CASTILLA Y LEÓN

The magic hands

A marvel of evolution

MUSEO DE LA EVOLUCIÓN HUMANA

Junta de Castilla y León

ORGANIZATION AND PRODUCTION:
Museum of Human Evolutión
Fundación Siglo para el Turismo y las Artes de Castilla y León.
Consejería de Cultura, Turismo y Deporte.
Junta de Castilla y León.

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IPHES-CERCA Background: Gerard Campeny, María D. Guillén, Jordi Mestre, Andreu Ollé, Xosé Pedro Rodríguez, Josep Zaragoza. IPHES-CERCA, project PID2021-122355NB-C32 'Ecosocial behavior of the hominids of the Sierra de Atapuerca during the Quaternary, VI', financed by the Ministry of Science and Innovation – State Agency research.

CENIEH Background: Pilar Fernández, Minerva Ferrero, Sofía de León, Raquel Lorenzo. Collections Area, Conservation and Restoration of the National Center for Research on Human Evolution, project PDI2021-122355NB-C33/AEI/10.13039/501100011033/ FEDER, EU, financed by the Ministry of Science and Innovation – State Research Agency.

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Servicio de Mantenimiento del MEH / SERVEO.

ACKNOWLEDGMENT:
Equipo de Investigación Atapuerca; Sociedad de Ciencias Aranzadi; Escuela de Artes Pilar Vizcaíno, Lucía Cabrera y Marta Gragera, pianistas.

EDITION:
Museo de la Evolución Humana.
Fundación Siglo para el Turismo y las Artes de Castilla y León.
Consejería de Cultura, Turismo y Deporte.
Junta de Castilla y León.

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PHOTOGRAPHS AND ILLUSTRATIONS:

Kennis & Kennis / MSF; Arantxa Boyero Lirón and Javier Rodríguez Barrera. National Museum of Anthropology; Javier Trueba / Madrid Scientific Films; Laboratory Of Human Evolution. UBU; Carlos Lorenzo. IPHES; Museum of Human Evolution. Junta de Castilla y León; Museum of Palencia; José Miguel González Bornay. Museum of Cáceres; Hipólito Collado; Pablo Girón / Arbolé Theater.

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Índice

Hands tell stories

This hand belongs to Piseth Pilika, a dancer from the Royal Ballet of *Phnom Penh. Khmer* classical dance was declared a Masterpiece of the Oral and Intangible Heritage of Humanity by UNESCO in 2003 and an Intangible Cultural Heritage of Humanity in 2008.

Its repertoire narrates the origins of the Khmer people. It uses codified postures and gestures that evoke all human emotions.

Khmer Dance Series
Isabel Muñoz
Pigment ink print on baryta paper
1996

If we had wings, fins, hooves, claws, or hooves instead of hands, humans would not have travelled into space. However, hands with five fingers and flat nails are not exclusive to humans. Nor are our eyes, positioned on the head so that we see the world in three dimensions.

We are not the only animals that live exclusively during the day (we are afraid of the darkness of night), the only ones with a large brain, or those who usually give birth to a single offspring.

We share all these characteristics with the rest of the higher primates, especially those of the Old World.
But we are the only bipedal species, the only species that throws stones with accuracy, and the only one that makes complex tools. We usually use our hands in front of our faces, and we see what we are doing with them.

Human hands are an amazing natural instrument, with a lot of biological engineering behind them.

With our hands, we can perform magic because the hand is faster than the eye.

Behind it all is the brain, of course, but that will be the next exhibition.

Hand and Foot of a Dancer; human hands and feet have the same groups of bones but are very different.

Khmer Dance Series
Isabel Muñoz
Platinum Print
1996

The hands and feet of chimpanzees are quite similar in appearance, which is why apes were once called quadrumanous (four-handed).

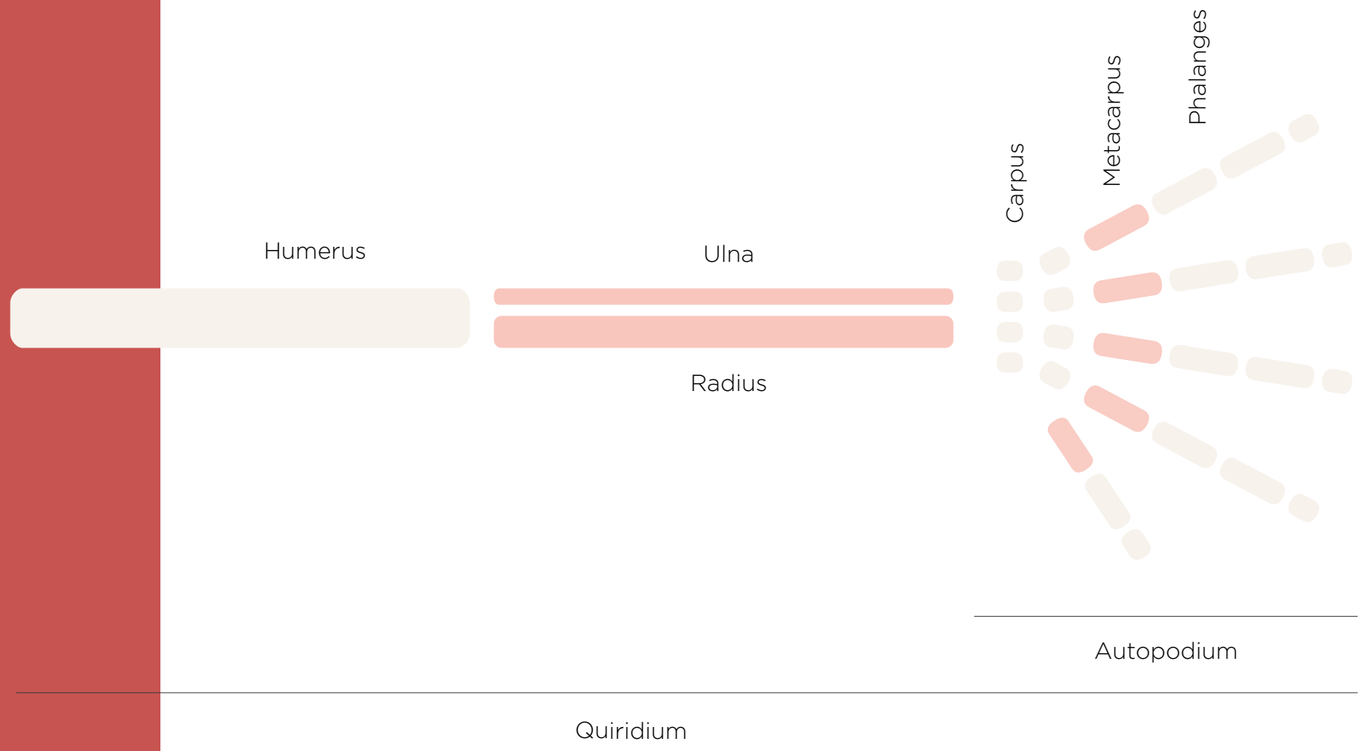
Primates Series
Isabel Muñoz
Platinum Print
2015

Five-fingered hands

Since their origins around 360 million years ago, all tetrapod vertebrates have had four limbs that are practically identical, following the same pattern.

