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Images of Bodily Transformation

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My purpose is to tell of bodies which have been transformed into shapes of a different kind.¹

In the beginning, according to Ovid, there was Chaos. All existence was merely “a shapeless uncoordinated mass, nothing but a weight of lifeless matter, whose ill-assorted elements were indiscriminately heaped together in one place”.² Heat was blended with cold, dry with damp, and hard with soft: everything interfered with everything else. Then a divine power separated the elements and set them in their rightful places, and matter acquired form. The earth was shaped into a ball, and human beings were created. Then, almost immediately, the trouble began, starting with an attack by giants on the kingdom of the gods. The rest of Ovid’s work is a compilation of tales of transformation and shape-shifting, beginning with the original werewolf story, in which Lykaon angers Zeus and is punished by being changed into a wolf.

Shapechangers

People have always been fascinated by stories of humans changing into animals, and animals behaving anthropomorphically. Such accounts address fundamental questions of human identity, and they can be adapted to elicit either laughter or wide-eyed terror from the crowd around the campfire. Both comic and tragic heroes undergo dramatic bodily changes. In Apuleius’ *Transformations of Lucius, or the Golden Ass*, Lucius rubs in a magic ointment procured for him by his girlfriend Fotis, who is the maid of a witch. He expects to change into an owl, as the witch had done, but Fotis has taken the wrong ointment and he turns into a donkey instead. Lucius spends the rest of the story trying to regain human shape.

The hair on [my arms] grew coarser and coarser and the skin toughened into hide. Next, my fingers bunched together into a hard lump so that my hands became hooves, the same change came over my feet and I felt a long tail sprouting from the base of my spine. Then my face swelled, my mouth widened, my nostrils hung flabbily down, and my ears shot up long and hairy. The only consoling part of this miserable transformation was the enormous increase in the size of a certain organ of mine; because I was by this time finding it increasingly difficult to meet all Fotis’s demands upon it.³

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Harmondsworth, Penguin, 1955 (repr. 1988), p. 29.

² Ibid., p. 29.

³ Apuleius, *The transformations of Lucius, otherwise known as the golden ass*, tr. R Graves, Harmondsworth, Penguin, 1950, pp. 90–1.

¹ Ovid, *Metamorphoses*, tr. M M Innes,

Such advantages aside, the thought of reverting to animal type is generally frightening. It is a reminder that fate can dispose of us as it wishes regardless of our civilized pretensions; the highest individuals in human society can be reduced to the lowest level of existence on a whim of the gods. Pierre Boaistuau (d. 1566), whose vividly illustrated copy of his *Histoires prodigieuses* is a highlight of the Library's manuscript collection, reflected as much in his account of the degeneration of King Nebuchadnezzar III of Babylon:

. . . who . . . felt so sharply the heaue hande and justice of God, that he was exiled and banished from his kingdome the space of vii. yeares, wandring and living in the deserts with brute beastes, and being naked, remayned in that estate beaten not only with heate and cold, but also with hayle and dewe, until he was covered with haire like unto the Eagle, & his nailes like to birdes. Here all men may see as in a glasse, an example, spectacle and wonder worthie to be noted, that he having at commaundement a whole kingdome, and served as a King with al delicate viandes, was taken into the deserts, and there fedde and banqueted with wilde beastes. Yea, he which had been invested with purple and decked with precious Jewels, was by the hande of God so much imbased, that he was covered with no other garment than with haire, a clothing naturall to all brute beastes.⁴

Tales of exotic and bestial beings have an endless appeal to the armchair traveller. Pliny describes a plethora of odd races in far corners of the world, many of them mixtures of animal and human. They include "men with dogs' heads who are covered with wild beasts' skins; they bark instead of speaking",⁵ and "forest-dwellers . . . who have their feet turned back behind their legs; they run with extraordinary speed and wander far and wide with the wild animals".⁶ Best of all, there are the Monocoli, "who have only one leg and hop with amazing speed . . . when the weather is hot they lie on their backs stretched out on the ground and protect themselves by the shade of their feet". To the east of these are "some people without necks and with eyes in their shoulders",⁷ and "in southern India men have feet 18 inches long and the women have such small feet that they are nicknamed Sparrow-foot".⁸

Medieval bestiaries are full of images of creatures like these, and early modern writers and artists enthusiastically reproduced Pliny's monstrous races. Sebastian Münster's *Cosmographia* (1544) and Hartmann Schedel's *Liber chronicarum* (1493) bulge with tales of wonder, and of strange beasts and quasi-humans to be found at the edges of the world. The Monocoli and the dogs'-heads crop up in the form of near-identical woodcuts in book after book.

