1 The Mysterious Hand

'A hand is not simply part of the body, but the expression and continuation of a thought which must be captured and conveyed […] .'

Honoré de Balzac[1]

'The hand is the window on to the mind.'

Immanuel Kant[2]

'If the body had been easier to understand, nobody would have thought that we had a mind.'

Richard Rorty[3]

The Multiple Essences of the Hand

A hand in the attitude of benediction embellished with charms to increase its power, late Roman period, bronze.

We regard our own hand as a commonplace and self-evident member of the body, but in fact it is a prodigious precision instrument that seems to have its own understanding, will and desires. Often it even appears to be both the origin and the expression of pleasure and emotion. The hand, its motions and

gestures, are expressions of the person's character to the same degree as the face and body physique. Hands also have their unique appearances and features; they have their distinct personalities. They even reveal one's occupation and craft; just think of the robust hands of a steelworker or blacksmith, the often mutilated hands of a cabinet-maker, the hands of a shoemaker hardened and cracked by handling of the substances of the trade, the eloquently speaking hands of a pantomime artist, or the delicate, utterly precise and quick hands of a surgeon, pianist or magician. Hands are generic organs characteristic to *Homo sapiens*, but at the same time they are unique individuals. Imagine the hand of a child full of clumsy and innocent curiosity and excitement, and the nearly useless hand of an old person deformed by hard work and articular rheumatism. The vivid movement of the contours of Henri Matisse's colourful paper cut-outs acquire a special meaning after having seen a photograph of the aging artist warming his aching finger joints in the feathers of domesticated pigeons, or on his sickbed drawing on a sheet of paper on the wall with a charcoal attached to the end of a long bamboo stick. André Wogenscky, Le Corbusier's close assistant for 20 years, describes his master's hands poetically and suggestively:

The French mime artist Marcel Marceau during a performance at Sadler's Wells Theatre in London.
'The art of mime is the portrayal of the human being in its most secret yearnings. By identifying itself with the elements which surround us, the art of the mime makes visible the invisible and concrete the abstract.' Marcel Marceau.

> Then I would let my eyes go from his face down to his hands. I would then discover Le Corbusier. It was his hands that revealed him. It was as if his hands betrayed him. They spoke all his feelings, all the vibrations of his inner life that his face tried to conceal […] Hands that one might have thought Le Corbusier had drawn himself, with that trait made of a thousand small successive traces that seemed to look for one another but that in the end formed a precise and exact line, that unique contour that outlined the shape and defined it in space. Hands that seemed to hesitate but from which

A child's hand explores the world eagerly. The child's first impressions of the world are tactile images.

> precision came. Hands that always thought, just like he did in his thinking, and on his hands one could read his anxiety, his disappointments, his emotions and his hopes.
> Hands that had drawn, and were to draw, all his work.[4]

Le Corbusier appears as a somewhat enigmatic and distant person in literature written about him, his life and work, but his hands as observed by his assistant seem to reveal his inner character and intentions.

Hands can tell epic stories of entire lives; in fact, every epoch and culture has its characteristic hands; just look at the varying hands of the countless portraits through the history of painting. Moreover, every pair of hands is equipped with singular patterns of fingerprints, which do not change at all after five months prior to the person's birth; these engravings on the human skin are the secret prenatal hieroglyphs of individuality.

Our hands are our reliable and diligent servants, but now and then they seem to take command, lead their independent lives and demand their own liberties. But then, the integral completeness of the human figure is so powerful that we accept an armless statue as a valid and aesthetically pleasing representation of the human constitution, not as a deliberate depiction of mutilation. '[N]othing essential is missing. Standing before them, one has the sense of a profound wholeness, a completeness that allows for no addition,' Rainer Maria Rilke, the poet, writes of Auguste Rodin's vivid

Henri Matisse cutting painted paper in his studio in the Hôtel Régina in Nice, 1952.

torsos.[5] Or are we here rather seduced by the magic integrity of an artistic masterpiece?