This pattern consists of three segments articulated with each other and with the trunk; in the case of the forelimb, through the pectoral girdle (clavicle and scapula).

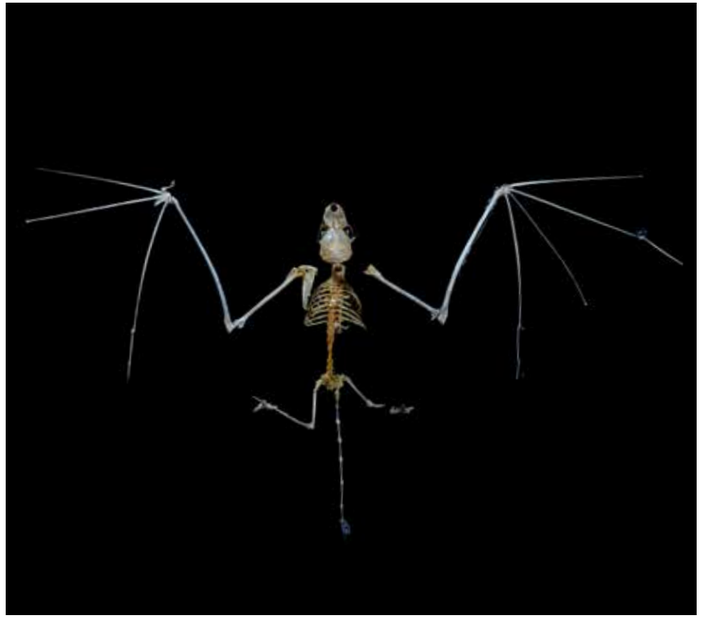
However, this general pattern has undergone various modifications over time because each species has its own specific adaptations to its respective ecological niches. This search for solutions to survival problems has resulted in some cases where evolutionarily distant species have developed similar structures to adapt to similar environments. A striking example of adaptive convergence can be seen in the wings of mammals, birds, and reptiles.



Adaptation to flight

Bats are the only mammals capable of true flight. To do this, they have transformed their forelimbs into wings.

These transformations mainly involve the elongation and thinning of their bones, which are very long and slender. Moreover, the humerus has a modified joint with the pectoral girdle to allow for the movements required for flight; the ulna is fused to the radius, and the phalanges are very flexible.
The bones of their forelimbs are connected by a thin, flexible, and elastic skin membrane (patagium).

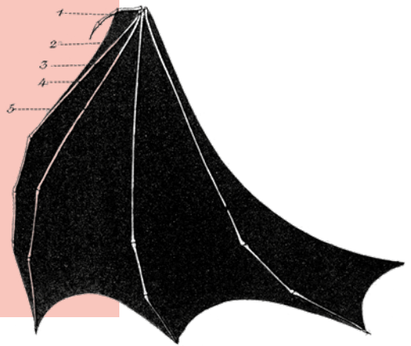


Common Pipistrelle
(Pipistrellus pipistrellus)

Skeleton

Museum of Comparative Anatomy of Vertebrate Animals.
Historical Heritage of Complutense University of Madrid

Photographs: Javier Trueba / Madrid Scientific Films



Bat wing
The History of Creation
Ernst Haeckel
1868

Adaptation to swimming

Not all mammals that have adapted their bodies to swimming lead a fully aquatic life (like cetaceans); others, such as some mustelids (otters), rodents (beavers), and even monotremes (platypuses), carry out their activities both in water and on land.

The transformations associated with swimming involve the entire skeleton, but concerning the anterior appendicular skeleton, the modifications aimed at generating powerful propulsion movements stand out, such as the significant development of muscle insertion areas on the scapulae, humerus, and the fingers connected by a well-developed interdigital membrane.

Otter
(Lutra lutra)

Skeleton

Museum of Comparative Anatomy of Vertebrate Animals.
Historical Heritage of Complutense University of Madrid

Photographs: Javier Trueba / Madrid Scientific Films

Platypus
The History of Creation
Ernst Haeckel
1868

European Beaver
(Castor fiber)

Stuffed animal

Museum of Comparative Anatomy
of Vertebrate Animals.
Historical Heritage of Complutense
University of Madrid

Photographs: Javier Trueba / Madrid
Scientific Films

Platypus
(Ornithorhynchus anatinus)

Skeleton

Museum of Comparative Anatomy
of Vertebrate Animals.
Historical Heritage of Complutense
University of Madrid

Photographs: Javier Trueba / Madrid
Scientific Films

Mammals of Australia
by John Gould and H.C.
Richter, 1845-1863

Burrowers

Adaptation to fossoriality has evolved independently and is widespread among various phyla and taxa.

The skeletons of burrowers have developed modifications that provide them with more strength for digging, such as short and robust limbs (especially the forelimbs) that end in long claws or the significant development of muscle insertion surfaces at the joints.

Mole
The History of Creation
Ernst Haeckel
1868

Chinese Pangolin
(Manys pentadactila)

Stuffed animal

Museum of Comparative Anatomy
of Vertebrate Animals.
Historical Heritage of Complutense
University of Madrid

Photographs: Javier Trueba / Madrid
Scientific Films

Iberian Mole
(Talpa occidentalis)

Skeleton

Museum of Comparative Anatomy
of Vertebrate Animals.
Historical Heritage of Complutense University
of Madrid

Photographs: Javier Trueba / Madrid
Scientific Films

Badger
(Meles meles)

Stuffed animal

Museum of Comparative Anatomy
of Vertebrate Animals.
Historical Heritage of Complutense
University of Madrid

Photographs: Javier Trueba / Madrid
Scientific Films

Climbers

They have developed adaptations that allow them to climb trees with ease. Regarding their forelimbs, notable modifications include joints that allow great freedom of movement and the elongation of their arms and hands, especially their phalanges. Additionally, the distal phalanges (third phalanges) are very strong, curved, and end in sharp claws that provide good grip.

Common Rat
(Rattus norvegicus)

Skeleton

Museum of Comparative Anatomy
of Vertebrate Animals.
Historical Heritage of Complutense
University of Madrid

Photographs: Javier Trueba / Madrid
Scientific Films

Red Squirrel
(Sciurus vulgaris)

Skeleton

Museum of Comparative Anatomy
of Vertebrate Animals.
Historical Heritage of Complutense
University of Madrid

Photographs: Javier Trueba / Madrid
Scientific Films

Arboreal species

A significant portion of primates is adapted to arboreal life. They have developed various modes of locomotion to move through the branches, allowing them to be jumpers, quadrupedal climbers, or brachiators.

Some use a prehensile tail for assistance.

Brachiators, such as gibbons and orangutans, use their very long arms to swing above their heads, gripping branches with their elongated hands, curved phalanges, and a thumb set back from the other four fingers.

