

# Faces in the Eye of the Mirrors. Faces without Mirror

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*Spiegel: noch nie hat man wissend beschrieben, was ihr in eueren Wesen sind...*

*(Mirror: never has one knowingly described, what your essential nature is...)*

R.M, Rilke *Die Sonette an Orpheus* 1922

If mirrors had a soul and a memory, they could reveal not only myriads of figures of human faces but also a great deal of their owner's insights. Would they tell the truth? That's another question. As Raphael Mirami puts it already in 1582, "I say that for some people mirrors were a hieroglyph of the truth in that they discover everything that presents itself to them, as it is the custom for the truth that cannot remain hidden. Others, on the contrary, take mirrors for symbols of falsity because they often show things differently than they are."<sup>1</sup>

If one considers the multiple inventions and discoveries derived from mirrors, like telescopes or microscopes, undoubtedly, "As our first technology for contemplation of the self, the mirror is arguably as important an invention as the wheel and perhaps even more universal."<sup>2</sup>

## HISTORY OF MIRRORS

If the most ancient man-made objects reflecting our image were found in Anatolia, dating back to 8000 years, humans had certainly used earlier simple still pools or containers of water providing reflecting surfaces for their face, as recalled in the ancient Greek myth of Narcissus. The first mirrors were made from obsidian (volcanic glass) and had a convex surface and quite good optical quality. Metal mirrors were used in ancient Egypt and Mesopotamia around 3000-4000BC, forged from polished bronze or copper. In Egypt, golden mirrors were also used to represent the sun god Ra, giving them a religious significance.<sup>3</sup>

In Greece, bronze mirrors were produced as early as the Mycenaean period (1600-1100 BC). Later on, looking glasses became very common among the elite. Reviewing a large number of texts and paintings, hellenists such as Françoise Frontisi-Ducroux and Jean-Pierre Vernant consider the Greek mirror essentially as a feminine object: "This is a point on which all the categories of testimonies agree, to begin with the objects themselves because the ancient mirrors, which arrived to us often have a handle or support in the shape of a woman, naked or dressed, holding sometimes a dove or escorted by a young lover which indicates without ambiguity Aphrodite. The images

confirm this exclusive relationship. On the paintings that decorate the vases, the mirror only appears in the hands of women or to define a place as a feminine space."<sup>4</sup> Similarly, the Greek papyri found in Egypt, dating mainly from the first century BC to the seventh century AD, represent the mirror as essentially a "gender object" and most of this papyrological evidence shows a clear connection with the feminine world. Mirrors were mainly considered instruments for cosmetic and personal beauty care, connected with the most private and intimate aspects of the life of a woman. Physical beauty and personal adornment were intricately linked to issues of identity and status. Mirrors were the best artefacts to exhibit an individual's reflection and help to manipulate the physical appearance.<sup>5</sup>

The evolution of glass mirrors in the Middle Ages followed improvements in glassmaking technology. Glassmakers in France made flat glass plates by blowing glass bubbles, spinning them rapidly to flatten them, and cutting rectangles out of them. A better method, developed in Germany and perfected in Venice by the 16th century, was to blow a cylinder of glass, cut off the ends, slice it along its length, and unroll it onto a flat hot plate. Venetian glassmakers also adopted lead glass for mirrors because of its crystal clarity and its easier workability.<sup>6</sup>

## THE REVERSED AND REDUCED SIZE OF MIRROR'S IMAGES

Since Antiquity, everyone who studied mirror's reflexivity observed that mirrors flip the image from right to left. This reversal puzzled scientists and philosophers. For Lucretius (99-55BC), for example, the face in the mirror "turns inside out as it would happen with a plaster mask" if it were limber enough like a modern-day rubber mask, giving the impression that the right eye became the left. The idea to build a nonreversing mirror is also very ancient, but its realization is quite recent, although a patent for a nonreversing mirror was issued to the priest John Joseph Hooker in 1887. In 1995, an American inventor, John Walter, developed a device that he calls a true mirror, which does not reverse images and reflects the face as if one looks at a photograph. It consists of 2 perpendicular mirrors in a box, the second mirror acting to undo the reversal of the first. This type of nonreversing mirror introduces however a line down the middle interrupting our view. A nonreversing mirror can also be made by using a concave mirror. At a certain distance from the mirror, a nonreversed image will appear. The disadvantage of this is that it only works at a certain distance.