The poet also describes the multiple roles and determinedly independent lives of the human hands:

> There are hands that walk, hands that sleep and hands that wake; criminal hands weighted with the past, and hands that are tired and want nothing more, hands that lie down in a corner like sick animals who know no one can help them. But then hands are a complicated organism, a delta in which life

> from the most distant sources flows together, surging into the great current of action. Hands have stories; they even have their own culture and their own particular beauty. We grant them the right to have their own development, their own wishes, feelings, moods, and occupations […] .[6]

The hand has its social roles and behaviours, its amorous as well as hostile and aggressive acts, its gestures of welcome and rejection, friendship and animosity. The hands of God and Christ, as well as of the Pope, are hands of benevolence and blessing. The hand of Mucius Scaevola is the hand of bravery and heroic self-control, whereas the hands of Cain and Pontius Pilate are organs of crime and guilt. Regardless of its self-sufficiency, the hand may momentarily lose its independence and identity, and fuse with the body of the other. As Rilke observes: 'A hand lying on the shoulder or thigh of another body no longer belongs completely to the one it came from: a new thing arises out of it and the object it touches or grasps, a thing that has no name and belongs to no one, and it is this new thing, which has its own definite boundaries, that matters from that point on.'[7] The hands of a mother and child or of two lovers turn into an umbilical cord that unites the two individuals.

Works of art and architecture extend the human hand through both space and time. When looking at the *Rondanini Pietà* (1555–64) in Castello Sforzesco in Milan, I can feel the passionate but already feeble hands of Michelangelo approaching the end of his life. The works of a great architect likewise invite the imagined presence of his figure and hand, as the architectural space, scale and detailing are unavoidably products and projections of the maker's body and hand. The greater the work, the more present the hand of the maker. I cannot look at a Vermeer painting at a close distance without thinking of the painter stooped over his painting with a thin, sharply shaped brush in his hand. No, I do not imagine the painter, I become him. My entire physique changes and my hand guides the brush to the still wet 'little patch of yellow wall' in his *View of Delft* (1660–1) that Marcel Proust admired and wrote about.[8]

As I am looking at a Suprematist painting by Kasimir Malevich, I do not see it as a geometric gestalt but as an icon meticulously painted by the artist's hand. The surface of cracked paint conveys a sense of materiality, work and time, and I find myself thinking of the inspired hand of the painter holding a brush.

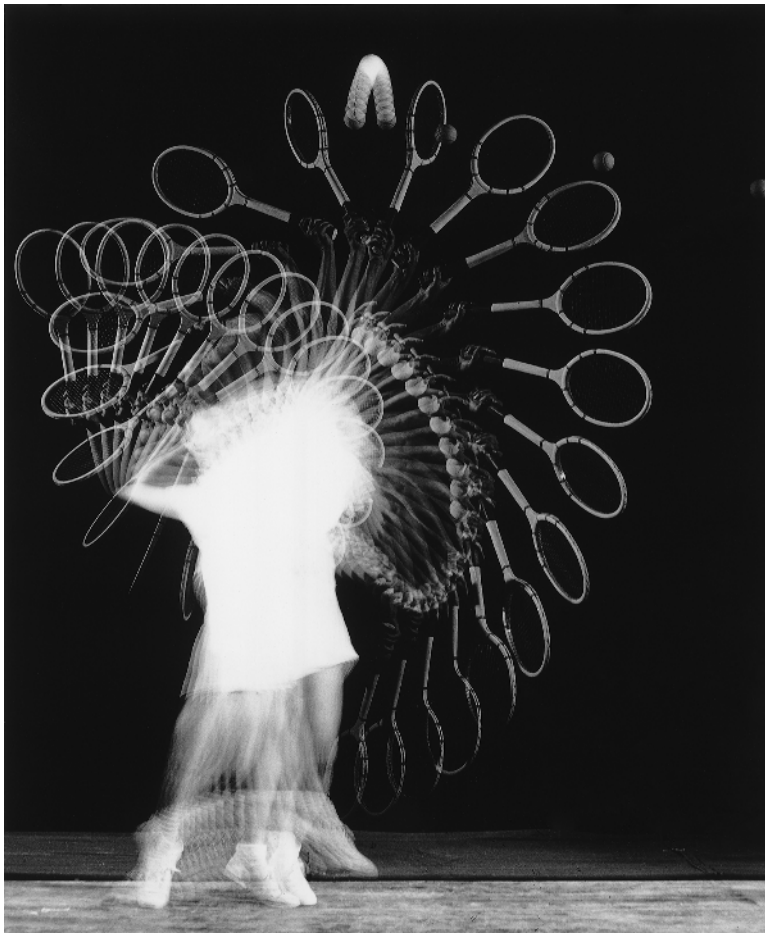
'A hand lying on the shoulder or thigh of another body no longer belongs completely to the one it came from.' Rainer Maria Rilke. Auguste Rodin, *The Kiss* (detail), marble, complete sculpture 183 x 110 x 118 cm, 1886. Musée Rodin, Paris. Judging by the year in which the sculpture was created, it is likely that it was initially intended for *The Gates of Hell*.