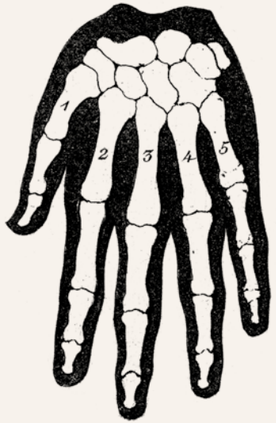
Tufted Capuchin
(Cebus apella)

Skeleton

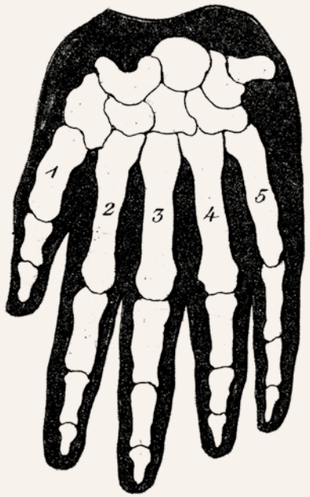
Museum of Comparative Anatomy
of Vertebrate Animals.
Historical Heritage of Complutense
University of Madrid

Photographs: Javier Trueba / Madrid
Scientific Films

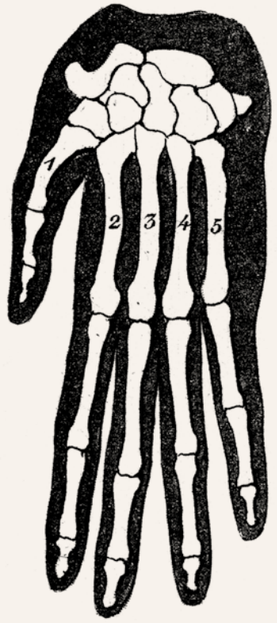
Human



Gorilla



Orangutan



The hand most similar
to human is the gorilla hand
because they are not
arboreal apes

Illustrations by Ernst Haeckel
The History of Creation
1868

The hand is the visible part of the brain

Immanuel Kant (1724-1804)

The brain is the organ that governs everything, from our involuntary capacity to secrete hormones to the intentional decision of what we think about the current state of the planet. But it is the interaction between this powerful organ and the equally significant hand that makes humans particularly effective and efficient: we are primarily technologists and engineers.

Technology has made us human in a process that began over 3 million years ago and continues to this day.

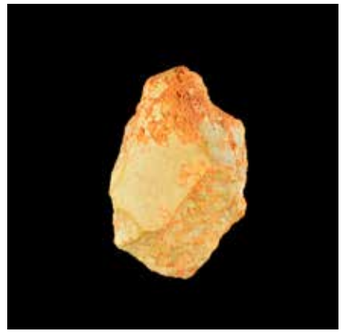
During the first phase of their evolution, hominins essentially needed to compensate for a basic deficiency in our bodies: the absence of tearing nails or fangs. They needed (and we need) to cut, so the first tools were mainly sharp flakes obtained by striking two stones together. This very basic but highly effective technology is called Mode 1 or Oldowan.

Over hundreds of thousands of years, technology evolved, adapting to all raw materials and the ever-increasing needs of hominins with progressively larger brains, metabolic improvements facilitated by survival-applied technology. The methods of tool-making became more standardised, focusing more on producing versatile but well-standardised tools. This is Mode 2 or Acheulean, which appeared in Africa 1 600 000 years ago.

Hominins evolved, as did their needs and the environment they lived in, so technology evolved in parallel, now towards extraordinarily efficient manufacturing methods and increasingly specialised tools. This is Mode 3 or Mousterian, which appeared around 250 000 years ago.

Denticulate racloir tool
TD6 (Gran Dolina, Sierra de Atapuerca)
Cretaceous flint
Museum of Burgos. Junta de Castilla y León

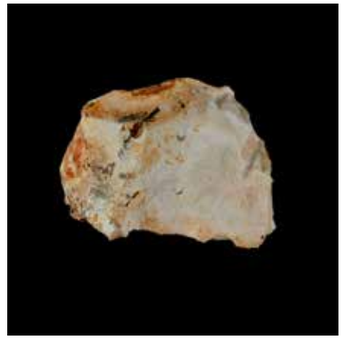
Flake
TD6 (Gran Dolina, Sierra de Atapuerca)
Quartzarenite
Museum of Burgos. Junta de Castilla y León



Core cobble
TD6 (Gran Dolina, Sierra de Atapuerca)
Quartzite
Museum of Burgos. Junta de Castilla y León

Flake
TD6 (Gran Dolina, Sierra de Atapuerca)
Sandstone
Museum of Burgos. Junta de Castilla y León

Denticulated racloir tool
TD6 (Gran Dolina, Sierra de Atapuerca)
Quartzite
Museum of Burgos. Junta de Castilla y León

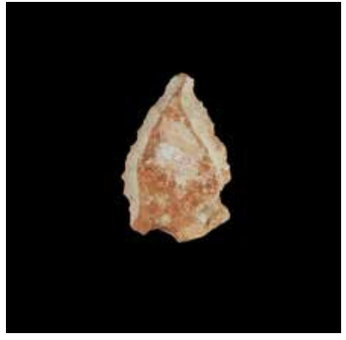


Core cobble
TE09 (Sima del Elefante,
Sierra de Atapuerca)
Cretaceous flint
Museum of Burgos. Junta de Castilla y León

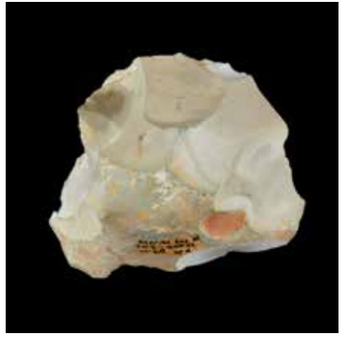
Biface
TN07 (Galería Complex, Sierra de Atapuerca)
Sandstone
Museum of Burgos. Junta de Castilla y León

Biface
TZ (Galería Complex, Sierra de Atapuerca)
Sandstone
Museum of Burgos. Junta de Castilla y León

Biface
TG7 (Galería Complex, Sierra de Atapuerca)
Sandstone
Museum of Burgos. Junta de Castilla y León



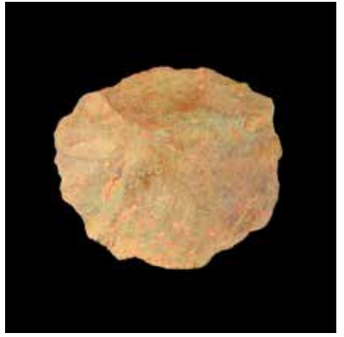
Denticulate proyectile point
TN06 (Galería Complex, Sierra de Atapuerca)
Neogene flint
Museum of Burgos. Junta de Castilla y León



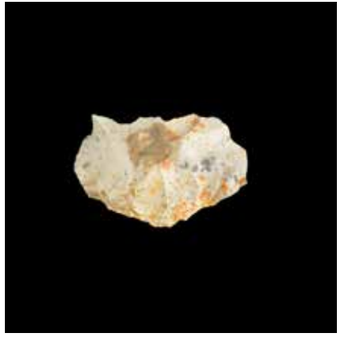
Core cobble
TN06 (Galería Complex, Sierra de Atapuerca)
Cretaceous flint
Museum of Burgos. Junta de Castilla y León

MODE 2

Denticulate tool
TD10 (Gran Dolina, Sierra de Atapuerca)
Cretaceous flint
Museum of Burgos. Junta de Castilla y León



Core cobble
TD10 (Gran Dolina, Sierra de Atapuerca)
Sandstone
Museum of Burgos. Junta de Castilla y León