Amongst the more familiar legendary animal/human mixtures are mermaids and werewolves. Some mermaid tales are probably based on animal species such as the dugong, others on human deformities or illnesses. A scaly creature known as the "bishop fish" because of its robed and cone-headed appearance, found in Poland in 1531 and described by Conrad Gesner⁹ and others, may have been a hooded seal or *cystophora cristata*.¹⁰ The "fish boy" of Naples, on the other hand, was human, but probably suffered from the disease ichthyosis, which gives the skin a scaly appearance.¹¹

⁴ P Boaistuau, *Certaine secrete wonders of nature*, tr. E Fenton, London, H Bynneman, 1569, fol. 11 v.

⁵ Pliny the Elder, *Natural history: a selection*, tr. J F Healy, Harmondsworth, Penguin, 1991, book 7, sect. 23, p. 78.

⁶ *Ibid.*, sect. 11, p. 76.

⁷ *Ibid.*, sect. 23, p. 78.

⁸ *Ibid.*, sect. 24, p. 79.

⁹ C Gesner, *Fischbuch*, Frankfurt am Main, J Saur, 1598, fol. 105 r.

¹⁰ P Delaunay, *Ambroise Paré, naturaliste*, Laval, Goupil, 1926, p. 33.

¹¹ J Bondeson, *A cabinet of medical curiosities*, Ithaca, NY, Cornell University Press, 1997, p. 147.

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Werewolves, and other were-beasts, went by human form in the everyday world, but were apt to transform horribly in the dead of night, especially at full moon. A classic werewolf story appears in Petronius' *Satyricon*, related by the character Niceros. He says that, while on his way to visit his girlfriend Melissa in the middle of the night, he got talking to a soldier who lived in his house and who was going the same way. As they passed some tombstones at the side of the road, the soldier suddenly stripped off his clothes and turned into a wolf. "He started howling and rushed off into the woods . . . I went up to collect his clothes—but they'd turned to stone. If ever a man was dead with fright, it was me." Trembling with shock, Niceros went on to Melissa's, slashing with his sword at every shadow. When he arrived, Melissa told him that he had missed a great drama: a wolf had got into the grounds and attacked the livestock. "But," she said, "He didn't have the last laugh, even though he got away. One of the slaves put a spear right through his neck." Niceros spent a sleepless night and rushed home in the morning, seeing only bloodstains in the spot where the soldier had left his clothes. When he got home, he found that his soldier friend "was lying in bed like a great ox with the doctor seeing to his neck. I realized he was a werewolf and afterwards I couldn't have taken a bite of bread in his company, not if you killed me for it."¹²

Werewolves were able to transform themselves by means of spells or an ointment, or by wearing a belt made of either a wolf's skin or human skin—preferably that of a condemned criminal. Sometimes moonlight was necessary. In some cases they had to remove their clothes, and in others they burst out of them as their hairy torsos expanded. To return to human form, they could wash or roll in dewy grass, or remove the magic belt. The reversion might happen spontaneously if they were injured, although the wound would then be conserved on the human body as in the Petronius story. Werewolves in mufti could be recognized by distinctive signs which betrayed their animal nature: their eyebrows met in the middle, and often they had hairy palms, pointed ears and a loping walk.¹³

Witchcraft trials often included accusations of werewolfery and other animal transformations. In the late sixteenth century there was a series of "werewolf trials" in France and Germany, of which the most renowned was that of Peter Stubbe or Stump in Bedburg near Cologne, executed in 1590. He appears to have been a mere serial killer, who confessed to killing and partly eating at least two men, two pregnant women and thirteen children, but he denied doing so in the form of a wolf.¹⁴

Belief in werewolves declined in the seventeenth century, and they did not become popular again until the Romantic era, when they were revived as symbols of man's wild side and the modern werewolf tale was born. *Dr Jekyll and Mr Hyde* could be regarded as a refinement of the genre, concerning as it does a rational and scientific man who suffers a regular metamorphosis into something hairy, horrible and devoid of reason and morality.¹⁵

¹² Petronius, *Satyricon*, tr. J P Sullivan, Harmondsworth, Penguin, 1969, pp. 73–4. The word "werewolf" here is a translation of "versipellis", or turnskin.

¹³ W M S Russell and C Russell, 'The social biology of werewolves', in J R Porter and W M S Russell (eds), *Animals in folklore*, Ipswich, D S Brewer, 1978, pp. 154–5.