What is the Hand?

We use the notion of the 'hand' carelessly and without much thought, as if its essence were self-evident. 'The human hand is so beautifully formed, its actions so powerful, so free and yet so delicate that there is no thought of its complexity as an instrument; we use it as we draw our breath, unconsciously,' Sir Charles Bell wrote in 1833.[9] But how should we really define the hand? When we say 'give me your hand', or 'I place this matter in his hands', or we speak of 'handwork' or 'handshake', what exactly do we mean?

Everyday use of the word as well as classical *surface anatomy* would probably argue that the hand is the human organ that extends from the wrist to the fingertips.[10] From the viewpoint of *biomechanical anatomy*, the hand would be seen as an integral part of the entire arm. But the arm also functions in a

dynamic coordination with the muscles of the neck, back, and even the legs, and in fact with the rest of the body. Training in most sports aims exactly at this complete integration of the actions of the hands with the entire body. When I raise my hand for an oath or greeting, or give my fingerprints as evidence of my identity, the hand stands for my entire persona. *Physiological and functional anatomy* would even consider those parts of the brain that regulate hand functions as part of the hand. Altogether, we are bound to admit that the hand is everywhere in our body, as well as in all our actions and thoughts, and thus the hand is fundamentally beyond definability. As Frank R Wilson, neurologist and writer, argues in his seminal study of the

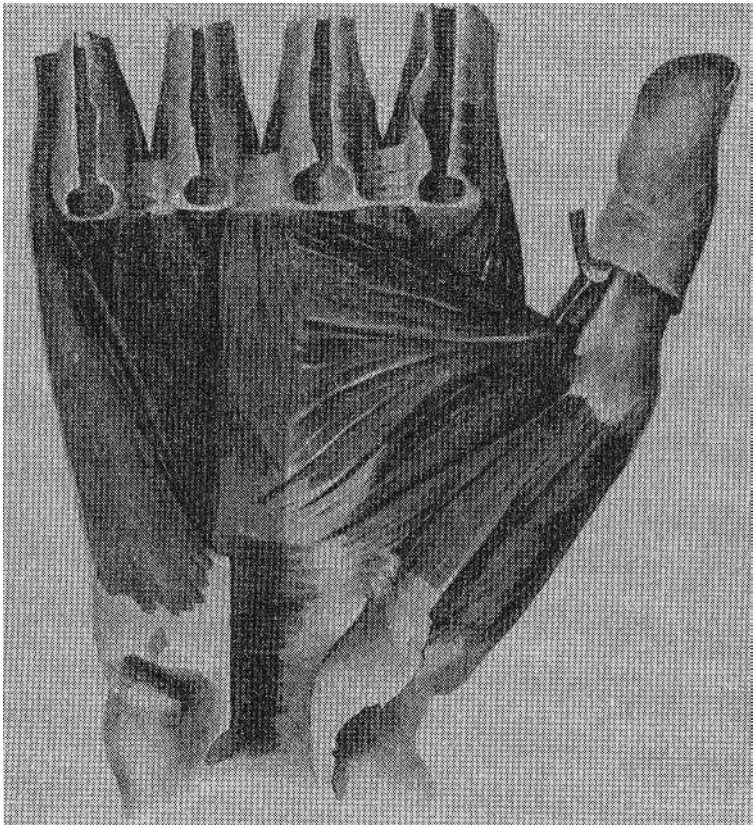


Hands act in collaboration and coordination with the entire body.
Harold E Edgerton, *Tennis Player*, 1938, gelatin silver print.