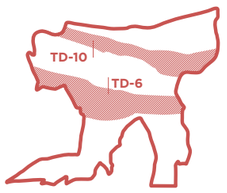


Spine
TD10 (Gran Dolina, Sierra de Atapuerca)
Cretaceous flint
Museum of Burgos. Junta de Castilla y León

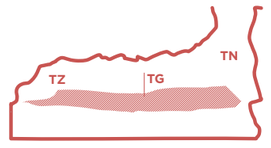
TRANSITION TO MODE 3

Photographs:
Minerva Ferrero. Collections,
Conservation and Restoration Area. CENIEH
Museum of Human Evolution.
Junta de Castilla y León

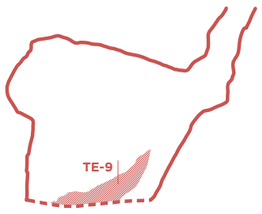
The Trinchera del Ferrocarril archaeological sites (Sierra de Atapuerca)



Gran Dolina



Galería Complex



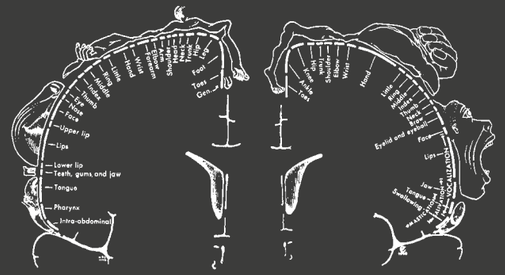
Sima del Elefante

Man thinks because he has hands

Anaxagoras (500 - 428 BC)

Wilder Graves Penfield (1891 - 1976), a neurosurgeon, drew a human body on the cerebral cortex to proportionally reflect the space corresponding to each part.

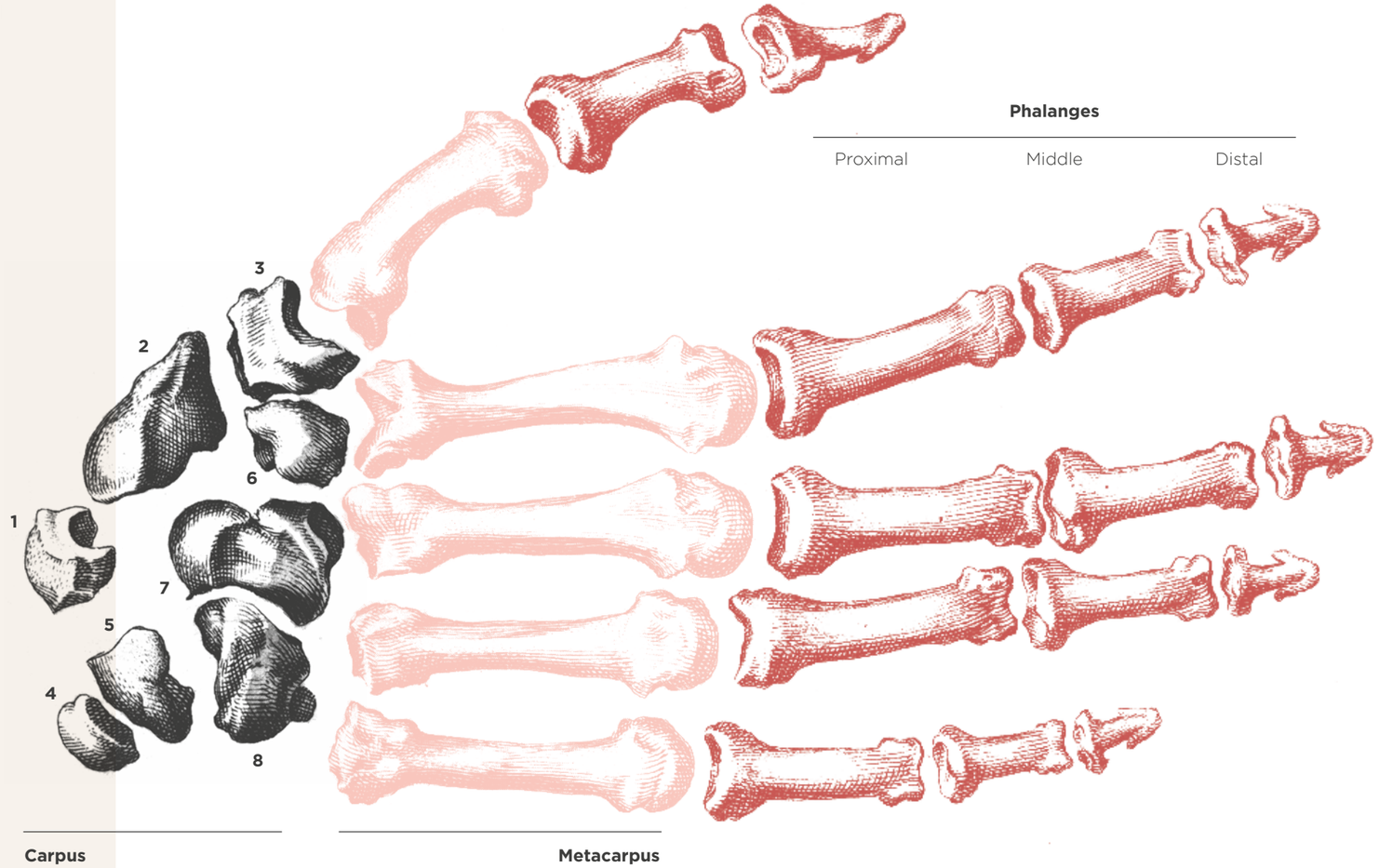
The result was a “homunculus” (as he called it: little man), totally disproportionate, highlighting the large amount of space the hand occupies in the cerebral cortex.



Sensory Homunculus Motor Homunculus

Skeleton of the left hand in dorsal view
Plate II. Anatomical Atlas.
Crisóstomo Martínez

1. Lunate
2. Scaphoid
3. Trapezium
4. Pisiform
5. Pyramidal
7. Trapezoid
7. Capitate
8. Hamate



Elusive fossils

The bone elements of hands are not abundant in the fossil record. Even in historical cemeteries, they are the parts of the skeleton that are most easily lost. The reason is that wrist bones (carpals) are small, and the bones of the palm (metacarpals) and fingers (phalanges) are fragile. For this reason, there are hardly any skeletal remains of hands until burials began to be practiced among Neanderthals and modern humans. There are exceptions, however, such as a couple of very complete australopithecines and the skeletons of a South African species called *Homo naledi*.

In the Sierra de Atapuerca, there are hand bone remains in three sites. The oldest is a phalanx from the Sima del Elefante site, approximately 1 200 000 years old, provisionally attributed to *Homo erectus*. At the Gran Dolina site, hand bones of several individuals assigned to the species Homo antecessor have been found. They are dated at 800 000-900 000 years. Finally, the Sima de los Huesos site has provided the greatest number of hand bone remains in the world, as is the case with all regions of the skeleton. From an evolutionary point of view, they are direct ancestors of the Neanderthals, and their age is around 400 000 years.

