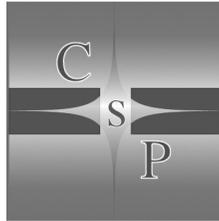


The Book of the Mirror

The Book of the Mirror:
An Interdisciplinary Collection
exploring the Cultural Story of the Mirror

Edited by

Miranda Anderson



Cambridge Scholars Publishing

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Edited by Miranda Anderson

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TABLE OF CONTENTS

Preface and Acknowledgements	vii
List of Illustrations	xi

Introduction.....	1
Mirror Mirror: A Historical and Psychological Overview Mark Pendergrast	

Part I: Mirrors of Antiquity

Chapter One	16
Mirrors in the British Iron Age: Performance, Revelation, and Power Melanie Giles and Jody Joy	
Chapter Two.....	32
Mirrors and Divination: Catoptromancy, Oracles and Earth Goddesses in Antiquity Crystal Addey	
Chapter Three.....	47
The Mirror as a Metaphor for Epistemology in Seneca's <i>De Clementia</i> Ross Hulkes	

Part II: Mirrors of God

Chapter Four	60
Seeing Through a Glass, Darkly: The Interpretation of a Biblical Verse in Augustine of Hippo Mark Kauntze	
Chapter Five.....	70
Chaucer and the Subject of the Mirror Miranda Anderson	

Chapter Six.....	80
Mirrors as Transmitters of Divine Harmony in Marsilio Ficino's <i>Compendium in Timaeum</i> Jacomien Prins	
 Part III: Mirrors of Perception	
Chapter Seven.....	94
Shaving in Ockham's Mirror Richard L. Gregory	
Chapter Eight.....	105
Early Modern Mirrors Miranda Anderson	
Chapter Nine.....	121
The Double Lynn Holden	
 Part IV: Mirrors of Art	
Chapter Ten.....	132
Mirrors in Images: Images in Mirrors Beth Williamson	
Chapter Eleven.....	151
In the Looking Glass: The Painter Fades Judit Varga	
Chapter Twelve.....	166
Reflecting on the Text: Apollinaire's <i>miroir</i> Katherine Shingler	
List of Contributors.....	181

PREFACE AND ACKNOWLEDGEMENTS

This book investigates the mirror, as a material object and in visual and verbal imagery, and examines its relationship to ideas of knowledge, perception and human subjectivity in various socio-cultural and technological contexts. Within this book the rich potential of interdisciplinary collections is evident as these essays combine to make the apparently mundane object, the mirror, something we will look at, as well as into, in new ways. The realms of literature, art, history, archaeology, religion and magic are illuminated by the essays, which make apparent surprising parallels and contrasts between different chronological, geographical and disciplinary realms.

Under analysis here are the complex and dynamic relations of particular objects to imagery and to the individuals and societies who both shape and are shaped by them. These essays variously reveal the roles of external and internal factors in constituting human subjects and the permeability of boundaries between us, our technologies, our cultures and our worlds. Whilst several of the essays demonstrate that ways in which human subjectivity can be extended beyond our physical boundaries are represented through the use of the mirror or through other types of mirroring; conversely other essays show that the limits of the human subject may also be symbolised by the mirror and mirroring. Resonances of themes echo throughout the book as a whole, although essays have been divided into four parts, in relation to particular focuses: in Part One the mirror is shown as enabling insight into restricted knowledge; in Part Two it signifies perception of God or self-reflection, with both operating on a vertical axis in ontological and epistemological hierarchies; in Part Three the mirror presents worldly perceptions of oneself and others with horizontal analogies and doublings; and in Part Four the mirror is diversely used to create and explore the subject's *representation* by art.

The book opens with an introduction by Mark Pendergrast, the author of *Mirror Mirror*, who presents an extensive overview of the history of the mirror, providing a background to the detailed studies in the other essays. In the first essay, Melanie Giles and Jody Joy offer a new reading of bronze and iron mirrors in the Iron Age, which have previously tended to be conceived of as mere objects of vanity, on account of frequently being found in women's graves. They reveal that these objects, with complex identities and histories of their own, could be used to signify the supernatural properties of the possessors and thus would have endowed the holder or community with considerable power.

Thus Giles and Joy also make apparent the dangers in critical analysis of hasty generalisations about gender roles. This is followed by Crystal Addey's examination of the use of mirrors for divination in the Graeco-Roman world. Addey explores the differences and similarities between catoptromancy that involved an oracle and catoptromancy in which a God or *daimon* is invoked. She discusses in what ways they were "supernatural" and their different uses of the elemental mediums of light, water, and earth, which are variously employed in combination with the mirror as a means to revelation. Like the earlier two essays in this section, Ross Hulkes's essay upon Seneca's nuanced use of the mirror as a metaphor, reveals its epistemological functionality. In the political realm of Nero's Empire Seneca's writings employ the mirror as a valuably ambiguous symbol that can represent entry into knowledge by the emperor via the philosopher as his moral mirror image.

In the next part, there is a movement in focus away from the practical use of the mirror as an entry into forms of supernatural belief or worldly power and towards the concept of the mirror as representative of the liminal state of man within the Christian World. Mark Kauntze charts the inauguration of this movement. He explains how St. Paul's mirror metaphor, that man only sees through a glass darkly, originally referred to the Sayings of the Prophets and functioned as a marker of man's earthly ignorance. Kauntze then goes on to show how this was later positively reinterpreted by Augustine as a metaphor for the mind of man as the microcosm of the Trinity. The essay that follows, which is on Chaucer's use of mirror imagery, explores the ever increasing emphasis in medieval discourses upon the imaging of God as an active and rational process. This paradoxically heightens the stress on man as fallen, as well as potentially the mirror of God, and depicts women constructed at a double remove from God, in their passions, passivity and vanity. Jacomien Prins's essay explores the continuing evolution of beliefs in man's mirroring of God as evident in Marsilio Ficino's philosophy. In Ficino's Christianisation of Platonic thought it flowered into a belief in a cosmic harmony which was interpretable by man through his smooth and shiny liver's mirroring to his mind of the harmony of the spheres and this world's mirroring of God.

