

mirrors - narcissus, looking into the water, did not understand that he saw his own reflection, and fell in love with himself

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mirrors

myths

in greek mythology, the mathematician archimedes invented giant mirrors that used the sun to set roman warships afire during an attack on syracuse in 212 B.C.,

- narcissus, looking into the water, did not understand that he saw his own reflection, and fell in love with himself,

- another legend has it that the hero perseus killed medusa by using a mirrored shield. the creature was so hideous that any human who made eye contact with her was immediately turned to stone.

by watching the reflection of monster in his shield, perseus used his sword to slice off medusa's head without having to look directly at her.

- another example, this time from the german tales of the brothers grimm, is snow white, in which the wicked queen consults a magic mirror to determine the identity of the most beautiful woman in the world....

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a short history of mirror production

the first mirrors

were likely to be a pool of water where one could observe their reflection. ancient and primitive mirrors were typically made of polished stone (obsidian in stone age turkey, and pre-columbian peru), perhaps wetted to make them more reflective.

egypt copper mirrors

long before man was able to make mirrors out of glass, mirrors made of metal (copper, bronze, silver, tin, etc.) were



wall painting from the 'stanzino delle matematiche' in the galleria degli uffizi (florence, italy). painted by giulio Parigi, 1599-1600.

used. sheets of metal were flattened and polished until it could be used as a mirror. rounded forms, disks, sometimes with a design on the back, and usually with a handle.

roman glass mirrors

following pliny, natural history, glass mirrors were invented at sidon in the first century AD.
surviving examples date earliest to the second century AD.
after the discovery of glass making, the romans made mirrors out of glass by finishing them with a metall layer.
in roman graves dating from the second and third century there were also found pieces of glass covered with lead.

middle ages

after the discovery of glassblowing in the 14th century, mirrors were made out of glass bulbs.
after cooling the bulbs, they were cut in pieces, thus forming little hollow (convex) mirrors.
(although these mirrors did not have a perfect reflection, people did not mind at all.
the mirrors available previous at that time, were made out of metall which wasn't flat and had an even worse reflection).

renaissance mercury mirror

a method of backing a plate of flat glass with a thin sheet of reflecting metal (tin/mercury amalgam - the reflecting layer of mercury on mirrors existed out of 75% of tin and approximately 25% mercury.)
came into widespread production on the italian island of murano, near venice during the 16th century.
the mirror-makers perfected a method of backing larger sheets of glass. in the first act of industrial espionage, the french under louis XIV bribed murano experts to come to paris. after apparent threats and poisonings, they returned to italy, but by then it was too late, and the hall of mirrors at versailles was one result.
also in germany and in belgium this method was already being used. the exact ingredients and procedure were kept secret for a long time.
producing a mirror was a complicated and delicate process, therefore these mirrors were very expensive.
from then on, mirrors got bigger, cheaper, and more pervasive.
on top of that, the production was very unhealthy, due to the fact that mercury fumes are very toxic.

19th century silver mirror

the chemical process of coating a glass surface with metallic silver was discovered in the 19th century.
this advance inaugurated the modern techniques of mirror making.
the technique is said to be invented by the german justus von liebig in 1835.

present-day mirrors

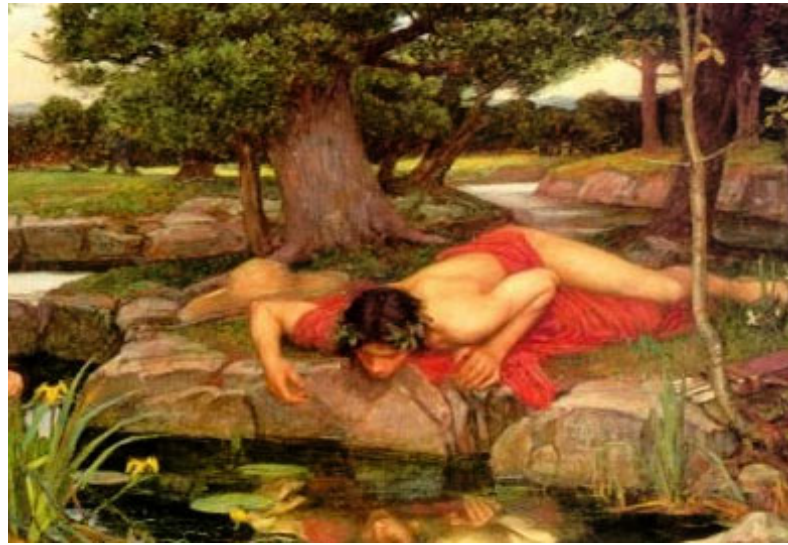
are made by sputtering a thin layer of molten aluminum or silver onto the back of a plate of glass in a vacuum.