Sima del Elefante

In 2007, at level TE9C of the Elephant Pit, a fragment of human jaw with teeth was found, estimated to be at least 1 200 000 years old.

The following year, 2008, there was another discovery of great significance: a human phalanx. With this phalanx, it has been observed that the little finger of this individual is very similar to ours, that of *Homo sapiens*.

Proximal phalanx. Fifth finger
TE9C level of Sima del Elefante (Trinchera del Ferrocarril, Sierra de Atapuerca).
Museum of Burgos. Junta de Castilla y León

Photographs: Carlos Lorenzo. IPHES

Gran Dolina
TD6 level

During the excavation campaign of 1994, human fossils appeared in TD6 level of the Gran Dolina site; these were the oldest found in Europe up to that time.

Their hands do not exhibit features similar to those of Neanderthals; therefore, they are not on the Neanderthal evolutionary line. Thus, this species is considered the last common ancestor of sapiens and Neanderthals.

A significant portion of the bones, including the phalanges, show cut marks; indicating they were consumed by other hominins. This is the first documented case of cannibalism.

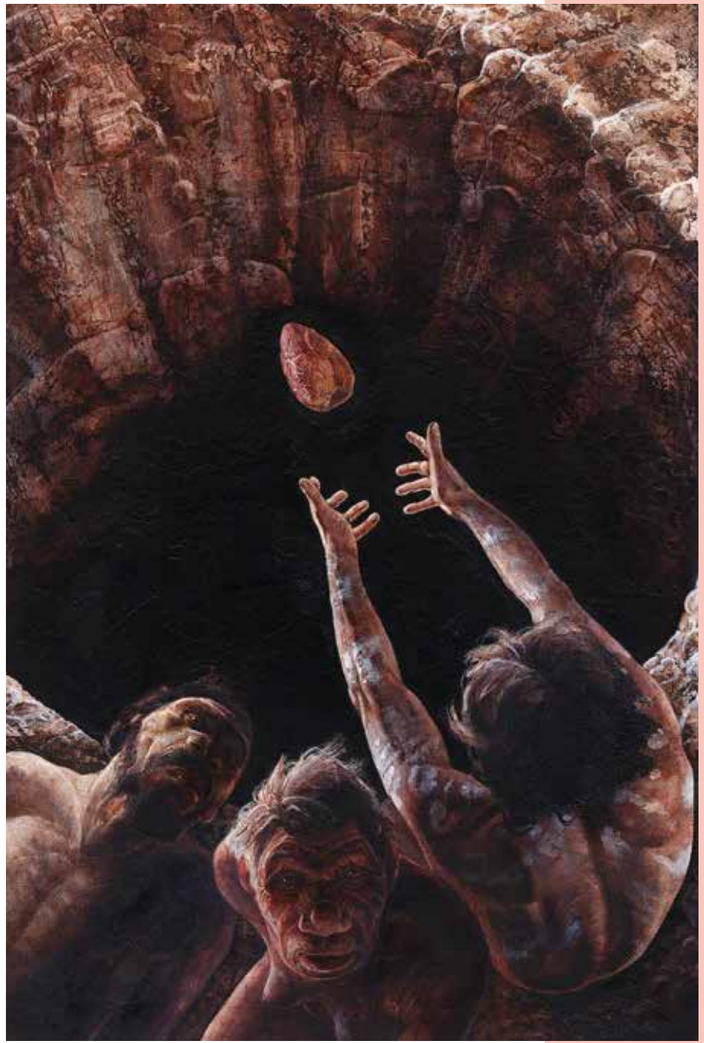
Cannibalism
Kennis & Kennis / MSF

Left arm fossils
Homo antecessor

Left arm fossils from different individuals.
Gran Dolina,TD6
(Trinchera del Ferrocarril, Sierra de Atapuerca)
Museum of Burgos. Junta de Castilla y León

(above)
Distal fragment of the humerus with elbow joint
(centre)
Radio
(below)
Hand bones

Photographs:
Humerus and radius: Laboratory Of Human Evolution. UBU
Hand bones: Carlos Lorenzo. IPHES



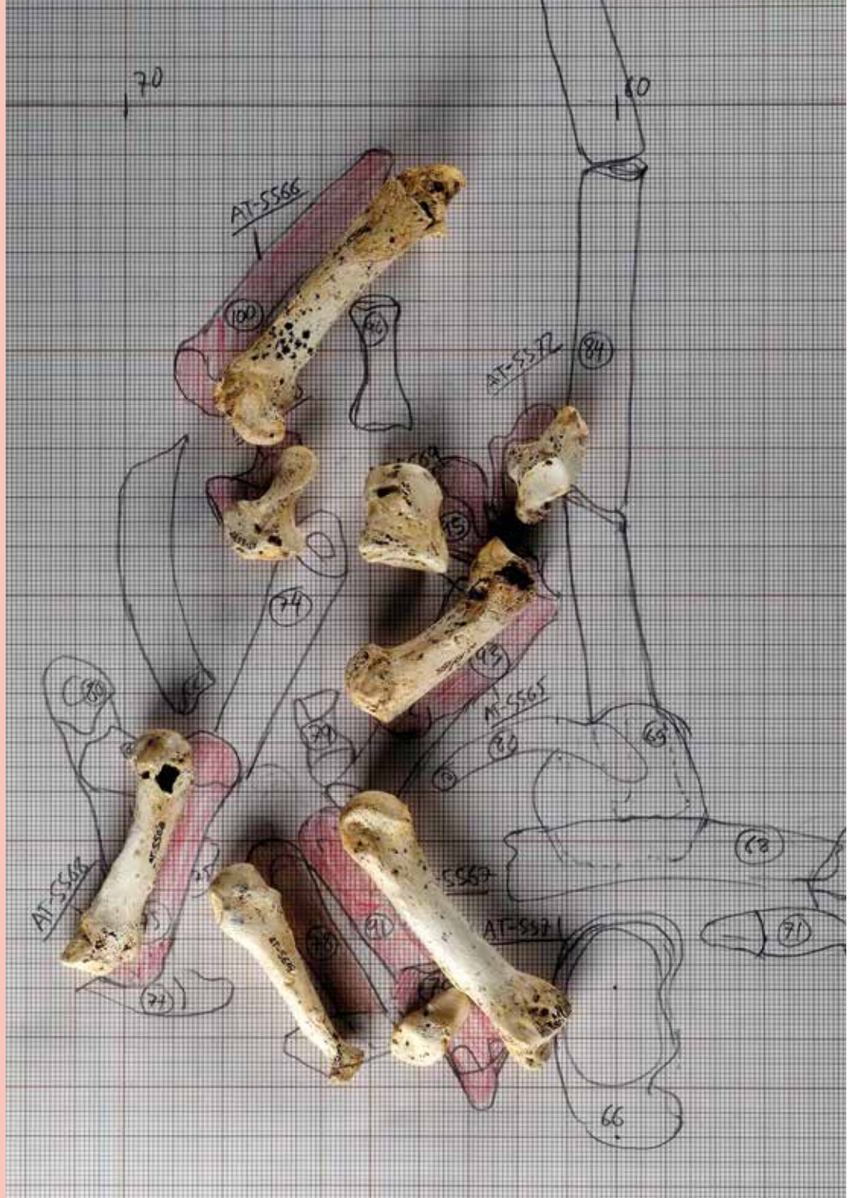
Excalibur
Kennis & Kennis / MSF

Sima de los Huesos

Sima de los Huesos is the site with the most Middle Pleistocene human fossils in the world. The discovery of fossils corresponding to about thirty individuals has allowed the study of a population and thus recognition of variability among individuals.