Another surprising mirror reflection image was noticed by art historian Ernst Gombrich in 1960:<sup>7</sup> tracing the perimeter of one's face in a mirror, the contour of the drawing in the mirror

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always will be exactly half that of the head. The explanation is that the mirror reflects a virtual image that occurs halfway between the subject and its representation.

## MIRRORS AND ART

*The mind of the painter must resemble a mirror.*

Leonardo da Vinci

Obviously, the history of self-portraits is linked to the development of the mirrors.

In Europe, since the late 15th century, the first self-portraits developed thanks to the improvements in glassmaking, which made flat mirrors of a reasonable size widely available, and the revolution in oil painting, which allowed the artists to paint in studios rather than on the walls of churches and palaces. The mirror became an indispensable tool for self-representation and the study of perspective. In fact, mirrors were found in every artist's studio. Albrecht Dürer (1471–1528) is known as the first artist who started drawing or painting his own image. Among his 13 self-representations that we can still admire, the one with a head bandage drawn in 1491 is particularly interesting for surgeons, as it shows a neat capelin or turban bandage that is still in common use today after a scalp injury or operation (Fig. 1). Leonardo da Vinci, a few years later, recommended in his Notebooks the use of a mirror as “the true master of painting” for one's guide, “because on its surface the objects appear in many respects as in a painting”; therefore “when you paint you should have a flat mirror and often look at your work as reflected in it”. Leonardo was also known for his surprising mirror writing (right to left), which still generates polemics about its motivation.

Since that time, women and more rarely men reflecting themselves in a mirror have also been represented by numerous famous painters like Titian, Rembrandt, Velazquez, Frieda Kahlo, and Picasso. Rare are the painters who were not, once in their life, tempted to look in the mirror and draw their own face or a model's face reflected by a mirror.

## THE MIRROR TEST IN HUMANS AND ANIMALS

In 1972, Beulah Amsterdam published the first mirror recognition study for human babies.<sup>8</sup>

Recognizing its own face in a mirror is experienced by most toddlers at ages 20 to 24 months. Before, young infants seemed to think the baby in the mirror was another baby. For the French psychoanalyst Jacques Lacan, there is a mirror stage based on the belief that when infants recognize themselves in a mirror, a turning point in their psychic development is induced. It participates in the setting up of the body as unified (in opposition to the fragmented body pre-existing to the stage of the mirror) and in the structuring of the self. However, for most recent analysts, a literal interpretation of the Lacanian mirror stage contradicts empirical observations about human identity and personality. If personal maturation was dependent upon catching sight of oneself in a mirror, then the mirror stage theory would predict that congenitally blind individuals would lack selfhood and be unable to gain access to language, society, or the world at large.<sup>9</sup>

The initial study of self-recognition in nonhuman animals is usually attributed to psychologist Gordon Gallup, who started observing in the 1960s, the reaction of pre-adolescent chimpanzees in front of mirrors.<sup>10</sup> He devised a test, marking their eyebrows and ears with red dye, that the chimps recognized and were able to touch with their fingers. Similar experiments with this so-called mirror self-recognition test (MSR) were then conducted on a number of species. Today, the list of animals



FIGURE 1. Albrecht Dürer auto portrait 1492- (Albertina Museum Wien).