The essays in Part Three concentrate on the relation of mirrors and mirror imagery to perception and doubling. The eminent scientist Richard Gregory introduces this part with his analysis of the technology of mirrors and of how reflection works. This is followed by my essay on early modern mirrors, which compares subject formation by mirrors and by language, as well as exploring the interrelation of social, psychophysiological and technological types of mirroring. Lynn Holden closes this part with her essay on *doppelgänger*s, which examines related psychological theories and the cultural and literary

phenomenon of the double that allows for a play that can be a source of terror, liberation, and subversion.

The last three essays provide a variety of perspectives on the mirror as a visual metaphor, although all reveal a common concern with the play of presence and absence. Beth Williamson begins with a survey of some of the stereotypical mirror paintings which come to mind: Van Eyck's *The Arnolfini Portrait*, Velasquez's *Las Meninas*, and Manet's *Bar at the Folies-Bergère*. Williamson offers an invigorating reappraisal of these, and then goes on to examine ways in which the viewer is implicated as a witness by late medieval depictions of the Annunciation, and implicated as a reader by visual techniques in Mary of Burgundy's Book of Hours. Judit Varga's examination of Johannes Gump's curious *Self-Portrait*, argues that it reveals itself as in fact an *Image-Portrait* and so is a disruptive allegory of 17th century Dutch painting in its anxiety about self-presentation as only possible as representation. Finally, Katherine Shingler's study of Apollinaire's *miroir* reveals it's mimicking of Van Eyck, Velasquez and Manet as also an undermining of the belief in mimetic representation. Thus in this last section the mimesis offered by mirrors and paintings, begins with the ideal of a recreation of presence through the didactic utilisation of these objects, but their employment increases in self-consciousness and finally ends in the high irony of Apollinaire's symbolisation.

This widespread examination of the mirror as an object and in textual and visual imagery reveals that its deployment is related to discourses and beliefs circulating within a particular period, whilst it also interacts with the longer term cultural and psychophysiological capacities and constraints involved in being a human subject. The evolution of the form and functioning of the mirror as a concept is closely interlinked with the evolution of discourses and beliefs concerned with human subjectivity, knowledge and perception, and the authors here collaboratively in this book chart how the meaning of an object and a metaphor is both transformed by and transforms the socio-cultural matrix: the continuities underlying the concept reflect aspects that remain viable in relation to the contexts within which they operate, whilst variations in the manifest forms of concepts reflect the variety of co-evolving structures in play at that moment.

There are many organisations and individuals that are due an acknowledgement for their contribution to this book's making. Most of all, thanks are due to the Bristol Institute for Research in the Humanities and Arts (BIRTHA) for sponsoring the original conference at which many of these essays first took form as conference papers and to Mark Kauntze for organising the funding and the conference. In addition, thanks are due to Perseus Books for permission to use adapted material from Mark Pendergrast's book for the

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ILLUSTRATIONS

- Figure 1.1. Bronze mirror types. Line drawings by Jody Joy.
- Figure 2.1. Fresco depicting a scene of catopromancy or lecanomancy. Room 5, Villa of Mysteries, Pompeii. Photo by Hannah Platts.
- Figure 2.2. Painted representation of a priestess reflected in a mirror. Room 4, Villa of Mysteries, Pompeii. Photo by Hannah Platts.
- Figure 7.1. Sir Isaac Newton's optical diagram.
- Figure 10.1. *Mary of Burgundy at Prayer*, Hours of Mary of Burgundy.
- Figure 10.2. *Christ Nailed to the Cross*, Hours of Mary of Burgundy
- Figure 10.3. *Virgin Annunciate*, Antonello da Messina.
- Figure 10.4. *Stigmatisation of St Francis*, Master of the St Francis Legend.
- Figure 10.5. *St Francis Stigmatised*, Giotto.
- Figure 11.1. *Self-Portrait*, Johannes Gump.
- Figure 11.2. *Triple Self-Portrait*, Norman Rockwell.
- Figure 12.1. "Cœur couronne et miroir", Guillaume Apollinaire.
- Figure 12.2. *The Arnolfini Portrait*, Jan van Eyck.
- Figure 12.3. *Las Meninas*, Diego Velázquez.
- Figure 12.4. *Un Bar aux Folies-Bergère*, Édouard Manet.

INTRODUCTION

MIRROR MIRROR: A HISTORICAL AND PSYCHOLOGICAL OVERVIEW

MARK PENDERGRAST

Strange, that there are dreams, that there are mirrors.
Strange that the ordinary, worn-out ways
of every day encompass the imagined
and endless universe woven by reflections.
—Jorge Luis Borges

It's a morning ritual, something so commonplace that you hardly notice it. Yes, there you are again, perhaps a little bleary-eyed, but it's you, all right, perhaps with a toothbrush in your mouth or a washcloth in your hand. You orient yourself in the world for another day. You're so used to this experience that you rarely think about it. Yet what you have just done is almost unique in the animal kingdom. Your ability to recognize the creature in the mirror as *you* seems to be limited to the higher primates, and perhaps dolphins and elephants. Other animals see only a rival or friend.

Mirrors are meaningless until someone looks into them. Thus a history of the mirror is really the history of looking, and what we perceive in these magical surfaces can tell us a great deal about ourselves—whence we have come, what we imagine, how we think, and what we yearn for. The mirror appears throughout the human drama as a means of self-knowledge or self-delusion. We have used the reflective surface both to reveal and to hide reality, and mirrors have found their way into religion, folklore, literature, art, magic and science.

A Long, Magical History

Humans have been intrigued with mirrors since prehistoric times. The ancient Egyptians, Indians, Chinese, Mayans, Incas, and Aztecs buried their dead with metal or stone reflectors, to hold the soul, ward off evil spirits, or allow the body to check its appearance, before taking the final trip to the after-

life. Because a round mirror can both reflect the sun and become a miniature imitation of it, early metal reflectors came to be associated with sun gods. At the same time, however, secular mirrors were used to apply cosmetics, foreshadowing thousands of years of people peering into the “flattering glass”.¹ Yet the magic of mirrors remained. “Scryers” used them to look into the mystic future; mirrors served as a portal to the divine or demonic. Magicians manipulated them to create illusions to impress kings and commoners.²

From earliest times, mirrors have also been used for scientific applications. According to legend, Archimedes used mirrors to set fire to Roman ships during the siege of Syracuse, and the controversy over whether or not this feat was possible led eventually to modern solar ovens and generators. Concave mirrors made early lighthouses possible, and the reflecting telescope changed our view of the universe. Today, huge mirrors permit us to peer into ever-more distant regions of space, and light-weight gossamer optics will allow us to delve even farther. Some envision orbiting giant mirrors to manage the earth's climate.³