¹⁴ Russell and Russell, *ibid.*, pp. 152–3, and A Douglas, *The beast within*, London, Orion, 1992, pp. 132–5.

¹⁵ Russell and Russell, *ibid.*, p. 150. The hairiness is something of a Hollywood refinement, although in the book Mr Hyde is described as having a hand that is "lean, corded, knuckly, of a dusky pallor, and thickly shaded with a swart growth of hair." (R L

Witches could transform themselves into cats, birds and other animals—including wolves. Of course, they could also transform others, and not usually flatteringly. The preferred species were ignoble ones such as asses and swine. Reginald Scot (1538?–1599) in his work *The discoverie of witchcraft* denies the possibility of witch-induced transformation, and his arguments are interesting. First, he queries how the victim would be resurrected in Heaven, since Paul states that we appear there in the same form as that in which we are buried. Would an ass be allowed into Heaven, if it contained the soul of a man?¹⁶ He also asks whether the apparent ass would suffer from asinine diseases, or human ones. Moreover, he points out, if a witch can turn a man into an ass, she should also be able to turn an ass into a human; but there are no reports of this.¹⁷ Scot quotes Jean Bodin (1530–96), who asserted the existence of witchcraft and sorcery, to the effect that when a man is transformed “the essentiall form (to wit, reason) is not changed, but the shape or figure”—that is, only the external frame. “Howbeit,” responds Scot archly, “I thinke it is an easier matter, to turne Bodin’s reason into the reason of an asse, than his bodie into the shape of a sheepe.”¹⁸ Finally, he says, there can be no animal transformation because the flesh is simply of a different nature. “For there is one Flesh (saith Paule) of men, another flesh of beasts, another of fishes, another of birds. And therefore it is absolutelie against the ordinance of God (who hath made me a man) that I should flie like a bird, or swim like a fish, or creepe like a worme, or become an asse in shape.”¹⁹ Thus a human being contains its humanity in the very matter of which it is formed, and there can be no casual reshuffling of features.

Contrary to God’s ordinance, Satan (like his cousin Pan) frequently sports animal parts: cloven hooves, shaggy shanks, horns, asses’ ears, and sometimes birds’ claws for hands. The demons of Hell resemble teratological births, and are often constructed using the mix-and-match animal principle. Here is an excerpt from an English version of the Faust story:

The great Devil in his likeness, sate him down by Faustus, commanding the rest of his Devils to appear in the Form as they were in Hell. First entered Belial in Form of a Bear, with curled black Hair to the Ground, his Ears standing upright . . . Lucifer himself sate in the Manner of a Man all hairy, but brown in Colour like a Squirrel curled, and his Tail turning upwards on his Back as the Squirrels use, I think he could crack Nuts too like a Squirrel. After him came Belzebub in curled Hair of a Horse-flesh-colour, his Head like the Head of a Bull, with a mighty Pair of Horns, and two long Ears down to the Ground, and two Wings on his Back, with two pricking things like Horns; out of his Wings issued Flames of Fire, his Tail was like a Cow’s. Then came Astaroth in the Form of a Worm, going upright on his Tail, and had no Feet, but a tail like a Glow-worm, under his Chops grew two short Hands, and his Back was Coal-black, his Belly thick in the Middle, yellow, like Gold, having many Bristles on his Back like a Hedge-hog . . . Then came Anobis; this Devil had a Head like a Dog, white and black Hair, in Shape like a Hog, saving that he had but two Feet, one under his Throat, the other at his Tail; he was four Ells long, with hanging Ears like a Blood-hound . . .²⁰

Stevenson, *Dr Jekyll and Mr Hyde*, London, Folio Society, 1948, p. 135). It is more a matter of a general impression of bestiality. “There is something wrong with his appearance,” says Mr Enfield, struggling to describe him. “Something displeasing, something downright detestable . . . He must be deformed somewhere; he gives a strong feeling of deformity, although I couldn’t specify the point.” (Ibid., p. 32.) Thanks to John Symons for

questioning Hyde’s hairiness and pointing out these descriptions.

¹⁶ R Scot, *The discoverie of witchcraft*, London, W Brome, 1584, p. 100.

¹⁷ Ibid., p. 92.

¹⁸ Ibid., p. 93.

¹⁹ Ibid., p. 100.

²⁰ *The surprizing life and death of Doctor John Faustus*, London, The Booksellers, 1727, pp. 32–3.