showing a sign of recognition in a mirror is increasing every year, starting from the big apes, orangoutan's, gorillas, and bonobos, and extending to bottlenose dolphins, orca whales, magpies, ants, elephants, and very recently cleaner fishes, and possibly manta rays.<sup>11</sup> According to Gallup, an animal that can pass the mirror test gives strong evidence of self-recognition, indicating the possibility of self-awareness.<sup>12</sup> However, it does not mean that animals unable to pass the test, like dogs, for example, do not possess these abilities. Furthermore, some animals may be able to recognize themselves in the mirror and react to their reflection as if seeing another animal. It has also been shown that animals who initially failed can pass the MSR test with extensive training, suggesting that this training either uncovers latent self-awareness or teaches them a new cognitive skill.<sup>13</sup> If animals can pass the MSR test, it is obvious that roboticists could create machines with similar capacities. According to previous studies, it has been shown that social or service robots with an appealing human face representation may increase trust and relationship between patients or consumers with the machine.<sup>14</sup> Embodied robots, able to pass the MSR test, may even increase this relationship between humans and socially designed robots.<sup>15</sup>

Numerous studies and conflictual interpretations about the mentalistic meaning of the MSR arose between ethologists, psychologists, and philosophers: What does it represent in terms of awareness or self-consciousness? For the British philosopher Alexandria Boyle,<sup>16</sup> Gallup should be criticized for assuming that self-awareness is an all-or-nothing phenomenon, failing to consider alternative explanations, and not providing substantive arguments for his interpretation. While a self-representation of some kind must be involved in self-recognition, this need not be nearly as complex as Gallup claims. For the Canadian psy-

chologist Alain Morin, there are different stages of awareness.<sup>17</sup> He also criticizes a recent article by Gallup and Anderson<sup>12</sup> about the signification of MSR in animals and emphasizes the difference between bodily awareness and introspective, private self-awareness, requiring language in the form of inner speech, which many creatures capable of MSR lack. For other cognitive psychologists,<sup>18</sup> the self is where the bodily I meet the social me. The mirror can facilitate but also disrupt this meeting. The mirror seems to be considered as having a double effect, as it produces an image that is both us and another. Moreover, the mirror does not change over time, but the face one sees in it changes at every reflection. The external self (the body and its face) changes and is transformed as time goes by, but the internal self (one's own sense of personal identity) remains the same. Without contest, the mirror self-recognition test leads us to the most fundamental questions concerning our identity, our inner self, questions that famous philosophers tried to answer, like Descartes with his dualist theory of mind and body, or Locke who affirms that consciousness, and not the biological body, makes our personal identity.

### THE USE OF MIRRORS IN PLASTIC SURGERY

The absence of fogging on a mirror placed in front of the nostrils was classically considered a sign of death in the old times, but the first scientific communication (1887) on the possibility of using diagnostically the “breath or breath stain” formed on a glass plate during exhalation in front of the nose came from Hendrik Zwaardemaker (1857-1900) in Utrecht. Ernst Glätzel, a Prussian military rhino-laryngologist, reported later on his experiments with a polished graduated metal plate, with which he carried out a hygrometric functional investigation of the air permeability of the nose. He used a mirror made of nickel-plated zinc sheet and gave it a handy shape. This mirror-fogging test is still commonly used in the assessment of nasal sub-obstruction or in velo-pharyngeal insufficiency.<sup>19</sup>

Instrumental mirrors have always been widely used for reversed examinations in the field of dentistry and rhino-laryngology during all kinds of operations. For many plastic surgeons, it is also a practical and simple instrument to assess the symmetry of a nasal correction during a rhinoplasty, without having to turn around the operating table to have a visual field from the other side.<sup>20</sup>

As it happened in the emergence of self-portraits in arts, the common use of facial looking glass is undoubtedly at the root of the development of esthetic surgery of the face, and the “eye of the mirror” is probably the most important provider of patients for the facial plastic surgeons. The patient seeing herself in the mirror is not only seeing her own face but also sees as others see herself. She is confronted with the appearance presented to others. A similar phenomenon appeared more recently during the COVID epidemic with the widespread teleconferences, where everyone can observe at length the reflection of their own face.

During preoperative and postoperative consultations, the mirror becomes a useful tool for the assessment of all kinds of minor facial deformities, serving as an intermediary for the dialog between the surgeon and the patient. When individuals see themselves in the mirror, they compare their appearance with their internal model or anticipated model (Fig. 2). Through the mirror, the individual assumes the role of a protagonist and observer to see the self through a distance that allows him or her to gain self-insight. The mere-exposure effect is a psychological phenomenon in which a person tends to rate things more positively merely because she is familiar with them.