The hands of individuals from Sima de los Huesos were very similar to those of modern humans, but more robust. This robustness can be clearly seen in the distal phalanges and in the carpus, specifically in the carpal tunnel which is very wide to accommodate the strong tendons going to the hand.

Studying the morphology of these hands reveals that they had the same ability to make precision grips as modern humans, but additionally, they had much more strength.



Too many skeletons

The problem with having too many skeletons is that it is difficult to know which bone belongs to which. A human skeleton has 206 bones, and in Sima de los Huesos there are around 30 skeletons, all mixed in a very small space. Additionally, most of the bones are broken and it is necessary to find the different fragments and fit them together. That is why the reconstruction work of the thirty skeletons is laborious. With the bones of the hands and feet the puzzle is colossal.

But there is an exceptional case; in 2008, some hand bones were found together: part of the wrist or carpus (trapezium, trapezoid, capitate, hamate) and all the bones of the palm or metacarpals. Since they are from the same side and there are no repeated elements, everything suggests they are from the same hand.

Right hand on excavation plan
Sima de los Huesos
(Cueva Mayor, Sierra de Atapuerca)
Museum of Burgos. Junta de Castilla y León

Photographs:
Javier Trueba / Madrid Scientific Films

Left arm fossils

Reconstruction made from fossils of different individuals.

Sima de los Huesos (Cueva Mayor, Sierra de Atapuerca)

Museum of Burgos.
Junta de Castilla y León

(Over)

Hand bones

(In left to right direction)

Ulna, radius and humerus

Photographs:

Humerus, ulna an hand bones: Javier Trueba / Madrid Scientific Films

Radius: Laboratory Of Human Evolution. UBU

Right arm fossils

Reconstruction made from fossils of different individuals.

Sima de los Huesos (Cueva Mayor, Sierra de Atapuerca)

Museum of Burgos.
Junta de Castilla y León

(In left to right direction)

Humerus, radius and ulna

(Over)

Hand bones

Photographs:

Humerus and ulna: Javier Trueba / Madrid Scientific Films

Radius: Laboratory Of Human Evolution. UBU

Hand: Museum of Human Evolution.
Junta de Castilla y León

What the hand does, the mind remembers

María Montessori (1870 – 1952)

There could be no technology without a prehensile organ, that is, without a grip. Birds have it in their beaks, which they handle skillfully. Their arms are adapted for flight, turned into wings, and they cannot rely on the fingers of their hands to manipulate objects. Mammals use their mouths to hold things. But two hands are needed to make real tools. A single grip, no matter how skilfully managed, is not enough. Primates need both hands to grip branches, which is why they have prehensile hands. Unlike a beak or a snout, which are rigid, primate hands are adaptable; they can mold to any object. Some primates, like capuchin monkeys and chimpanzees, use them to create simple tools, but they cannot make a cutting edge. It was with the edge of stone that we began to be different. Then came other edges, no longer of stone but metallic: copper, bronze, and iron. Now we live in the age of the laser, the edge that shapes our artificial world.

Capoeira Series
Isabel Muñoz
Baryta print
2000

In human evolution, the oldest hands known from fossils belong to Ardipithecus. Particularly those of Ardi, a female of the species *Ardipithecus ramidus* who lived in Ethiopia around four and a half million years ago. It was not a hand like that of a chimpanzee, but neither like ours.

The fingers were long and the thumb short. They could not easily bring the tip of the thumb together with the tips of the other fingers as we do.

In contrast, the Australopithecines had a hand nearly identical to ours for over four million years. It does not seem that early Australopithecines knapped stones by striking one against another to produce sharp edges.

They probably did not need them. A sharp edge is useful for cutting meat, and Australopithecines did not regularly consume animals.

Some groups of Australopithecines began doing so perhaps three million years ago, and knapped stones became increasingly necessary.

But it was with *Homo habilis,* around two and a half million years ago, when anatomy and technology began the slow co-evolution that has led to the species that has transformed the world: us, *Homo sapiens.*

Australopithecus garhi
Kennis & Kennis / MSF

Hand skeleton replicas:

1: *Australopithecus sediba*
2: *Homo neanderthalensis*
3: *Homo sapiens*
JLA

Photographs: Javier Trueba / Madrid Scientific Films

Neanderthals were very robust throughout their bodies, much more so than us. They were built for explosive efforts. Strength predominated over endurance, unlike in modern humans. The metacarpal bone of the thumb and the phalanges of the nails on all the fingers of Neanderthals reflect the strength of their hands, which closed like a vice.

The skeleton of Kebara is that of a Neanderthal found in a cave on Mount Carmel (Galilee, Israel). It is a partial skeleton, but very complete in the preserved part. This is a burial site created by Neanderthals.

Kebara Skeleton 2
Replica
JLA

Photographs: Javier Trueba / Madrid Scientific Films

Mind-Hand

The Shaolin Monastery (Henan, China) is renowned for its skill in the use of the sword (jian).
The goal of the Shaolin tradition is to "harmonise the body and develop concentration through activity".

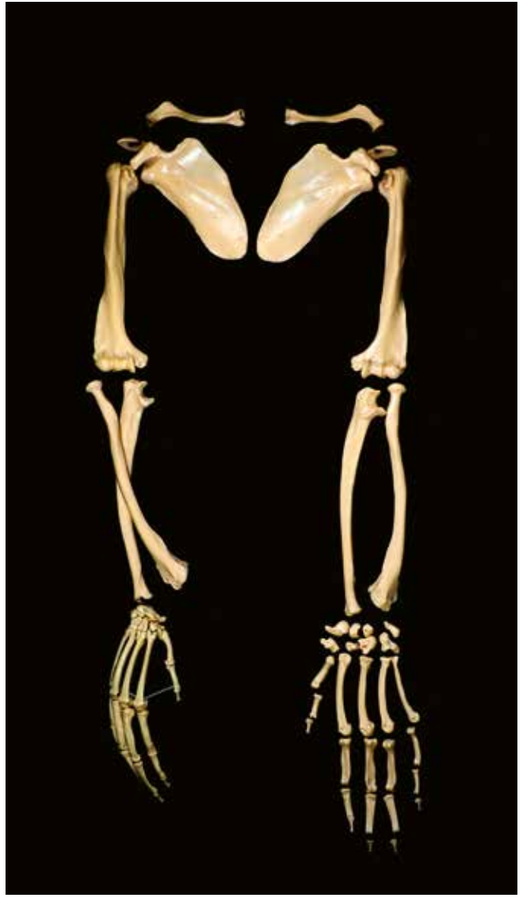
Shaolin Series
Isabel Muñoz
Pigment ink print on baryta paper
1999

Anatomy and biomechanics

We often compare humans to chimpanzees because they are our closest relatives. However, we did not descend from chimpanzees, so they are not a time machine to understand our ancestors. Chimpanzees exhibit many skeletal adaptations to jungle life, which they likely developed on their own.