evolution and significance of the human hand entitled *The Hand: How Its Use Shapes the Brain, Language, and Human Culture*:

> Bodily movement and brain activity are functionally interdependent, and their synergy is so powerfully formulated that no single science or discipline can independently explain human skill or behaviour […] . The hand is so widely represented in the brain, the hand's neurological and biomechanical elements are so prone to spontaneous interaction and reorganization, and the motivations and efforts that give rise to individual use of the hand are so deeply and widely rooted, that we must admit we are trying to explain a basic imperative of human life.[11]

Recent anthropological and medical research and theories even give the hand a seminal role in the evolution of human intelligence, language and symbolic



The mobility of the thumb results from the arrangement of nine muscles that enter the thumb from the forearm and from the hand.

thought. The amazing mobile versatility, learning capacity, and apparently independent functions of the hand may not be a result of the development of the human brain capacity, as we tend to think, but the extraordinary evolution of the human brain may well have been a consequence of the evolution of the hand. 'Aristotle erred in asserting that humans had hands because they were intelligent; Anaxagoras was, perhaps, more correct in stating that humans were intelligent because they had hands,' as Marjorie O'Rourke Boyle notes.[12]

Wilson sees the brain as well as the interdependence of the hand and brain omnipresent in the body:

> The brain does not live inside the head, even though it is its formal habitat. It reaches out to the body, and with the body it reaches out to the world. We can say that the brain 'ends' at the spinal cord, and that the spinal cord 'ends' at the peripheral nerve, and the peripheral nerve 'ends' at the neuromuscular junction, and on and on down to the quarks, but brain is hand and hand is brain, and their interdependence includes everything else right down to the quarks.[13]

We can certainly conclude that 'the hand speaks to the brain as surely as the brain speaks to the hand.'[14] Even beyond its physical and neurological significances, Wilson regards the hand as an essential constituent of the story of human intelligence and its gradual evolution: '[A]ny theory of human intelligence which ignores the interdependence of hand and brain function, the historic origins of that relationship, the impact of that history on developmental dynamics in modern humans, is grossly misleading and sterile.'[15] We usually think that our hands deal merely with the concrete, material world, but some theorists attribute to the hand a significant role even in the emergence of symbolic thought.[16]

Hand, Eye, Brain and Language

The human hand is the product of evolution. The extraordinary mobility of the arm and the hand, as well as the human eye–hand coordination and precise judgment of spatial positions and relations were already developed when the ancestors of hominids lived and moved up in trees. The earliest direct ancestors of humans were the australopithecines – misleadingly named 'southern apes' – who walked upright. The transition from moving on the branches of trees to walking on two legs on the flat floor of the savannah

changed the role of the hands and liberated them for new purposes and a new evolutionary development. In the 1960s the discovery of the remains of 'Lucy', who had lived 3.2 million years ago in Hadar in East Africa, was an anthropological sensation; our now famous female ancestor was named after the Beatles song 'Lucy in the sky with diamonds' that was played on a tape recorder in the anthropologists' camp.[17] Prevailing theories already assumed that the human brain could have evolved as a consequence of the increase in tool use. 'The structure of modern man must be the result of the change in the terms of natural selection that came with the tool-using way of life […] From the evolutionary point of view, behaviour and structure form an interacting complex, with each change in one affecting the other. Man began when populations of apes, about a million years ago, started the bipedal, tool-using way of life,' anthropologist Sherwood Washburn argues.[18]

The most seminal single aspect in the evolution of the hand was that the physical opposition between the thumb and fingers became increasingly articulate. At the same time this opposition combined with subtle changes occurring in the bones that support and strengthen the index finger.[19] These anatomical changes enabled both the power and the precision grip in tool handling.[20]

Hand tools from the Palaeolithic era, Czech Republic.