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The idea of transformation itself is devilish. Having watched this parade of demons, Faustus asked to see Mephistopheles in his original form. A fierce dragon appeared, changed himself into a friar, and asked Faustus what he desired. Faustus said: "I will that thou teach me to Transform my self, in like Sort, as thou and the rest have done." So Mephistopheles "put forth his Paw, and gave Faustus a book, saying, Hold, do what thou wilt; which he looking upon, chang'd himself into a Hog, then into a Worm, then into a Dragon; and finding this for his Purpose, he lik'd it well."²¹

Plastic Power

Often feeding a gruesome fascination masquerading as scientific curiosity, books on monstrous births portrayed people born with animals' heads or other body parts, or combining features of different species in their appearance. Fortunio Liceti's *De monstribus*, for example, shows humans with the heads of ducks and elephants, with webbed or cloven feet, with lions' or boars' bodies, and so on. Some of these are recognizable deformities, others resemble the unlikely demons seen by Faust. One unfortunate individual displays an ass's head, large breasts, a body covered in scales, and a bearded head in place of a tail; one of her hands is human and the other elephantine; one foot belongs to an eagle, the other to a cow.²²

There was considerable debate over how these travesties of the human form came into being. Ambroise Paré, in his *Deux livres de chirurgie* (Paris, 1573), listed a number of supposed causes of monstrous births, including the glory of God or his wrath, too great or too little a quantity of seed, awkward positions assumed by the mother, smallness of the womb, and the imagination.²³ Of these the most interesting is the latter, also known as the "maternal impression". The belief was that a vivid or frightening sensory impression experienced by the mother during pregnancy could be transferred in some appropriate way to the foetus. A classic example is that of a woman who, as a cure for a fever, is made to clasp a frog in her hand until it is dead. Understandably, this experience has a profound impact on her, and she later gives birth to a child with a froglike head.²⁴

An early instance of the phenomenon appears in the Bible.²⁵ Jacob, having agreed with his miserly father-in-law Laban that he would receive all newborn speckled or spotted goats as payment for his work as a shepherd, tricks him by placing branches with their bark peeled in striped and spotted patterns by the water troughs where the animals mate. The result is that all the young conceived there are speckled, and Jacob becomes a rich man.

Folk beliefs relating to the maternal imagination ranged far and wide. If a mother walked over a water filled ditch or urinated in a churchyard, the child would be a bed-wetter. If she peered through a keyhole, the child would have a squint. If she climbed under a rope, the child might be born with the umbilical cord wrapped round its head. In Germany and Scandinavia, a male child would have enormously enlarged genitals if the mother was so foolish as to carry logs of wood in her apron while pregnant. Ducks caused

²¹ Ibid., p. 35.

²² F Liceti, *De monstribus*, Ed. novissima, Amsterdam, A. Frisius, 1665, pp. 256–7.

²³ A Paré, *On monsters and marvels*, ed. J L

Pallister, paperback ed., Chicago and London, University of Chicago Press, 1983, pp. 3–4.

²⁴ Ibid.

²⁵ *Genesis*, ch. 30.