**FIGURE 2.** “God!! What a nose you made me!” Sketch by Honoré Daumier 1834 (Paris Bibliothèque nationale).

De Runz et al have conducted a study of self-assessment,<sup>21</sup> asking plastic surgery patients to rate their appreciation of their own faces and to choose between standard and mirror-reversed photos of themselves. The results showed that the majority of patients have a significant preference for mirror-reversed photographs of themselves over standard photographs, due probably to the fact that they see themselves more often in mirrors.<sup>20</sup>

### MIRROR THERAPY AND MIRROR NEURONS

Excessively frequent mirror gazing is sometimes the sign of a psychological disorder, like dysmorphophobia or certain forms of schizophrenia. However, the frequent use of mirrors may also serve as a therapy. Developed initially by Vilayanur S. Ramachandran at the University of California San Diego, mirror therapy utilizes mirror boxes to give the impression to the user's brain that it is seeing an affected or amputated limb, although the patient sees in the mirror the normal contralateral limb.<sup>22,23</sup> For phantoms ‘pain for arm amputates, this repeated maneuver of tricking the brain and resurrecting the limb virtually is now of common use to alleviate the painful sensations, if it is not due to a neuroma. The mirror box creates the illusion that the patient has two intact arms and that both arms are moving. Thus, looking at the mirror, he sees the reflection of the intact limb and feels as if the amputated limb is still present and moving. Encouraged to make “mirror symmetric” movements, it appears as if the phantom limb is also moving. Through the use of this artificial visual feedback, it becomes possible to unclench it from potentially painful positions. A similar method has been developed to rehabilitate patients with hemiparesis after a stroke.<sup>24,25</sup> During mirror therapy, a mirror is placed in the person's midsagittal plane, thus reflecting the nonparetic side as if it were the affected side. By this setup, movements of the nonparetic limb create the illusion of normal movements of the paretic limb. Repeated gentle movements while looking in the mirror for 20 to 25 minutes daily are encouraged. This so-called mirror therapy is now considered a valuable method for enhancing motor recovery in poststroke hemiparesis. A similar type of therapy has been devised to improve mobility of the patient's hemiface after Bell's palsy by using a bi-fold mirror to twice reflect the unaffected half of the face, such that she sees a full, unaffected face.<sup>26</sup> Regular exercises with this method seem to give better results than electro-stimulation.

The theory behind mirror therapy is that positive visual feedback will encourage neuroplastic change in the brain. For most neurophysiologists, this increased cortical and spinal motor excitability is linked to the discovery of the mirror neuron system.<sup>28</sup> Mirror neurons were first described at the Università degli Studi di Parma in the 1990s as nerve cells in the frontal and premotor cortex of macaques that fire both when the monkey performs a movement and when it observes the same movement by another monkey or a human. The presence of a “mirror” system describing a close match between execution and observation of movements) was then also confirmed in humans. Scientists have theorized that mirror neurons allow understanding of the meaning of another’s actions, and constitute the neural basis of imitation learning and empathy. These mirror neurons are responsible for laterality, that is, the ability to differentiate between the left and the right side. When using the mirror box, these mirror neurons get activated, which helps in the recovery of affected parts. Neuroimaging studies suggest that self-recognition is a complex neurological network involving primarily the right frontal and parietal areas of the brain.