The story of mirrors is also the story of light, that mysterious medium that acts simultaneously like a wave and a particle, imposes a speed limit on the universe, and in a sense *is* the universe, according to Einstein. Yet no one really knows what it is. Sure, it is called electromagnetic radiation, but that only means that it is produced when you run electricity by a magnet. But what *is* light really? Even though it allows us to see, it is itself invisible, traversing space without a trace, unless it bumps into something like dust, which allows us to see that it travels in straight lines. It isn't readily apparent that it has a finite speed—though it does, imposing an apparent speed limit on the universe—or that “it” is an *it* at all. We still really don't understand it, though we know a great deal about how it behaves. The marvel is that humans have tried, with some success, to figure it all out.⁴

As if these mysteries were not enough, visible light is only one octave in the spectrum that ranges from mile-long radio waves to high-energy bursts of gamma rays. After World War II, our ability to explore the universe dramatically expanded as scientists figured out how to make unusual mirrors reflect most of those wavelengths. That story, too, is part of the mirror saga.⁵

From Metal to Glass: Technology Changes Culture

While the first mirror was undoubtedly a still body of water, the first known man-made mirror dates from around 6200 BCE, found at the Çatal Hüyük site in modern-day Turkey. Within another three thousand years, Egyptians and Sumerians created metal mirrors—first copper, then bronze, gold, and silver. Meanwhile, in the Western hemisphere, the Olmecs, Moche, and other cultures made mirrors from anthracite, slat, pyrite, and obsidian.

The ancient Romans pioneered in making glass mirrors by blowing glass bowls and coating their insides with molten lead, then breaking them apart to form poor-quality convex mirrors. During the Middle Ages, this art was nearly forgotten but became popular again, particularly in northern Europe, in time for Jan Van Eyck and others to portray them—and possibly use them as artistic tools—in their paintings of the early 15th century. In that same century, mirror-makers on the island of Murano near Venice perfected the secret art of making larger, flat glass mirrors, backed by a tin-mercury amalgam, creating a demand among royalty and nobility for these expensive, astonishing luxuries. After Louis XIV broke the monopoly in order to make his Hall of Mirrors at Versailles, glass mirrors gradually become more commonplace and cheaper.

People rarely stop to think about the side-effects of technological innovation, but the glass mirror helped to shape the modern secular age. When mirrors were rare, costly, small metal reflectors, they were often symbols of the sacred and divine. But as mirrors became more commonplace, they gradually lost their magic lustre and began to reflect everyday reality and vanity. Mirrors, which had sparked the advance of science ever since the Greeks puzzled over parabolic concave mirrors and why they focused heat and light, were crucial to the final separation of science and magic, which I date from just after the time of John Dee (1527-1609), one of the last great believers in scrying as well as optics and astronomy.⁶ As the seventeenth century broke, the science of optics and mirrors had advanced to the edge of modernity. In the new century, there would be no more “natural magic”. Many people would continue to believe in the supernatural, but it would be divorced from the natural.

Since its inception in the Middle Ages as a secret Italian guild, followed by the 17th century French industrial espionage that broke the monopoly, the glass mirror industry has grown to huge proportions, with the modern float glass factory running a constant river of molten and then solid glass over an ocean of liquid zinc. The common glass mirror also had an unforeseen, revolutionary impact on Renaissance literature and art. With the advent of cheap industrialized glass and modern methods of applying reflective material to it, mirrors have now become common objects even in the poorest homes. They have been used creatively by architects and home decorators, and in the 20th century, glittering mirrors helped transform America into a pleasure-seeking, vain, celebrity-driven society. Psychologists, advertising men, police, and voyeurs peer at us through one-way mirrors.

Mirrors ushered in the earliest human civilizations, and now they point us into the future—while simultaneously allowing astronomers to peer ever further back into time. The history of mirrors covers a vast territory, from the creation of the universe (perhaps along with alternate mirror universes) to the first

hominids to the Hubble Space Telescope and beyond. The cast of quirky characters looking into and manipulating mirrors is equally diverse.

A Personal Adventure

When I first conceived of researching mirrors, I knew it would be interesting, but I didn't realize in how many directions it would take me. I examined ancient Egyptian mirrors in the Louvre, walked through the Hall of Mirrors at Versailles, looked at myself in an Aztec divining mirror at the British Museum, stumbled through a century-old mirror maze in Lucerne, buried myself under books and manuscripts in various archives and libraries, visited a French nudist colony (few mirrors, as I suspected), lay on my back to see the world's largest kaleidoscope in an upstate New York silo, looked at myself as I really am (not flipped right-to-left) in a "True Mirror" in Manhattan, clambered to the top of a new 300-foot diameter radio telescope in rural Green Bank, West Virginia, gazed down into the vast pool of the 200 inch mirror on Mt. Palomar, ventured under the University of Arizona football stadium to see Roger Angel's Mirror Lab, and lived at a Vedanta Monastery while tailing John Dobson, the extraordinary missionary of amateur telescope mirror makers.

As I type this sentence, I am looking into my own eyes in the hinged "PC mirror" attached to the side of my computer monitor. This device is sold by a New York company primarily as a sales tool for telemarketers—if you smile winsomely people are more likely to buy your product. I put the mirror on my computer, however, not to sell something, but to remind me of my own humanity. Right now, I see a man in his mid-fifties, greying around the temples, who needs a haircut and who, though he hates to admit it, looks a bit like Woody Allen. I am confessing all this, because this essay is not only a history of mirrors but also, like all essays, a reflection of a particular person who lurks somewhere behind the words.

One overarching theme of the history of our intimacy with reflective surfaces is that as human beings we use mirrors to reflect our own contradictory nature. On the one hand, we want to see things as they really are, to delve into the mysteries of life. On the other hand, we want the mysteries to remain mysteries. We yearn for definitive knowledge, yet we also revel in imagination, illusion, and magic. The German poet Rainer Maria Rilke may have been right when he wrote, "Mirrors: still no one knowing has told/ what your essential nature is."⁷ In J.K. Rowling's Harry Potter fantasy novels, the Mirror of Erised shows us "the deepest, most desperate desire of our hearts."⁸ In a way, all mirrors are like that. Ultimately, what we see in them depends on what we bring to them.