Current theories suggesting that language originates in early collective tool manufacture and tool use imply that even the development of language is linked with the co-evolution of the hand and the brain. Wilson argues assuredly: 'It is a virtual certainty that complex social structure – and language – developed gradually in association with the spread of more highly elaborated tool design, manufacture, and use.'[21] The further refinement of the hand led to further development of the brain's circuitry:

> There is growing evidence that *Homo sapiens* required in its new hand not simply the mechanical capacity of refined manipulative and tool-using skills but, as time passed and events unfolded, an impetus to the redesign, or reallocation, of the brain's circuitry. The

new way of mapping the world was an extension of ancient neural representations that satisfy the brain's need for gravitational and inertial control of locomotion.[22]

The development and refinement of tool use is assumed to be related to the emergence of subjectivity and purposive thinking: 'It has been said that language is the prelude to the coming of man. That may be, but even before language comes *thinking in terms of tools*, i.e., the realization of mechanical connections and the invention of mechanical means for mechanical ends. To put it briefly, before the advent of speech, action comes to have a *subjective meaning*, i.e., it becomes consciously purposive.'[23] Psychologist Lev Vygotsky thought-provokingly suggests that speech and language, on the one hand, and thought, on the other, are of different biological origins: '[I]nitially thought is nonverbal and speech non-intellectual […] [But, in humans] thought development is determined by language, i.e., by the linguistic tools of thought and by the sociocultural experience of the child.'[24]

The power grip preceded the precision grip in the evolution of the human hand. Modern wrenches.

In fact, art and architecture guide us back to the origins of language, to the originary wonder and amazement when encountering the unforeseen. Artistic images expose us to images and encounters of things before they have been trapped by language. We touch things and grasp their essence before we are able to speak about them. Profound buildings place us at the central point of the lived world; even the tiny architectural space of the Kärtner Bar (1907) in Vienna by Adolf Loos turns into the nucleus of the world that seems to condense gravity and space, as well as all our existential knowledge, in its pre-verbal, compressed spatial and material configuration.

In his book *The Mind in the Cave: Consciousness and the Origins of Art*, David Lewis Williams proposes a convincing theory for the origins of image-making in the animals and symbols depicted on the walls of neolithic caves. He also provides an explanation for the mysterious fact that the Neanderthals, our nearest ancient relatives, who lived alongside our Cro-Magnon ancestors for over 10,000 years and borrowed their stone tool technology, never developed artistic expressions such as the cave paintings of the Cro-Magnons. In Williams's view, the explanation for this curious fact lies in the evolution of the human mind. The Cro-Magnons, unlike the Neanderthals, possessed a higher-order consciousness and a more advanced

In his book *The Ascent of Man*, Jacob Bronowski points out that the cave paintings reveal what dominated the minds of these early hunters: 'I think that the power we see expressed here for the first time is the power of anticipation; the forward-looking imagination.' Cave painting.

neurological structure which enabled them to experience shamanistic trances and vivid mental imagery. These mental images – the first recorded expressions of human imagination and artistic hand – were then painted on the cave walls, which were regarded as the membrane between the world of their pre-human occupants and their imaginary spirit world, in which the images originated.[25]

The American psychologist Julian Jaynes argues that human consciousness did not emerge gradually in animal evolution but that it is a learned process which developed from an earlier hallucinatory mentality through cataclysmic and catastrophic events. He identifies the emergence of human consciousness in 'the breakdown of the bicameral mind' roughly at the time of the earliest Mesopotamian written records – which, at around 3,000 years ago, is surprisingly late.[26]

The authors and researchers of the book *Gesture and the Nature of Language* suggest that actions of the hand directly moulded the development of language:

> The very categories of language are created by intentional hand actions, so that verbs derive from hand movements, nouns hold things as names, and adverbs and adjectives, like hand tools, modify movements and objects. The focus here is particularly on how experiences of touch and grip […] give language its directive power.[27]

George Lakoff and Mark Johnson suggest another connection between language and the body. In their book *Metaphors We Live By*, they develop ideas of the fundamental grounding of language on metaphors originating in the human body and the ways the body is related with and positioned in space. '[M]etaphor is pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature,' the two philosophers argue.[28] These metaphors of language, thought and action originate in the natural structures and aspects of the body and its relationship with space.