### MIRRORS AND DISFIGUREMENT

If gazing at a mirror can be used in the treatment of painful or paralytic symptoms, it can also represent a serious initial emotional shock after facial disfigurement following an accident or an operation. It is a critical event when a patient with face burns, for example, looks in the mirror for the first time. He often needs to look at his face several times to see, recognize, and understand the changes in his visage, his new exterior. It requires a large investment in the adjustment to the visible differences through gradual exposure to mirrors. For Mendes et al, it is very important for health professionals to assist the patients in this mirror experience and help them initially to anticipate a picture of what they are about to see to improve their acceptance and their concept of new body image.<sup>28,29</sup>

Since the advent of facial transplantation,<sup>30</sup> numerous investigations have been conducted by neuroscientists to better understand the neurocognitive plasticity related to recognizing the new self. Most facial transplantation reports have addressed this issue and observed a gradual integration of the new patient’s face into her body image. In a longitudinal study, Azevedo et al<sup>31</sup> have noticed that neurobehavioral measures show how patients preserve a strong mental and neural representation of their pre-injury appearance and gradually incorporate the new post-transplant appearance into their self-identity. These changes and underlying neural processes highlight how the malleable representations of our face ensure the self’s continuity over time. The acquisition of this new facial identity is supported by neural activity in medial frontal regions that are considered to integrate psychological and perceptual aspects of the self.<sup>32</sup>

### MIRRORS IN BLINDNESS

No doubt, mirrors will continue to fascinate philosophers, psychologists, and neuroscientists for the years to come. But the mirrors and all the connected phenomena attached to them are intimately linked to our capacity for vision. The possibility for a blind individual to grasp her face in a mirror is yet to come.

Since Antiquity, the eye of the mirror has been at the root of theories concerning our ability to see an object or recognize a face, an attempt to explain how the image reflected by the mirror reaches our brain. The first philosopher who really tackled this problem was the Greek Alexander of Aphrodisias (150-215 AD) in his commentaries of Aristotle, where he raises several questions, such as, “Do mirror images disappear as soon

as the reflected objects are removed from in front of the mirror? What is the source of light and colors in order for us to see? What is needed to have the perceptual capacity to do so? and What is the transparent medium between us and the perceived object?”<sup>33</sup>

In the Renaissance, for the French philosopher Descartes, seeing ourselves in a mirror incorporates the capacity to visualize the image with our eyes and to integrate this image into our brain. Descartes believed that light rays impressed subtle particles into the eyes. The image was then transmitted to the pineal gland, which served as the nexus between mind and body. In a sketch, he drowned the external stimulus, which is translated into an act of will, pointing to the pineal gland. (Fig. 3)

If mirror reflection of our face is so important for our personal development and our aptitude to conceive forms and esthetic images and faces, what does it represent for the blind, and particularly for the congenital blind?

### MOLYNEUX’S QUESTION

John Locke was already well known as a doctor and philosopher for his studies on mind, consciousness, and self-knowledge when he was questioned in 1688 by another philosopher about the possibility that a person born blind might immediately identify a shape previously familiar to them only by touch if he was made to see. “Suppose a Man born blind, and now adult, and taught by his touch to distinguish between a Cube, and a Sphere of the same metal, and highly of the same bigness, so as to tell, when he felt one and the other, which is the Cube, which the Sphere. Suppose then the Cube and Sphere placed on a Table, and the Blind Man to be made to see. Quære, whether by his sight, before he touched them, he could now distinguish, and tell, which is the Globe, which the Cube”. By extension, does a congenitally blind, who recovers one day her sight, may rec-

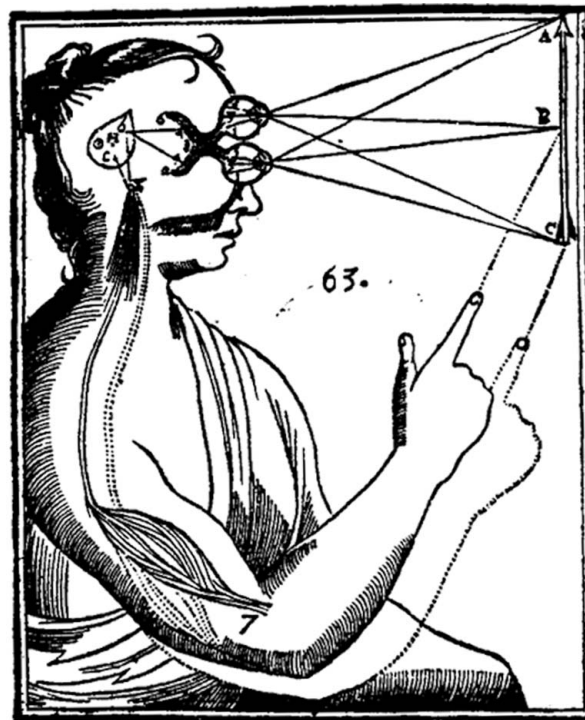


FIGURE 3. Woodcut from Descartes' 1644 *Principles of Philosophy* diagrams. Descartes' theory of vision and its interaction with the pineal gland.