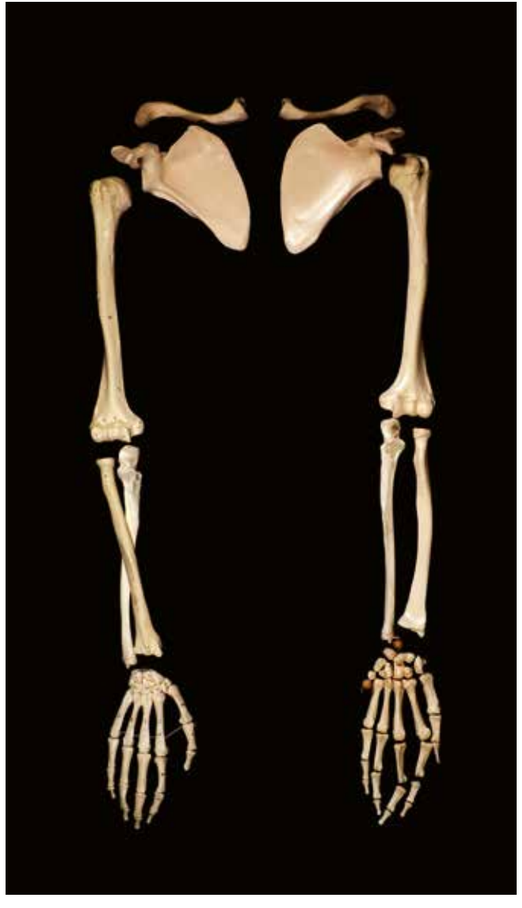
The scapula or shoulder blade of a chimpanzee is very distinctive. Compared to the human scapula, it is elongated along the direction of the spine (from skull to pelvis). The forearm bones of a chimpanzee (ulna and radius) are also very long and curved.

Similarly, chimpanzee hands are elongated, both in terms of the bones of the palms (metacarpals) and the phalanges of the fingers. The thumb is not much shorter than ours but is thinner. Our thumb is notably thick, demonstrating its importance in handling objects. Unlike chimpanzees, whose fingers are curved due to their arboreal lifestyle, our fingers are straight because we no longer swing from branches.



Scapular girdle and forelimb of a chimpanzee
Anatomical model
JLA

Photographs: Javier Trueba / Madrid Scientific Films



Scapular girdle and human upper limb
Anatomical model
JLA

Photographs: Javier Trueba / Madrid Scientific Films

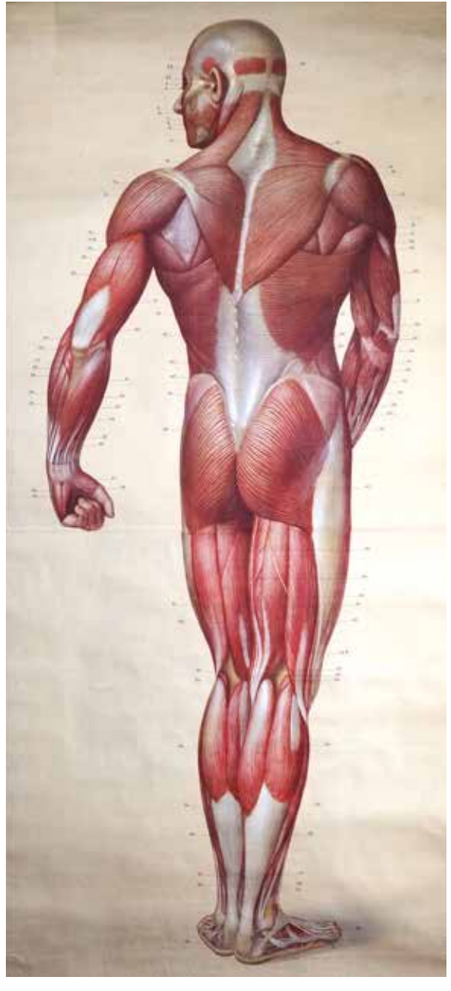
We cannot see our back, but there are very important muscles that move the scapula (shoulder blade) and the arm. We suggest you focus on three paired muscles: the trapezius, which has a diamond or hood shape when the left and right sides are joined; the deltoid, which rounds the shoulder; and the latissimus dorsi, which occupies the sides and extends towards the arm.

The muscles of the forearm also deserve our attention because they move the wrist and fingers. In this dorsal view, most of the muscles are extensors.

In reality, a significant portion of the muscles throughout the body is involved in the movements of the arms and hands. Precision in throwing projectiles (stones or sticks were the first) depends not only on the anatomy of the hand or arm but also on the bipedal posture.

Anatomical poster
Deutsches Hygiene Museum Dresden
Design period: 1950 - 1959
JLA

Photographs: Javier Trueba / Madrid Scientific Films



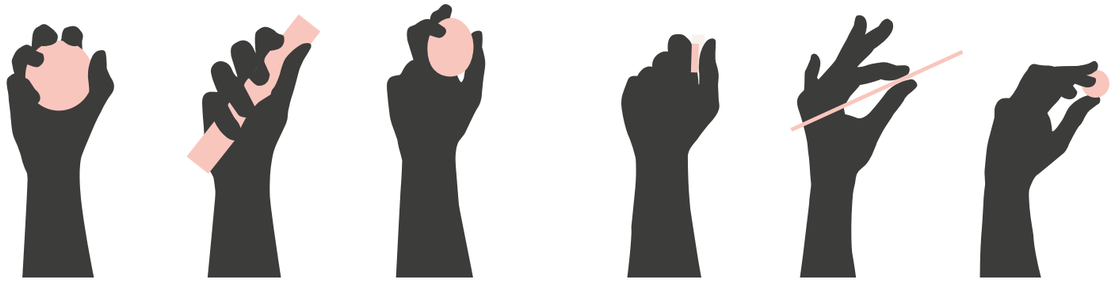
Power and precision grips

We need a strong grip when holding a rigid bar, such as the handle of a racket or a hammer.

In this case, we wrap our fingers (index to little finger) around the bar and cross the thumb over to improve the grip.
But if we want to strike with more precision and less force, the thumb rests on the handle and does not cross over the other fingers.

When we want to handle a spherical object, we wrap our fingers around it without pressing it against the palm of the hand when it is small. If it is something very small, we only use the pinch grip between the pads of the thumb and index finger, and sometimes the middle finger provides support.

It has traditionally been thought that the precision grip (the pinch) is the most important function of the human hand, both for feeding ourselves by allowing us to pick up small grains and seeds, and for manipulating and making tools. However, the power grip was very useful for our survival; it is our weapon, as we do not have claws or fangs.



Power

Precision

To deliver a blow with a weapon or tool, such as a hammer, the “power grip” is used.

Geologist’s hammer
Steel
JLA

Photographs: Javier Trueba / Madrid Scientific Films

To handle tools such as pencils, brushes, or spatulas, the “precision grip” or “pinch grip” is also used, involving only the first and second fingers.

Untitled
Máximo Trueba
Bronce
Javier Trueba

Photographs: Javier Trueba / Madrid Scientific Films

To throw a small ball, the “precision grip” or “pinch grip” involves the first, second, and third fingers.