Mirror Mazes

As I groped my way through the mirror maze in Lucerne's Glacier Garden, I kept bumping into a mirror where it appeared that I was walking down a long corridor framed with Moorish columns. At the far end of the corridor, I saw a young man approaching. He kept disappearing as both of us turned corners or pursued blind alleys. Finally, I bumped into another mirror, turned right, then left, and there he was again, now quite close. He reached out and, as he touched my face tentatively, he asked, "*Sind sie echt?*" In German, he was asking me if I was real. I laughed and said "*Ja,*" and he laughed too. But for a confusing moment of disequilibrium, he wasn't joking. That's what mirrors can do to us human beings. They can jolt us out of reality or fantasy with equal ease.

My younger brother once worked in a factory where he was the only white laborer. One day he caught a glimpse of himself in a mirror down a hallway and thought, "What is that white boy doing here?" Then he realized he was looking at himself. Most of us have had experiences like that, moments of shock when we see a stranger before recognizing ourselves. When it once happened to Sigmund Freud on a train, it caused him "profound displeasure". In researching the history of mirrors, I had more than my share of such moments, though I generally found them intriguing.

The Prague mirror maze atop Petrin Hill, known as the Bludište, was built in 1891. "I see my back at the end of one aisle," I wrote in my journal there, "my side in another, and I can look sideways at myself writing in this notebook. It is strange to turn everywhere and see yourself. There is a big fly in here with me, whacking against the glass, buzzing madly." At the end of the maze is a superb gallery of funhouse mirrors installed in 1911, which turned out to be the real attraction. Children shrieked and giggled, while adults flirted and laughed. One mirror makes you look like a dwarf with cute little knees but a very long body. Another stretches your head into grotesque shapes. As in the Lucerne mirror maze, the laughter here rippled over barely concealed anxiety. *Do I really look like that? Could this be a part of who I am in my dreams?* Later, at the London Natural History Museum, I saw a woman in a low-cut blouse look at herself in a distorting mirror, where she saw her breasts absurdly stretched downwards. She gasped and backed away, exclaiming, "I've seen the future!"

Who Do You See in the Mirror?

And so we come back to the question the earliest hominid faced in the still water after the rainstorm. This is the question of identity, of essence, of soul that concerned the ancient Egyptians, Chinese, and Aztecs. It is even at the root of the questions asked by astronomers who have turned their big mirrors out

towards space. Who are we, and what is our place in the universe? This brings us into the realm of psychology, where we must pick carefully amongst unproven theories and scientifically valid concepts.

In 1964 Chicago psychologists Arthur Traub and J. Orbach created the “adjustable body-distorting mirror,” a plexiglass reflective surface about four feet high that could be adjusted to bend as a convex or concave mirror in various ways. Subjects stood seven feet from the mirror and saw themselves at first as “tall, with pin head, large elongated body and legs tapering to tiny feet,” then as “short with enormous horned head and tapering legs.” When subjects were asked to adjust the mirror so that they looked normal, they had an unexpectedly difficult time. “Many subjects declare . . . that they have forgotten precisely what they look like,” wrote Traub and Orbach.⁹

A 1968 experiment shows how most people can hallucinate when staring at themselves in a mirror. Psychiatrist Luis Schwarz and psychologist Stanton Fjeld placed subjects two feet from a 16-inch square mirror, illuminated only by a tiny bulb three feet behind them, and then tape-recorded their impressions over the next half hour in what amounted to perfect scrying conditions. “It is a transparent face, jelly . . . like a cloud changing its form completely . . . the nose is large and the ears smaller and smaller . . . now I am bald,” a man identified as “neurotic” reported. But a “normal” male said, “My eyes are whole caves with dancing skeletons,” while another observed, “I see several faces . . . They change one from another . . . Their hair cut is changing . . . are holy men . . . a Japanese . . . a Negro.” Yet another normal male saw himself gradually fading: “The image is darker and darker . . . disappears . . . the mirror . . . and I see a deep black.”¹⁰

Some mirrors are intended to manipulate. A recent article in *Chain Store Age* offers the case study of Sally, who tries on a pair of capri pants in a store's dressing room. “Alas, the sole mirror and bad lighting make Sally look pale and fat,” and she leaves without buying anything. The moral? Store managers should “spend money on mirrors (and lots of them),” along with good lighting.¹¹ Although no department stores will admit it, rumor has it that they sometimes use slightly convex mirrors that make people look slimmer. Bruce Newman and Susan Larson of Assist Technologies in Lake Carmel, New York, sell the four-inch square, hinged PC Mirror that is attached to the side of my computer. Intended for use in workplace cubicles, the mirror can be useful in various ways, such as warning of a boss's approach or permitting a quick appearance check before a meeting. But its primary purpose is to help telephone sales people to “smile while you dial,” on the assumption that the smile can be “heard” in a more pleasant tone of voice. Company-sponsored surveys claim an average eight percent increase in sales after PC Mirror installations.¹²

Apes, Elephants and Dolphins Face the Mirror

One morning in 1964, when 22-year-old grad student Gordon Gallup looked at his own reflection while shaving, he considered that it would be interesting to see whether other species of animals could recognize themselves in mirrors. Five years later, as an assistant professor of psychology at Tulane, he got the chance.¹³

Gallup put four preadolescent chimps—two female, two male—into separate cages and placed a full-length mirror outside each cage for ten days. At first, they reacted as they would to a stranger—bobbing, vocalizing, threatening, or adopting submissive postures. On the third day, however, he noticed a dramatic change. In the mirror, the chimps began to examine the inside of their mouths, to groom the hair on their foreheads, to pick their noses, to examine their genitals—taking advantage of the mirror to see otherwise inaccessible areas. They made faces, blew bubbles, and manipulated food wads with their lips. It was obvious to Gallup that they knew they were looking at *themselves* in the mirror, but he needed to be able to prove this subjective impression to skeptical colleagues.