ognize a face or her face in a mirror that was known only by touch? Molyneux's question became a fulcrum for research in the epistemology of concepts; it was reprinted and discussed by a wide range of early modern philosophers, including Gottfried Leibniz, George Berkeley, and Adam Smith, and became one of the most important interrogations in the burgeoning discipline of psychology of the 18th century.

In 1749, the French encyclopedist Denis Diderot, in his *Letter on the Blind for the Use of those who can see*, extended Molineux's problem by asking questions to a man born blind and to an old lady blind since early childhood: "Our man talks about mirrors all the time. You'd think he wouldn't know the meaning of the word mirror, but he'd never put a mirror up against the light. I asked him what he meant by a mirror: "A machine," he replied, "that puts things in relief away from themselves, if they are placed properly in relation to it. It's like my hand, which I don't have to put next to an object to feel it. He knows, moreover, that we cannot see our own face, although we can touch it. Sight, he must conclude, is therefore a kind of touch that extends only to objects different from our face, and distant from us. Moreover, touch only gives it the idea of relief. So, he adds, a mirror is a machine that puts us in relief outside ourselves". For Diderot, the blind judges beauty by touch; that's understandable, but what is not so easy to grasp is that he includes pronunciation and the sound of the voice in this judgment.

As for the lady, Diderot notes: "She didn't care to see, and one day when I asked her why, she replied that I would only have my eyes, instead of enjoying everyone's eyes; by this deprivation, I became a continual object of interest and commiseration... She sometimes made the joke of standing in front of a mirror to adorn herself, imitating all the looks of a coquette taking up arms."

This concern of blind individuals for their facial appearance related by Diderot in the 18th century has been confirmed in a recent study<sup>34</sup> on a series of young congenitally blind, by sentences such as "It's very important to me that my body is well groomed because other people see me, so I know how I look..." or "Other people tell me my hairstyle is pretty, so I touch it, feel the shape and texture, to confirm what they're telling me, that's how I see." The terms neat and pretty validate what they are telling and show the blind person's awareness of the other's gaze, and how to present themselves to the other. If the sighted look in the mirror, the blind look with their fingers, their skin. This is because the other's gaze seems to gather within itself the judgment that the sighted person makes of the blind.

## ESTHETIC SURGERY IN BLIND

There are very few reports about facial plastic surgery in the blind and none in born blind. In a 2007 editorial, Andrew Burd<sup>35</sup> found only one paper with direct reference to performing cosmetic surgery on a blind person (augmentation mammoplasty). In 2022, Salvat Ors published the case of a rhinoplasty in a blind man.<sup>36</sup> The following is an unpublished personal report of a patient operated in Geneva in 2003:

Accompanied by an assistant, 56 years old, Ms B. entered my office, elegantly dressed. She sustained bilateral enucleation for retinoblastomas in childhood, and both eyeballs had been replaced by glass prosthesis. Her requests were purely cosmetic. She knew by touch and by other's commentaries that the prostheses did not fit properly, giving her a sad look accentuated by her eyebrows and lids ptosis, related to her age. The performed operation consisted of enlargement of the conjunctival cul-de-sacs with mucosal grafts, forehead and brow

lift, and fitting of new prostheses. Three months later, on the last visit, Ms B. had a large smile. Rarely, a patient of mine was so thankful for a cosmetic operation.