The decisive development of the human brain began about three million years ago with tool use, and in accordance with recent theoretical views, the modern human brain was completed 100,000 years ago, or perhaps even somewhat earlier.[29]

Hand as Symbol

The fact that the hand is the part of the human body that appears most frequently in symbolisation[30] reflects the significance, subtlety, as well as expressiveness and multiple meanings of the human hand. Imprints and silhouettes of human hands appear already in Palaeolithic cave paintings. These early imprints of hands probably signify the individual whose hand left the mark in the same way that young children enjoy impressing their hand marks as expressions of their selves. The depictions of twisted finger joints and mutilated hands in the Gargas cave in France are assumed to commemorate acts of sacrifice.

Palaeolithic hand marks and various symbols (according to Sigfried Giedion). El Castillo, Cantabria, Spain.

The hand can have multiple and even opposite symbolic meanings in social communication and art, as in the case of the hand gesture of taking hold or pushing away, that can express both positive and negative meanings. The image of the hand often appears in amulets, such as the Islamic Hand of Fatima. In Semitic cultures, 'hand' and 'might' are a single concept that refers to the power of a ruler. The hand contact is regulated by cultural and professional codes, such as the use of hand contact in the medical profession, or the social custom of greeting, but generally hand contact symbolises the magic touch. Laying on of hands signifies blessing and this sign transfers the powers of the touching person, or of a higher being, onto the person being touched. Raised or folded hands are a symbol of prayer, distinct gestures of the fingers signify oath or blessing, and a handshake is a general symbol of a friendly and accepting attitude.

In Christian iconography, Christ is referred to as the Right Hand of God; right hand altogether tends to have positive significations as opposed to the left hand. In many cultures the right hand is the 'clean' hand whereas the left hand is 'dirty'. Hands that are covered or hidden in sleeves refer to the age-old custom of covering one's hands as a sign of respect in the presence of rulers. The raised open hand of Byzantine rulers gave rise to the gesture of blessing in Christianity. The symbolism of both raised hands signifies a turning towards the heavens, the receptivity of the person in prayer, or the gesture of adoration. In Renaissance heraldry hands mean strength, loyalty, diligence, innocence and unity, whereas a hand with the fingers extended and spread apart means disunity, the closed hand or fist indicates strength and unity, and folded hands signify loyalty and union.

In artistic representation, a hand emerging from a cloud is an early form of representing the First Person of the Trinity. The hand that struck Christ is one of the instruments of the Passion, whereas a hand giving money refers to the payment to Judas, and the washing of hands referring to Pilate's hands after the trial of Christ represents innocence.[31]

The hand and fingers have varying connotations in different cultures; in the Islamic belief the five fingers signify proclaiming one's faith, prayer, pilgrimage, fasting and generosity. The traditional system of ritual hand postures, or mudras, of the Buddhists and Sivaists in India expresses a range of coded meanings for hand gestures and they can be an integral part of both secular and religious ritual performances. Each finger may be associated with its own hue, sound, element, and even its own celestial guardian.

A monument to the hand.
Le Corbusier, *The Open Hand*, sketch for a monument, Chandigarh, 1954.

Because of the characteristic Indian tendency to excessive classification, each mudra gesture may possess one meaning nested within another.