Gallup devised a test. He anesthetized the four chimps and marked an eyebrow ridge and top half of the opposite ear with an odorless red dye. He did the same thing with a male and female chimp with no previous mirror experience. When the chimps awoke, they were monitored to make sure they weren't touching their red marks. Then mirrors were introduced. The four experienced chimps immediately took notice, touching the red marks repeatedly, and then looking at that finger. One of them even smelled the finger. The two other chimps showed no mark-directed responses. In subsequent experiments, Gallup did the same test on macaques and rhesus monkeys, habituating them to mirrors for two weeks before trying his mark test. They failed. In a two-page paper published in *Science* on January 2, 1970, Gallup summarized his experiments, concluding, "Recognition of one's own reflection would seem to require a rather advanced form of intellect." He added that this ability might imply a "concept of self" that set humans and the great apes apart from other species. That fly I met in the Prague mirror maze might wear itself out, buzzing and banging against its image, but it will never figure out who that other hardheaded fly is.

Gallup and others have subjected all kinds of animals to the mark test with mirrors. Orangutans passed with no problem. To everyone's surprise, however, no gorillas touched the red marks. Only Koko, the famous gorilla who has learned sign language, clearly identified herself in a mirror, according to her owner. Bonobos, the endangered, peaceful apes of the Congo, knew themselves

in mirrors. But all monkeys flunked. Gallup left a mirror with a pair of rhesus monkeys for 18 years, and they still didn't get it.

Elephants apparently failed the mark test in the late 1980s, but ten years later, in Nevada, animal behaviorist Patricia Simonet tested two performing Asian elephants—Bertha, a veteran in her forties, and 8-year-old Angel, although Angel got little chance to see herself, since the dominant Bertha hogged the mirror. Within 20 minutes of the mirror's introduction, Bertha stopped flapping her ears and trumpeting at the other elephant in the mirror and apparently began examining herself. During the mark test, white children's face paint was applied to a brow and temple, behind one front leg, and on one hip, all visible to Bertha only in the mirror. With her trunk, she touched the marks 15 times during the two hours of testing.

Dolphins also know themselves in mirrors, according to a 1999 study by Lori Marino, an Emory University psychology professor, and Diana Reiss, director of marine mammal research at New York Aquarium.¹⁴ They marked Pressley and Tab, two teenaged bottlenose dolphins, with non-tactile black magic marker and used a variety of control circumstances. In order to qualify for self-recognition, the dolphins had to 1) spend more time at the mirror when marked, 2) display no "social" behavior as if towards another dolphin, and 3) swim immediately to the mirror and expose the mark. Pressley and Tab passed the test, obviously contorting their bodies in front of the mirror in order to observe marks under their chins or sides. When they marked Pressley's tongue, he opened and closed his mouth in front of the mirror as he never had before. Gordon Gallup, Marino's former mentor, is still skeptical, since dolphins have no hands or trunks with which to touch their marks. "It is entirely possible," he told me, "that the dolphins have learned that they have control over the behavior of the 'other' dolphin in the mirror, and therefore when they see the image with a mark they change their orientation to the mirror so that they can see it better."¹⁵

No one denies, however, that dolphins are smart. Like humans, they have large brains, but they have meager frontal lobes, which are crucial to humans. Marino believes this may be a case of evolutionary convergence, in which different species arrive at the same survival strategy by independent paths, like the flying ability of bats and birds. The convergence is probably not toward the specific trait of mirror self-recognition, she says, but to a "certain level of complexity in how they process information."¹⁶

Becoming Aware of Yourself

In a 1972 issue of *Developmental Psychobiology*, Beulah Amsterdam published the first mirror-recognition study for human babies, "Mirror Self-

Image Reactions Before Age Two.”¹⁷ She described how she had tested 88 children between the ages of 3 months and 24 months by putting a spot of rouge on one side of the nose and seeing if they touched it while looking in the mirror. Early on, babies seemed to recognize their mothers in the mirror, but not themselves. By six months, infants were smiling and playing with themselves in the mirror, but they treated the reflection as another child. At one year, they began to search behind the mirror for their mysterious playmate. Finally, Amsterdam concluded “from 20 to 24 months, 65 percent of the subjects demonstrated recognition of their mirror images.” Subsequent research has substantiated her findings, indicating that most children's brains first register that they are observing themselves sometime during the latter part of their second year, when they become coy, embarrassed, clownish, or self-admiring in front of the mirror.

What exactly does mirror self-recognition imply? Gordon Gallup believes self-recognition means self-awareness. “You become the object of your own attention. You are aware of being aware. And that, in turn, allows you to make inferences about comparable states of awareness in others.”¹⁸ Gallup doesn't deny that other animals such as dogs or even fleas may have alternate forms of self-concept, but the brain's capacity to allow us to know we are looking at ourselves appears to place us—along with higher apes and perhaps elephants and dolphins—in a unique category, and this simple ability to recognize ourselves in a mirror seems to be essential to the human enterprise.

Can it be a coincidence that toddlers develop language and begin to say *I*, *me*, and *mine* about the same time they learn mirror self-recognition? Or that the frontal lobes develop dramatically in the second year of life? Or that they reach Piaget's level of understanding “object permanence” (remembering and seeking out hidden objects) and begin to engage in pretend play? Or that they begin to act like strong, self-willed individuals in the “terrible twos”? Or that they begin soon afterwards to develop empathy for others and moral standards? Or that their autobiographical memories supersede the period of “infantile amnesia” around the age of three?

In the late 1800s, Charles Horton Cooley, a Michigan sociologist, theorized that the human sense of self is created in infants through social interactions. Cooley—who was himself a shy semi-invalid—called this the “looking-glass self” because he believed that our self-concept is a reflection of what we perceive others think of us.¹⁹ His disciple, George Mead, concluded, “it is impossible to conceive of a self arising outside of social experience.”²⁰ Gallup, suspecting that Cooley and Mead were onto something, gave the mark test to chimpanzees that had been raised in complete isolation, after habituating them to mirrors. As he predicted, they failed to identify themselves. Similarly, the famed Wild Boy of Aveyron, captured in the French woods in 1799, reached

behind a mirror to find the boy he thought was hiding there. The Wild Boy never learned mirror recognition, nor did he learn to speak.²¹ Perhaps such abilities must be developed during the crucial developmental period when the brain is growing and establishing new branches, connections, and synapses.