The Point within the Movement
Manuel Boix
Bronze
JLA

Photographs: Javier Trueba / Madrid Scientific Films

The hand can be compared to a puppet because, for the most part, the wrist and fingers do not move with muscles of the hand itself but are moved by tendons of muscles originating from the elbow region, as if they were puppet strings.

The result is that the hand, like a puppet, has enormous mobility and precision of movement. Thanks to these muscles, the hand can open or close into a fist, tilt to one side or the other (as when waving goodbye), move forwards and backwards, and present either the back or the palm to our eyes.

Skeleton
(puppet)
Edu Borja
Arbolé Theatre

Photographs: P. Girón

Individual of the Bodi ethnicity
Omo River Series
Isabel Muñoz
Pigment ink print on baryta paper
2007

The intangible hand

Hand of Irulegi

On the back of this plaque, there is a text of five words that has not yet been deciphered. Epigraphists and linguists have indicated that it is an adaptation of the Iberian script to the language of the Vascones. It is the first known text of considerable length in the Vasconic language to date.

The hand has a hole for hanging and was found at the entrance of a house in an Iron Age settlement in the Aranguren Valley (Navarra). It has been interpreted as a symbol of home protection. The first word, "sorioneku", has been deciphered and is similar to the Basque word *zorioneko*, meaning "of good fortune".

Replica (original: bronze sheet)
Iron Age (1st century BC)
JLA
Aranzadi.

Photographs: Javier Trueba / Madrid Scientific Films

Hospitality tessera from Paredes de Nava

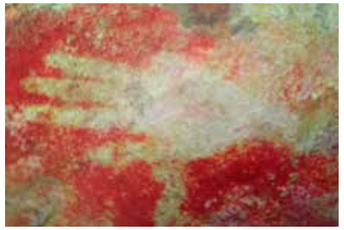
This piece is engraved with a Celtiberian text in Latin alphabet characters. It establishes a hospitality pact between Caisaros (of the tribe of the Ceccicos) and the tribe or city of Argailos.

Hospitality pacts, which acted as safe-conducts, were common practice among the different pre-Roman Indo-European peoples and continued after Romanisation.

The "handshake" as a greeting has deep roots in time. A gesture that shows those who greet each other do not carry weapons in their hands, that they are not ready to attack.

Early 1st century AD
Bronze
Museum of Palencia.

Photographs: Museum of Palencia



Hand 7

Hand 9

Photographs:
H. Collado

In the Maltravieso cave, 61 hand representations have been documented; the oldest of them are around 65 000 years old. In this panel, four hands were depicted, although one of them is not clearly visible.

All were airbrushed with red pigment and have the little finger hidden. They were not amputated; they are bent beneath their palms.

Panel CI of the Hall of Columns (Maltravieso Cave)
Replica
Museum of Cáceres.
On loan from the Government of Extremadura

Photographs: José Miguel González Bornay. Museum of Cáceres.

In this shelter, various human groups have been leaving the imprint of their hands for about nine thousand years.

Thanks to the quantity and quality of the represented motifs, 829 hands and various geometric figures (circles, ovals, or stars), the Cave of Hands was declared a UNESCO World Heritage Site in 1999.

Cave of Hands
(Río Pinturas, Santa Cruz, Argentina)

Photographs: Javier Trueba. Madrid Scientific Films

The hand is the tool of the soul

(Miguel Hernández, 1937)

Hasta Mudras, or hand mudras, are symbolic gestures loaded with meaning and power. The different postures promote body-mind balance; their practice is fundamental for Hindus, Buddhists, or yogis.

The close relationship between hand postures and the mind is also recognised in the West; Frank R. Wilson refers to hand activity when speaking of the "hidden physical roots of human capability", and Heidegger maintains that every hand movement leads to thought.

Buddha Amitayus
(the Buddha of Long Life)
Hands in dhyana mudra.
Gilded copper alloy
Beijing, China
18th century
National Museum of Anthropology, Madrid
CE8215

Photographs: Arantxa Boyero Lirón.
National Museum of Anthropology

Buddha Amitabha
Hands in dhyana mudra.
Bronze
Osaka, Japan
19th century
National Museum of Anthropology, Madrid
CE8395

Photographs: Arantxa Boyero Lirón.
National Museum of Anthropology

Dhyani Buddha Aksobhya
One of the five wisdom Buddhas, of Indian influence.
Right hand in blumiparsha mudra and left hand in dhyana mudra.
Gilded copper
Tibet
17th century
National Museum of Anthropology, Madrid
CE8400

Photographs: Arantxa Boyero Lirón.
National Museum of Anthropology

Green Tara, Syamatara
Hands in vitarka mudra position.
Gilded copper
Nepal
19th century
National Museum of Anthropology, Madrid
CE8426

Photographs: Arantxa Boyero Lirón.
National Museum of Anthropology

Green Tara, Syamatara
Right hand in varada mudra, left hand holding a lotus bud.
Gilded bronze
Tibet (China)
18th century
National Museum of Anthropology, Madrid
CE8445

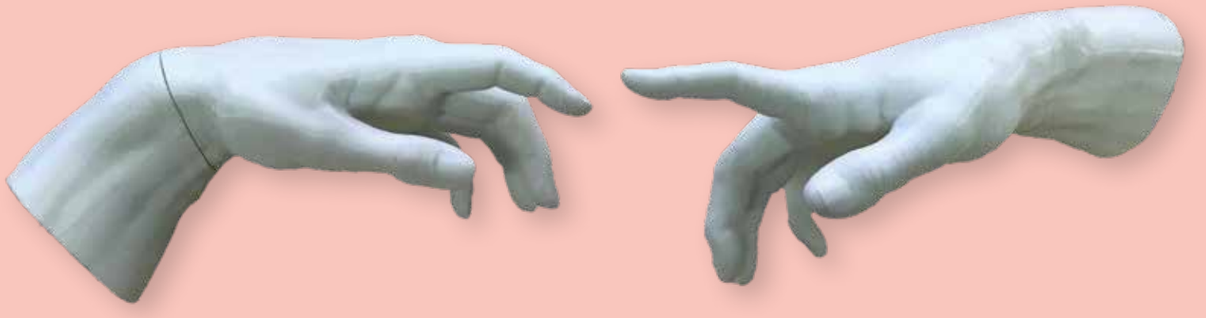
Photographs: Arantxa Boyero Lirón.
National Museum of Anthropology

Shiva Nataraja
Hand raised in abhayamudra.
Uttar Pradesh (India)
Brass
17th - 19th centuries
National Museum of Anthropology, Madrid
CE20477

Photographs: Arantxa Boyero Lirón.
National Museum of Anthropology

Hand of a Buddhist Deity
in abhayamudra
Bronze
Thailand
19th century
National Museum of Anthropology, Madrid
CE8449

Photographs: Arantxa Boyero Lirón.
National Museum of Anthropology



Hands installation (hall of mirrors)
Interpretation of The Creation of Adam
Fresco on the ceiling of the Sistine Chapel
Michelangelo Buonarroti

By Ricardo Vergne

CASTILLA Y LEÓN

MUSEO DE LA EVOLUCIÓN HUMANA

Junta de Castilla y León