Anatomy of the hand

**Numbers**

- *Each hand* contains
  - 29 major and minor bones
  - 29 major joints.
  - At least 123 named ligaments.
  - 34 muscles which move the fingers and thumb:
    - 17 in the palm of the hand, and
    - 18 in the forearm.
  - 48 named nerves:
    - 3 major nerves.
    - 24 named sensory branches.
    - 21 named muscular branches.
  - 30 named arteries and nearly as many smaller named branches
There are 27 bones in a human hand:

- 14 digital bones in fingers and thumb
- 5 bones in palm
- 8 in the wrist
Thumb Opposition
Contrary to popular opinion, humans - *homo sapiens* are *not* the only primates possessing opposable thumbs. Chimpanzees and monkeys can oppose the thumb to the index digit. *What makes the human hand unique in the animal kingdom is the ability of the small and ring fingers to rotate across the palm to meet the thumb*, owing to a unique flexibility of the carpometacarpal joints of these fingers, down in the middle of the palm. This is referred to as "ulnar opposition" and adds unparalleled grip, grasp, and torque capability to the human hand.

This feature developed *after* the time of Lucy, a direct human ancestor, who lived about 3.2 million years ago.
PRECISION GRIP-THROWING

POWER GRIP - CLUBBING
Evolution of the human hand: the role of throwing and clubbing
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Abstract
It has been proposed that the hominid lineage began when a group of chimpanzee-like apes began to throw rocks and swing clubs at adversaries, and that this behavior yielded reproductive advantages for millions of years, driving natural selection for improved throwing and clubbing prowess. This assertion leads to the prediction that the human hand should be adapted for throwing and clubbing, a topic that is explored in the following report. It is shown that the two fundamental human handgrips, first identified by J. R. Napier, and named by him the ‘precision grip’ and ‘power grip’, represent a throwing grip and a clubbing grip, thereby providing an evolutionary explanation for the two unique grips, and the extensive anatomical remodeling of the hand that made them possible. These results are supported by palaeoanthropological evidence.
Fibonacci numbers

- In **mathematics**, the **Fibonacci numbers** are a **sequence** of numbers named after Leonardo of Pisa, known as **Fibonacci**.

- 0, 1, 1, 2, 3, 5, 8, 13, 21
A Fibonacci spiral, created by drawing arcs connecting the opposite corners of squares in the Fibonacci tiling shown above; see Golden spiral
The lengths of the finger bones approximate the ratio of the Fibonacci numbers 2, 3, 5, and 8.
The amazing thumb

The thumb is controlled by 9 individual muscles, which are controlled by all 3 major hand nerves. And moves in such a complex fashion that there are 6 separate descriptive terms just for particular directions of movement of one thumb joint - the basal joint, at the base of the thumb.
“In the absence of any other proof, the thumb alone would convince me of God's existence.”

Sir Isaac Newton
Pollice Verso – Thumbs down
FIRST GRAPHICS CARVED ON A PIECE OF OCHURE. FOUND IN BLOMBOS CAVE. 70 000 years old.
We choose to go to the moon. We choose to go to the moon in this decade.

Our hands have enabled us to achieve the amazing things….
We can land men on the moon, but, for all our mechanical and electronic wizardry, we cannot reproduce an artificial fore-finger that can feel as well as beckon and hold a pencil.

John Napier
With our hands we can create heavenly sounds....
The hand is the cutting edge of the mind.

Jacob Bronowski
Victory at all costs, victory in spite of all terror, victory however long and hard the road may be; for without victory, there is no survival.

Winston Churchill
I use emotion for the many and reserve reason for the few.

Adolf Hitler
Amandla!: A Revolution in Four-Part Harmony is a 2002 documentary film depicting the struggles of black South Africans against the injustices of Apartheid ...

Why the left hand?
Hands can be used for good and evil
Hands as brands

Sanlam
Thinking ahead
Hands as extensions of our soul
A child's hand in yours -- what tenderness and power it arouses. You are instantly the very touchstone of wisdom and strength.

Marjorie Holmes
Do not withhold good from those to whom it is due, when it is in the power of your hand to do so. 
Proverbs 3:27
The upper limb is the lightning rod to the soul.

Robert Markison

Man is spirit and body.

In order to translate our dreams into reality we need special tools like our hands and our brain.

Our hands are supreme tools.

They are wonderfully designed and crafted to focus power and precision.

Without our wonderful hands there would have been no culture and civilisation; we would have remained brutes.

The whole saga of mankind can be illustrated with images of hands.

Our hands are an extension of our soul.
May the road rise to meet you. May the wind always be at your back. May the sun shine warm upon your face, the rains fall soft upon your fields and, until we meet again, may God hold you in the palm of his hand.

Irish Blessing