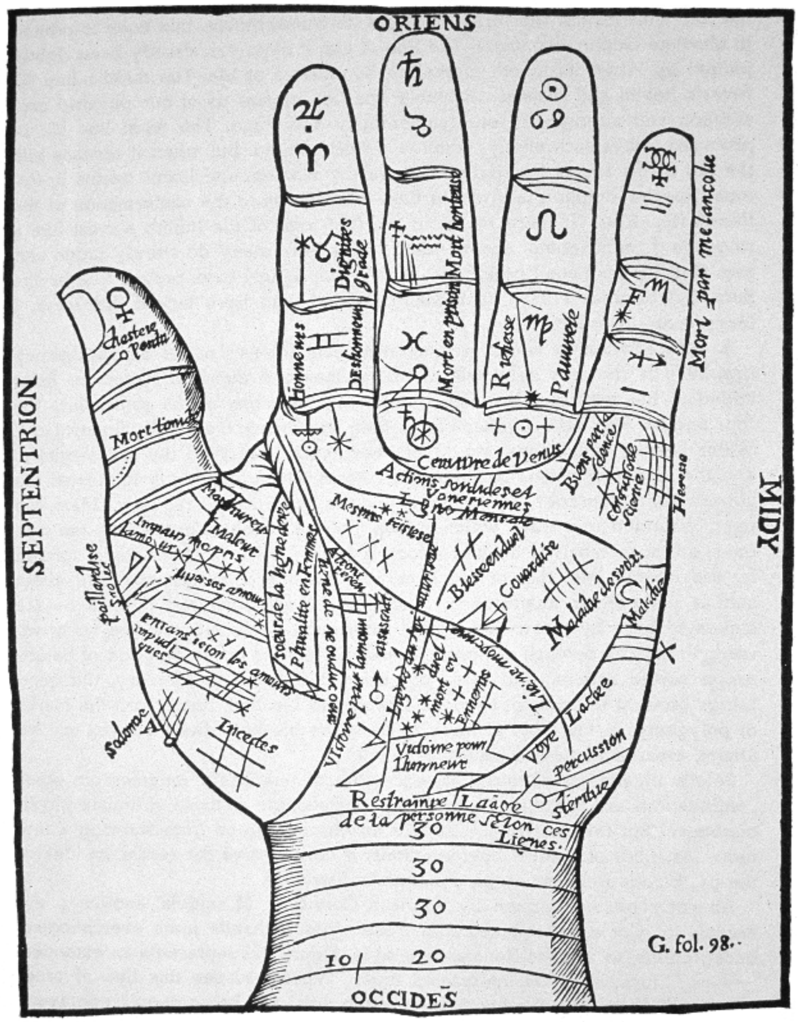
The intricate and individually unique lines of the palm are interpreted in palmistry, or chiromancy. The basic assumption of this practice is that symbolic analogies link the hand with its 'hieroglyphics', planetary forces and the potential life of the individual.

The hand is a signboard of personality; it expresses social class, wealth, allegiance, occupation and association. In many cultures the hand is decorated by tattoos or less permanent colorations and imagery. Hands are also bearers of rings and bracelets that communicate numerous coded meanings, such as marriage, profession, or membership in societies. Gestures, meanings and messages of the hand are also popular subjects in the arts.