In the case of Ms B., the absence of mirroring had been replaced by haptic sensations to evaluate the changes in her face. She was not blind as a child and certainly remembered what a human face look like, what is considered esthetic or inaeesthetic features for an average individual. Her decision to undergo surgery was partly prompted by her entourage but mainly by a deeper motivation to regain an appearance corresponding to her joyful character.

## MAJOR FACIAL RECONSTRUCTIONS IN BLIND PERSONS

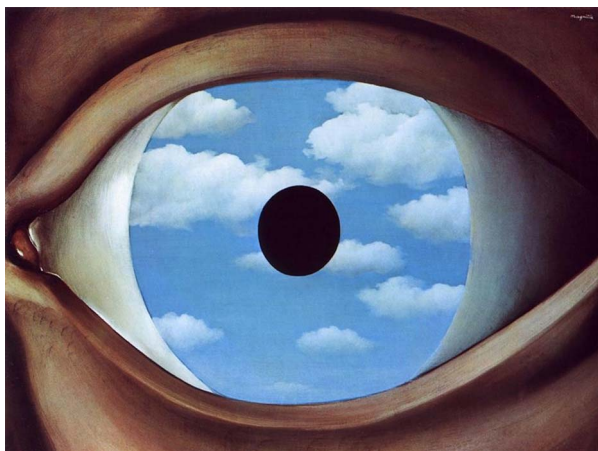
Major reconstructive procedures in blind individuals have been rarely reported. Among them, a few patients have undergone facial transplantation. The well-documented articles relating these operations<sup>37,38</sup> and their satisfactory psycho-social outcome for the patients have been discussed and questioned by Matthew Carty et al<sup>39</sup> and 10 years later by Joseph Lee.<sup>40</sup> Both have taken a position in favor of such operations for these severely facially blind disfigured patients. They both refute the reservations and counterarguments that would prevent surgeons to perform a face transplant in blinds. For Lee, most objections to FT focus on the blind person's disability in a seeing world. Yet the blind participate individually, socially, culturally, and ethically, like other human beings. Moreover, facial transplantation actually treats trauma or face disfigurement, not the disability in itself (blindness). It appears that there is no major argument to preventing the decision to perform a major facial reconstruction, including a face transplantation on a blind person who agrees to undergo the burden and the possible complications of this procedure.

## MIRROR IMAGE: TRUTH OR FALSITY?

The interrogation of Raphael Mirami will probably never receive an answer, or may be, it should be asked differently, as expressed by the famous René Magritte's painting *Le faux miroir* (the false mirror) (Fig. 4). The false mirror is representing at the same time the eye itself and the mirroring image of the eye. A mirror image does not exist without a seeing eye, and it represents boldly what is placed in front of the mirror, whereas the eye is subjective, filtering and processing the images it wishes to see. It does not just reflect but thinks and feels about these images as the brain processes them. The eye of the mirror is intimately linked to the eye of the observer. The responsibility of truth or falsity cannot be attributed to a true or false mirror but to the seeing eye and our brain's interpretation. What Magritte has achieved with the false mirror is the sense that the observer is also being watched by its own eye. Our reflected image allows us to take ourselves as an object. We become aware that we are the one we see in the mirror, and we simultaneously become aware of what we represent for others. This reflexive awareness can lead us to ask ourselves many existential, metaphysical, and religious questions.<sup>41</sup> As recalled by Kun Hwang in a recent editorial,<sup>42</sup> the British mathematician Godfrey Harold Hardy (1877-1947) could not bear to look in a mirror and would cover the mirrors with towels in the hotels he visited. Was it fear of acknowledging his aging or fear of an intrusive eye into his brain?

The mirror is also what makes us take care of our appearance according to cultural criteria. In a mirror, we see ourselves as we believe others see us see our appearance. However, this mirror self-recognition does not imply that it is a necessary stage





**FIGURE 4.** Le faux miroir (The false mirror), by René Magritte, 1928. (Art institute of Chicago).

for the construction of our selfhood, our identity. Even if congenitally blind individuals may manipulate a mirror and understand what it represents, thanks to their haptic perceptions, they do not need this tool for structuring their mind and decide what is good or bad for their appearance.

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