Of course, mirrors are not necessary for self-awareness. Blind people know perfectly well who they are, for instance. Thus Sidney Bradford, blind before his first birthday, was an intelligent, self-assured 52-year-old when his sight was restored by a cornea transplant in 1958. He became fascinated by mirrors, often preferring to see the world in their reflection rather than directly. But Bradford couldn't get used to his own face in the mirror and shaved by touch in the dark as he always had.²² The ability to recognize oneself in a mirror correlates with (but does not cause) essential human traits such as logic, creativity, curiosity, the appreciation of beauty, and empathy, leading directly to tool use, scientific experiments, story-telling, poetry, art, theater, law-making, philosophy, religion, and a sense of humor. In other words, as humans evolved, the ability to *think*—to ponder themselves in mirrors, among other things—helped them to survive.

“Without self-awareness,” Emory University primatologist Frans de Waal observes in his 1996 book, *Good Natured*, “we might as well be folkloric creatures without souls, such as vampires, who cast no reflections. Most important, we would be incapable of cognitive empathy, as this requires a distinction between self and other and the realization that others have selves like us.”²³ As one would expect, other species that display mirror self-recognition also show the capacity to empathize, which is the very essence of the Golden Rule, to treat others as you would be treated. Dolphins, for instance, are famed for helping injured people. On the other hand, the ability to put oneself in someone else's shoes also permits deception and cruelty. What would sadists know about exquisite torture unless they could imagine what it felt like? As Jane Goodall discovered with her beloved chimps, they could murder as well as comfort one another, whatever their motivation.

Sex also seems to be connected with mirror self-recognition, from the ancient Egyptians to the modern brothel ceiling. Bonobos and dolphins are highly sexed animals always ready for intercourse. Pan and Delphi, the two half-brother dolphins, always enjoyed sexual play with one another, but when mirrors were available, their libido went wild, so that in one half-hour session, they attempted to penetrate one another 43 times. In all cases, they assumed positions so that they could watch themselves in the mirror, breaking off if their bodies drifted out of sight, then resuming sex play in front of the mirror.²⁴

Self-awareness may lead to more satisfying sex, but it also makes humans, and perhaps some other animals, aware of their mortality. Humans want to believe in a humanistic deity—a mirror image of sorts—who will guarantee us immortality in heaven. Fear of death may account for the religious impulse, but

I think there's more to it. Our search for meaning and our innate reverence for this world in which we live are also probably related to self-awareness and mirrors.

The Mirrorless Biami Garden of Eden

Throughout the developed world, mirrors are commonplace. "The profundity of what takes place in a mirror is in perpetual danger of being lost through familiarity," notes science writer Adrian Desmond.²⁵ My history of mirrors was in part an attempt to untarnish our mirrors, allowing us to look into them with fresh wonder and to help us understand their extraordinary place in human history. Sometimes, however, I admit that I have thought we might be better off without mirrors, especially when I read that hundreds of thousands of people a year pay for botox injections to smooth their facial wrinkles with a paralytic poison, or when I consider other such attempts to manipulate image and deny mortality.²⁶ But without mirrors, we would still be human. It is not the blank slate of the mirror that I deplore—it is what we sometimes reflect in it.

Let me leave you with the parable of anthropologist Edmund Carpenter's encounter with the Biami, an isolated New Guinea tribe.²⁷ "It was important to us to film the reactions of people totally innocent of mirrors," Carpenter wrote in 1975. "Such people exist in New Guinea, though they number only a handful and are disappearing like the morning mist." A few Biami men had mirror shards, but they were too small to show a face and were used only as light-reflectors. They lived near swift rivers but no standing bodies of water in which they could see themselves. "Certainly their initial reaction to large mirrors suggested this was a wholly new experience for them," Carpenter observed. "They were paralyzed: after their first startled response—covering their mouths and ducking their heads—they stood transfixed, staring at their images, only their stomach muscles betraying great tension." Carpenter interpreted their reaction as the "terror of self-awareness," and he portrayed their looking into mirrors as something like Adam and Eve eating the apple in the Garden of Eden, then suddenly becoming self-conscious and covering themselves.

"Western man," Carpenter asserted, "values, above all else, the isolated, delimited, aware self," whereas for traditional New Guinea tribes, "there was no isolating individualism, no private consciousness." As appealing as this romantic assessment may be, I don't buy it. Anthropologist William Mitchell, who did extensive field work with New Guinea tribes, says, "I never met any 'primitive' male or female who didn't know who he or she was, and acted upon it."²⁸ Though the Biami did not have mirrors, they had the human capacity to recognize themselves in them, and the human need to consider and manipulate their image. After all, the men already applied elaborate face-paint to one

another in preparation for war. “In a matter of days,” Carpenter was forced to report, “they groomed themselves openly before mirrors.” When they first beheld the miracle of their own reflection, the Biami may have felt genuine terror, as Carpenter surmised, but perhaps they also felt awe, wonder, and dawning comprehension.

In the developed world, we would do well—as we look into the myriad mirrors that surround us daily and as we use innovative scientific mirrors to look ever farther into the reaches of space and time, to send messages ever more quickly over beams of light, to direct deadly laser weapons—to learn from the Biami. Mirrors *should* inspire terror, wonder and comprehension.

Notes and References

The material in this chapter is adapted from Mark Pendergrast, *Mirror Mirror: A History of the Human Love Affair with Reflection* (New York: Basic Books, 2003).

¹ See Richard Gregory, *Mirrors in Mind* (London: Penguin, 1997); Christine Lilyquist, *Ancient Egyptian Mirrors* (Munich: Deutscher Kunstverlag, 1979); Bruno Schweig, *Mirrors: A Guide to the Manufacture of Mirrors and Reflecting Surfaces* (London: Pelham Books, 1973); Benjamin Goldberg, *The Mirror and Man* (Charlottesville, VA: University Press of Virginia, 1985); Sabine Melchior-Bonnet, *The Mirror: A History*, trans. Katharine H. Jewett (New York: Routledge, 2001).

² Lynn Thorndike, *A History of Magic and Experimental Science*, 8 vols. (New York: Macmillan, 1923); Theodore Besterman, *Crystal Gazing: A Study in the History, Distribution, Theory and Practice of Scrying* (Kila, MT: Kessinger, 1924); Benjamin Woolley, *The Queen's Conjurer: The Science and Magic of Dr. John Dee, Adviser to Queen Elizabeth I* (New York: Henry Holt, 2001).

³ Goldberg, *Mirror and Man*.