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reflection

why does the mirror reverse left to right and not top to bottom?

the mathematical or geometrical version of the question is:



narcissus, detail of painting by waterhouse



medusa's image on perseus' reflective shield
painted by caravaggio (michelangelo merisi), ca.1590

'why does a chiral object (such as a right hand or glove) appear as an object of opposite chirality (left hand or glove) in the mirror?' the answer is that chirality of the three-dimensional space is dictated by the choice of the directions of the three axes. when the direction of one axis is reversed, as is the case in a mirror image, the chirality of space changes to the opposite one. if two mirrors are set side by side (with, say, a 90° angle between them), the axes in the doubly reflected image are inverted twice and the handedness of the image is not changed. in such a double mirror, a right hand looks like a right hand. this set-up lets you see how you really look, but most people find it very difficult at first to use a mirror like this for shaving.

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common uses

whether hand-held, wall-mounted, or standing, most mirrors have been placed in frames. mirrors are used

- for inspecting parts of one's body which are difficult or impossible to see directly, such as the face, neck or the whole body.
- for self-contemplation.
- rear-view mirrors are applied in and on vehicles (such as cars, or bicycles), to allow drivers to see other vehicles coming up behind them.
- rounded (convex) mirrors are sometimes placed at road junctions, and corners of places such as parking lots allowing people to see around corners to avoid crashing into other vehicles.
- mirrors are also sometimes used as part of security systems, so that a single video camera can show more than one angle at a time.
- interior decoration to create an illusion of space
- the use of mirrors for 'cutting' and snorting cocaine.
- the classic 'mirror on the ceiling' for use during sex ... (the story of hostius quadra, a roman who had a giant metallic concave mirror in which his orgies were magnified.)
- telescopes and other precision instruments use front silvered or first surface mirrors, where the reflecting surface is placed on the front (or first) surface of the glass, in order to eliminate faint reflections from the glass itself (which gives better image quality).
- modern thermonuclear weapons use x-ray mirrors...



egyptian bronze mirror, ancient kingdom

see page 2



humans and mirrors

see page 3



anamorphic art mirrors



egyptian mirror, new kingdom



persian mirror, 1100-900 BC
this bronze mirror is made of a sheet of metal hammered down

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to less than a millimeter (1/32") thick.
 (the surface, originally polished to a high sheen to function as a mirror,
 has now achieved a variegated green patina).
 the ornamentation is limited to its flaring trapezoidal handle,
 with a finely scalloped edge and a frieze of five disks cut away
 by stamping. similar mirrors have been found as far as the banks
 of the caspian sea, and in anatolia.



early chinese octagon bronze mirror.
 in china, the first tool to serve as mirror is a shallow bronze jar,
 which holds water to provide reflection of one's face.
 however, this was a very expensive item, available only to the few.
 with the advancement of metallurgy in mid bronze age, the bronze mirror
 replaces the 'jian' as the common mirror. bronze mirrors have about three
 thousand years of developmental history in china.
 chinese mirrors have one shiny reflective side and a decorative side.
 a knob at the center of the decorative side allows a rope to be tied as a handle.
 bronze mirrors need polishing after some time of use.



etruscan mirror



roman glass mirror

design-aerobics courses

this is an example of a design-aerobics lesson taken from the sex course - part of our 'human needs cycle'.

design-aerobics are 'design education online courses'.
ideated and managed by the designboom team.
find out how the courses work [here](#)



shaker mirrors

(a protestant religious community, originated in manchester, england in 1772 under the leadership of mother ann lee. moved to new york in 1774, then near albany, where their communal life began to develop. shakers were well known for their production of elegant and functional furniture and tools.)



'milo' mirror by carlo mollino, 1937



'ultrafragols' by etторе sottsass, 1970

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