | 4 : 3         |          |
|         | 3 : 2     | 1.5   | 3 : 2         |          |
|         | 16 : 9    | 1.778 | 4 : 3 x 4 : 3 |          |
|         | 2 : 1     | 2     | 178 : 89      |          |
|         | 9 : 4     | 2.25  | 3 : 2 x 3 : 2 |          |
|         | 3 : 1     | 3     | 3 : 1         |          |
|         | 4 : 1     | 4     | 4 : 1         |          |
| MODULOR | 183 : 113 | ⌀     | 178 : 110     |          |
|         | 226 : 113 | 2     | 178 : 89      |          |

12.

Note one. With Alberti, the proportions 2 : 1, 3 : 2 and 4 : 3 were used to create a range of proportions when compounded together in various combinations. These three proportions derived from the harmonic mean  $((1+a) + (1+c) = 2+b)$  when applied to 2 : 1 (2 : 1.333 : 1). By using this mean applied in this way, Alberti was able to link the above to the harmonic proportions of the musical scale, by 2 : 1 representing an octave. The Babylonians, were the first to see the relationship between this mean and music, with this knowledge introduced into Greek culture by Pythagoras.

To form an internal volume from an area, an arithmetic ( $a+c = 2b$ ), geometric ( $ac = b^2$ ) or above harmonic mean was used. In practice, the geometric mean was not widely used as it normally produced an irrational number when forming heights. With the above means, a and c represent the area and b the height.

Note two. For *Tokhroma*, all the ratios listed are *Tokhromaratio*s made up of numbers or *Hitenumbers* from the *Sequencia*. To create the ratios 16 : 9 and 9 : 4, Alberti's method of compounding proportions is used.

Note three. With the Modulor, Le Corbusier created two sequences of fixed metric measurements inspired by the Fibonacci sequence. The first sequence the Red Series, contained the measurements 113<sub>cm</sub>/1.13<sub>m</sub> representing the height of a mans solar plexus and 182.9<sub>cm</sub>/1.83<sub>m</sub> representing the corresponding male height. The second sequence the Blue Series, created by doubling the former in line with Vitruvius, contained 226<sub>cm</sub>/2.26<sub>m</sub> representing a mans raised arm, and he regarded this measurement as an ideal spatial height.

When developing Modulor, Le Corbusier initially chose 175<sub>cm</sub> as the male height. He then changed this to the above as this also equalled 6<sub>feet</sub>/72<sub>inches</sub> and with this he was able to link the fixed Modulor measurements to the imperial system.