⁴ Jacob Abbott, *Light* (New York: Harper & Brothers, 1871); Richard P. Feynman, *QED: The Strange Theory of Light and Matter* (New York: Penguin, 1985); Thomas D. Rossing and Christopher J. Chiaverina, *Light Science: Physics and the Visual Arts* (New York: Spring, 1999); David Park, *The Fire Within the Eye* (Princeton, NJ: Princeton University Press, 1997).

⁵ Nigel Henbest and Michael Marten, *The New Astronomy* (Cambridge: Cambridge University Press, 1983); Wallace Tucker, and Riccardo Giacconi, *The X-Ray Universe* (Cambridge, MA: Harvard University Press, 1985).

⁶ Woolley, *The Queen's Conjurer*.

⁷ Rainer Maria Rilke, *Ahead of All Parting: The Selected Poetry of Rainer Maria Rilke*, trans. Stephen Mitchell (New York: The Modern Library, 1995), 467.

⁸ J.K. Rowling, *Harry Potter and the Sorcerer's Stone* (NY: Scholastic, 1997).

⁹ Arthur C. Traub and J. Orbach, “Psychophysical Studies of Body-Image,” *Archives of General Psychiatry*, vol. 11 (1964): 53–66; J. Orbach and Arthur C. Traub,

“Psychophysical Studies of Body-Image,” *Archives of General Psychiatry*, vol. 14 (Jan. 1966): 41–47.

¹⁰ Lui Schwarz and Staton P. Fjeld, “Illusions Induced by the Self-Reflected Image,” *Journal of Nervous and Mental Disease*, vol. 146, no. 4 (April 1968): 277–284.

¹¹ Suzanne Barry Osborn, “Little Things Make a Big Difference,” *Chain Store Age*, June 1, 2000, 36.

¹² <http://www.pcmirror.com/>, Bruce Newman (president of PC Mirrors) in phone interview with author, Jan. 30, 2001.

¹³ Gordon Gallup (psychology professor at SUNY Albany), interview with author in his office, August 2000 and phone interviews; Gordon G. Gallup, Jr., “Can Animals Empathize? Yes,” *Scientific American*, vol. 9, Nov. 1998, 66–71; Gordon G. Gallup, Gordon G., Jr., “Chimpanzees: Self-Recognition,” *Science*, vol. 167, Jan. 2, 1970, 86–87.

¹⁴ Diana Reiss and Lori Marino, “Mirror Self-Recognition in the Bottlenose Dolphin: a Case of Cognitive Convergence,” *PNAS*, vol. 98, no. 10 (May 8, 2001): 5937–42; Lori Marino (psychology professor at Emory University) interview with author, Oct. 9, 2002.

¹⁵ Gallup phone interview with author, Nov. 2, 2002.

¹⁶ Should we treat animals that recognize themselves in mirrors in an especially humane manner? So Steven Wise argues, but he also makes the case for many other animals who don't pass the mark test, including honeybees. Steven M. Wise, *Drawing the Line: Science and the Case for Animal Rights* (Cambridge, MA: Perseus Books, 2002).

¹⁷ Beulah Amsterdam, “Mirror Self-Image Reactions Before Age Two,” *Developmental Psychobiology*, vol. 5, no. 4 (1972): 297–305.

¹⁸ Gordon G. Gallup, Jr., “Self-Awareness and the Evolution of Social Intelligence,” *Behavioural Processes*, vol. 42 (1998): 239–247.

¹⁹ In 1949, Jacques Lacan incorrectly theorized that infants go through a “mirror stage” between 6 and 18 months of age in which they discover their mirror image and believe it is themselves, thus dooming them to a life of alienation from their true selves. As Lacan put it: “This jubilant assumption of his specular image by the child...[exhibits] the symbolic matrix in which the *I* is precipitated in a primordial form, before it is objectified in the dialectic of identification with the other.” Jacques Lacan, *Écrits: A Selection* (London: Tavistock Publications, 1977).

²⁰ George H. Mead, *Mind, Self and Society from the Standpoint of a Social Behaviorist* (Chicago: University of Chicago Press, 1934).

²¹ Harlan Lane, *The Wild Boy of Aveyron* (Cambridge, MA: Harvard University Press, 1976).

²² The story ends tragically. With his sight restored, Bradford became self-conscious, lost his self-confidence, and died within two years. Richard Langton Gregory and Jean G. Wallace, “Recovery from Early Blindness: A Case Study,” *Experimental Psychology Monograph No. 2* (1963).

²³ Frans De Waal, *Good Natured: The Origins of Right and Wrong in Humans and Other Animals* (Cambridge, MA: Harvard University Press, 1996).

²⁴ Reiss and Marino, “Mirror Self-Recognition in the Bottlenose Dolphin.”

²⁵ Adrian J. Desmond, *The Ape's Reflexion* (New York: Dial Press, 1979).

²⁶ David Noonan and Jerry Adler, “The Botox Boom,” *Newsweek*, May 13, 2002, 50–58.

²⁷ Edmund Carpenter, “The Tribal Terror of Self-Awareness,” in *Principles of Visual Anthropology*, ed. Paul Hockings (Hague: Mouton Publishers, 1975).

²⁸ William E. Mitchell (emeritus anthropology professor), email correspondence, July 21, 2002.

PART I:
MIRRORS OF ANTIQUITY

CHAPTER ONE

MIRRORS IN THE BRITISH IRON AGE: PERFORMANCE, REVELATION AND POWER

MELANIE GILES AND JODY JOY

In 1984, archaeologists excavating the Iron Age cemetery at Wetwang Slack, East Yorkshire, came across three remarkable graves, dating between the fourth and first centuries BC.¹ Like other burials nearby, they consisted of a single inhumation in a grave pit, surrounded by a square-cut ditch, from which chalk and silt had been used to cover the burial in a low mound. However, these barrows were larger than normal and set apart, lying to the west of the main cemetery. Grave goods within this cemetery included pots (usually containing a sheep humerus, representing a joint of mutton), or small items of jewellery such as a brooch, bracelet or necklace. However, all three of the new burials contained the dismantled remains of two-wheeled vehicles (chariots or carts), complete with their horse gear. Significantly, whilst the two men were buried with elaborately decorated bronze scabbards and swords, the woman was interred with a decorated bronze canister or box, and an iron mirror.