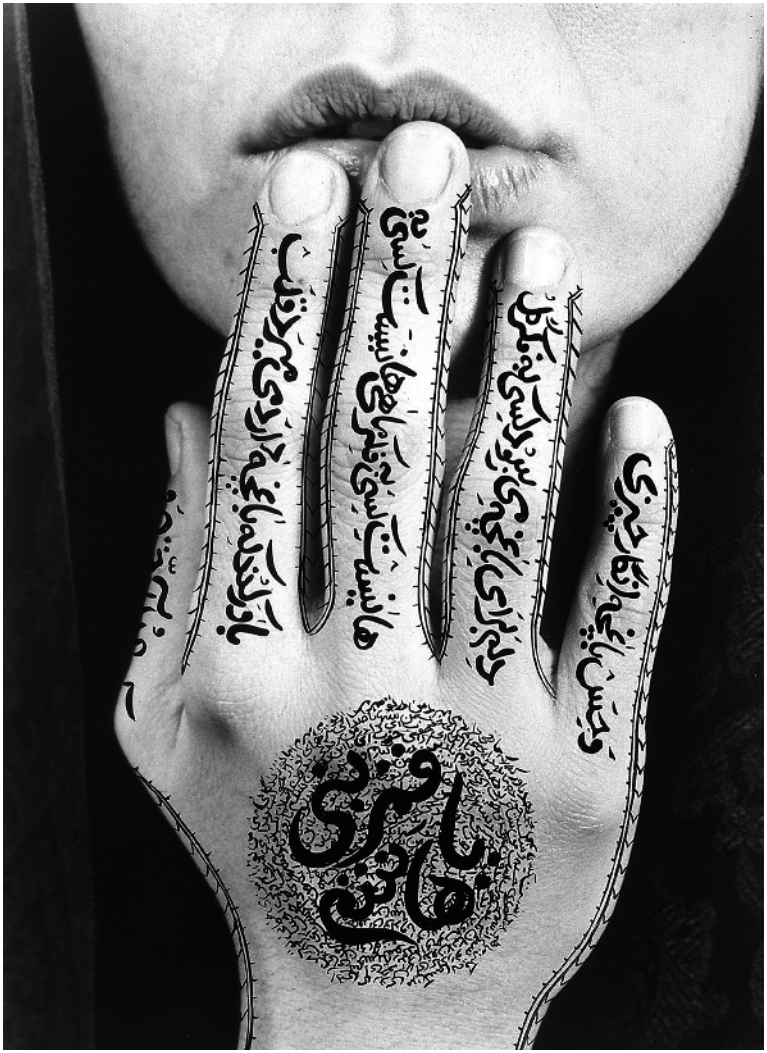
Gestures of the Hand

There are theories that regard human gesture as the first evolutionary phase on the way to spoken and written language. The emotive power,

immediacy, universality and articulate nature of gestural expression certainly reflect the integrity of the human constitution as well as of the close connection between the mind and the hand. Also deficiencies and failures in the mind–hand unity are dramatically manifested: 'The hand is the mind's only perfect vassal; and when, through age or illness, the connection between them is interrupted, there are few more affecting tokens of human decay.'[32]



A chiromantic hand from Jean Belot's *Oeuvres* (Lyons, 1649), reproduced in *A History of Magic*, published in the late 19th century. Engraving by French School, 17th century.



The hand as a work of art that reflects cultural restrictions and values.
Shirin Neshat, *Untitled* (from 'Women of Allah' series), black-and-white photograph with ink, 23.8 x 16.5 cm, 1996.

It is remarkable to realise that the meaning of numerous facial and hand gestures can be grasped quite independently of cultural background. 'The hand is the only speech that is natural to man […] It may well be called the Tongue and general language of Humane Nature, which, without teaching, man in all regions of the habitable world doe at the sight most easily understand,' John Bulwer wrote in 1644 in his book *Chironomia*.[33] A more

recent scholar, Edward Sapir, the anthropologist and linguist, argues similarly: 'We respond to gestures with an extreme alertness and, one might almost say, in accordance with an elaborate and secret code that is written nowhere, known by none, and understood by all.'[34]

Before they have learned even the foundations of linguistic communication, infants react correctly to basic gestures of threat or friendliness, for instance, and individuals born blind seem to be able instinctively to use basic facial and hand gestures.[35] Although they were divided linguistically, the various Native American peoples were able to communicate through sign language.[36] 'For purposes of trading, as much was done by the Hudson River Algonquins by signs with the thumb and fingers, as by speaking,' wrote Jonas Michaelius, a 17th-century clergyman.[37]

Languages of the Hand

Besides the Native North Americans, sign languages were particularly highly developed among Australian aborigines and the Maoris. In addition to sign languages of indigenous cultures there are occult sign languages of secret societies and religious communities. Certain hand gestures that continue to be used today were already known in ancient Egypt and Babylon. Other gestural symbolic signs are used in art, theatre, heraldry and religion.[38] Even today, members of many trades and professions use private sign languages. A peculiar example of invisible hand communication is the bidding process at the markets of the delicious but highly poisonous globefish in Japan, performed secretly by the hands of the seller and bidder pushed inside a special sleeve.

Sir Richard Paget, who developed a universal sign language in 1939, estimated that by combining various postural movements of the upper arm, forearm, wrist and fingers, it is feasible to produce the staggering number of 700,000 distinct elementary signs; he assessed that 500 to 600 signs would suffice for the vocabulary of his New Sign Language. This estimation makes the human hand overwhelmingly more versatile than the mouth. This surprising realisation seems to open up immense possibilities for gestural communication.[39]

Yet another, and the most common, realm of hand gestures are the mostly unconscious gestures of hands in conversation and public appearances. Hand gestures are, naturally, an important aspect of the arts of rhetoric and acting.

However, the working hand represents the true versatility of its actions as well as both its seamless unity with the intentioning mind and its cunning independence and capacity for autonomous thought.

Gestures for miming from John Bulwer's *Chirologia, Naturall Language of the Hand*, 1644. Engraving by English School, 17th century.

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