Mirrors are one of the prestige objects manufactured by smiths and artisans, during the middle-late Iron Age (c. 400 BC – 43 AD) and are found in both Britain and Ireland, as well as elsewhere on the Continent. They are made of iron or bronze polished plates and finished with bronze fittings, including looped handles and rims. Both complete examples and damaged fragments have been found in a variety of contexts: pools and lakes, as well as graves. However, their frequent association with female burials has often led to them being dismissed as a mere accoutrement, or “attractive vanity” of high status women, who are all too often marginalised in representations of Iron Age society.²

In this paper, we seek to challenge this passive and superficial view of both object and individual, by characterising these objects and exploring the context of their deposition. Since these Iron Age communities were pre-literate, we will use anthropological analogy to explore their potential use and meaning, and to prompt us to think differently about the relations between people and things in the prehistoric past.

Mirrors in the British Iron Age

The earliest mirrors from Britain and Ireland were made of iron, and date between the 4th and 1st centuries BC. Five examples are known from East Yorkshire: two from Arras,³ two from Wetwang Slack⁴ and one from Garton Slack.⁵ There are also three mirrors thought to date to the 1st century AD including an iron mirror handle from the Carlingwark Loch hoard, Kirkcudbrightshire⁶ and a fragment of iron mirror from a layer behind the hillfort ramparts at Maiden Castle.⁷ An iron mirror found in an inhumation on Lambay Island, Co. Dublin is also likely to be of 1st century AD date.⁸ Most of these examples consist of a roughly circular iron plate, once polished, varying between 165mm to 198mm diameter. In examples such as the Lady's Barrow from Arras, cast and decorated bronze fittings are used to join the iron handle to the plate. These handles are straight, measuring up to 154mm long, and are either round or square in section. This distinctive profile led Fox to classify them as part of a "bar-handled" type of mirror, most commonly found in the north of Britain.⁹

In contrast, bronze mirrors are made of a polished bronze plate, which is sometimes rimmed, and a cast bronze handle. Whilst the reflective surface of the front plate may have been improved by a variety of finishes, such as tin sweat, cementation, wiping, dipping or even plating, systematic metallurgical analysis has yet to be undertaken.¹⁰ However, many of the bronze mirrors have intricate La Tène style decoration engraved into the back of the main plate, and these highly decorated mirrors are amongst the most recognisable objects of the later British Iron Age. The majority come from burials in the south of England dating between the 1st century BC and the 1st century AD. Two distinct regionally and temporally significant groups, from the southeast and southwest of England, can be identified from depositional context, form, size and decoration (Figure 1.1).¹¹

Based on burial evidence, bronze and iron mirrors have been interpreted as the personal property of high status Iron Age women.¹² For example, the mirror burial found at Portesham in Dorset contained, in addition to a decorated bronze mirror, the crouched remains of a mature woman, pottery and joints of meat, three brooches, a knife, a bronze pan and a toilet set.¹³ Burials with mirrors are also sometimes seen as the female equivalent to a small number of male burials containing weapons such as swords, shields and spears.¹⁴ Evidence from recent finds suggests that these generalisations may be overly simplistic. Whilst it is true that the vast majority of mirrors have been identified as coming from female burials, a recent find from the Scilly Isles consisted of an unsexed inhumation burial containing, among other things, a bronze mirror and a sword.¹⁵

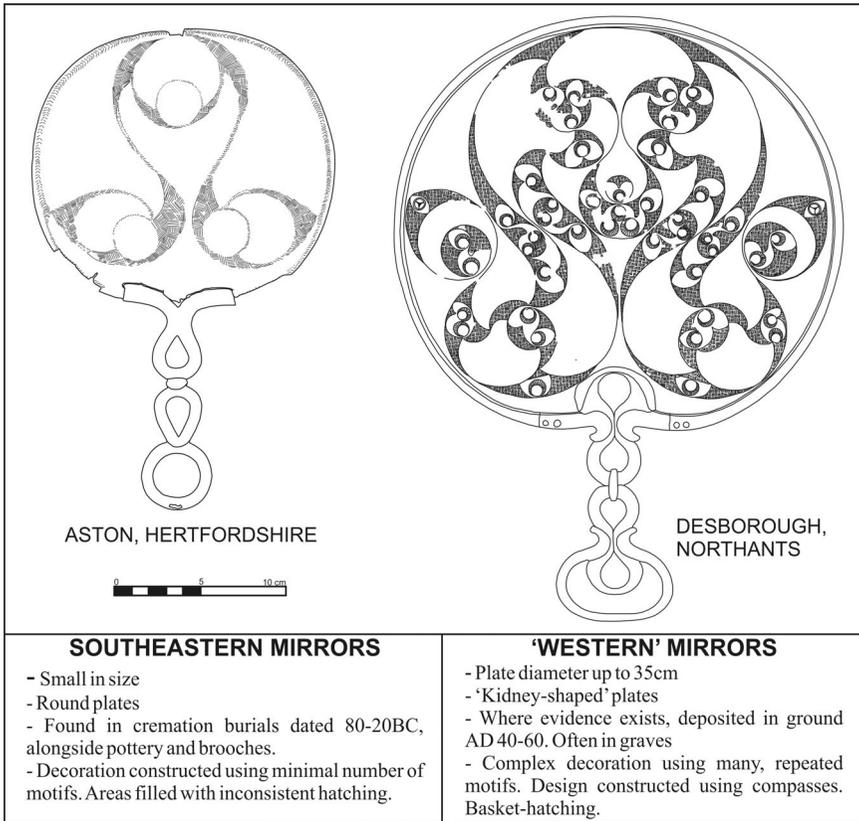


Figure 1.1. Bronze mirror types. Line drawings by Jody Joy.

Archaeologists have therefore begun to question the ways in which we interpret such grave goods: they cannot be seen as direct reflections of either the status or gender of the deceased. The dead do not bury themselves: the living do,¹⁶ and the motives of mourners may have been very complex. They may have used the funeral to demonstrate their own status, gaining prestige and authority by gifting a celebrated artefact or inherited antique to the deceased. The power and reputation of the object may also have been drawn upon to deal with important or unexpected “bad” deaths, which tore a rift in the social fabric. Such gifts may also have been used to close debts with the deceased (lest they return to look for reparation) or to appeal for intercession on behalf of the living, once the deceased had entered the world of the ancestors. For many prehistoric