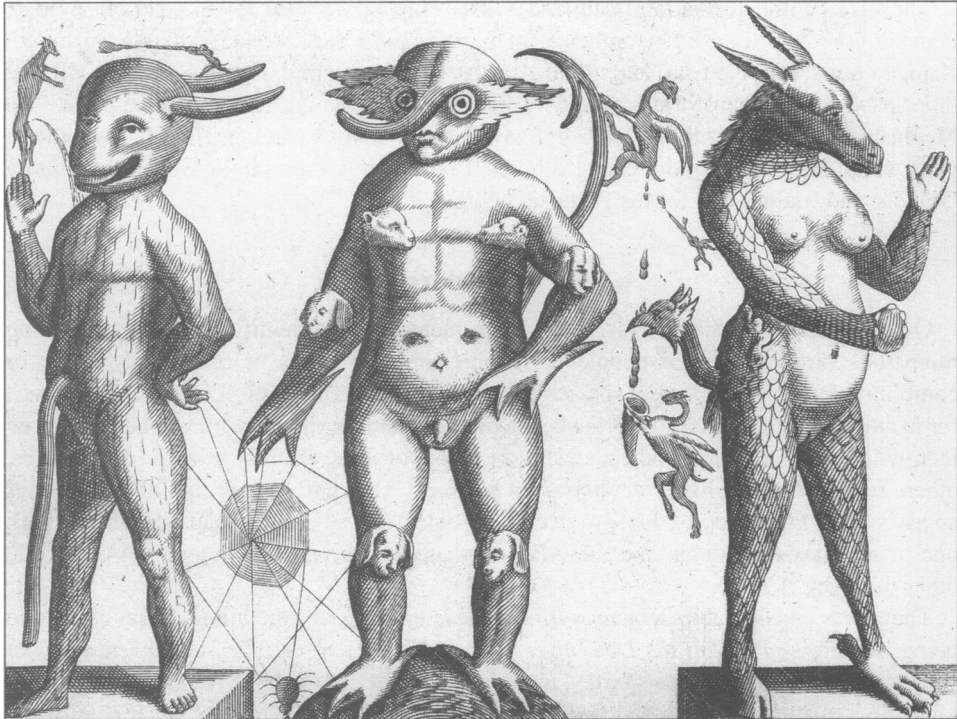


Figure 1: A selection of monsters from Fortunio Liceti's *De monstris*, Padua, 1668, p. 256. (Wellcome Institute Library, London.)

webbed feet, strawberries and blackcurrants caused birthmarks, and rabbits caused harelips. If the mother kicked a pig, the child might speak in grunts.²⁶

The theory had scientific credibility for some time, and numerous books were written discussing the phenomenon and speculating as to the mechanism by which it operated.²⁷ Since the mind and the body occupied different realms of being, an intermediary agent was needed to communicate the mother's mentality to the malleable body of the foetus. The imagination, which according to Aristotelian tradition was an "inward sense" whose objects differed from others only in their lack of materiality, occupied a limbo zone on the lower level of the mental world and thus was able to relay messages between it and the material one, in both directions. It conveyed the sensory impression to the mind "by a most quick Irradiation of the nervous Fluid deliver'd Inwards".²⁸ This impression, transformed by the mother's thoughts, was then relayed back to the material world and into the body of the foetus by means of a "plastic power". And if the mother dwells on an object "either beloved or dreaded", then she "may, through Intenseness of her Thought

²⁶ Bondeson, *op. cit.*, note 11 above, pp. 160–1.

²⁷ Notably T Feyens, *De viribus imaginationis tractatus*, Louvain, G Rivius, 1608, and D Turner, *Defence of the XIIIth chapter of the first part of a treatise, De morbis cutaneis*, London, R Bonwicke, 1714.

²⁸ Turner, *ibid.*, p. 160, quoted in D Todd, *Imagining monsters*, Chicago and London, University of Chicago Press, 1995, p. 60.

about the same, so operate upon the Plastic Power, or, if this be Jargon, so determine the Blood and Spirits as well of the Mother on the one side, as of the Foetus on the other, now at work and unfolding the parts, as to new-model certain Particles, which like Dough or Paste at this time are capable of the Impression; and to insculp or delineate the terrible or delightful Object . . .”²⁹ As Paré put it, it is a matter of “the force of the imagination being conjoined with the conformational power, the softness of the embryo, ready like soft wax to receive any form”.³⁰

A great debate on the subject raged between Daniel Turner and James Blondel, who denied the existence of this plastic power. Blondel attempted an approximate classification of deformities, showing that they fell into limited categories with distinct causes, rather than being susceptible to the vagaries of the mother’s experience and imagination.³¹ This argument was developed more systematically by later teratologists, who catalogued birth defects in considerable detail. By the early nineteenth century, the theory was defunct in medical circles, but it persisted as a popular belief. Joseph Merrick (1862–1890), the “Elephant Man”, believed that his disease had been caused by a circus elephant knocking his mother down during her pregnancy.³² Expectant mothers in Paris continued to have themselves wheeled around the Louvre to gaze on paintings of beautiful faces which they wished their children to resemble.³³

Transformation of the Self

The urge to change or improve one’s own bodily shape takes many forms. Body-building, dieting, plastic surgery, and the wily ways of corsetry and cosmetics all express a form of “plastic power” over the self.

A fascination with the variety of human appearances accompanied the development of European travel and increased knowledge of “exotic” cultures. At its worst, this took the form of freak-show exploitation; at its best, it could open the European mind and enable it to see its own habits in a relativist light. Somewhere between the two falls John Bulwer’s wonderfully titled *Anthropometamorphosis: Man Transform’d; or, the Artificial Changeling Historically presented, in the mad and cruell Gallantry, foolish Bravery, ridiculous Beauty, filthy Finnesse, and loathsome Loveliness of most Nations, fashioning and altering their Bodies from the mould intended by Nature . . .*³⁴ It is a survey of the transformations of personal appearance in all parts of the world, and its stated aim is to expose the ridiculousness of attempting to improve upon nature. The book is remarkably even-handed: it finishes with an “Appendix of the pedigree of the English gallant”, who is shown to be just as absurd as his counterparts in the Pacific islands or the

²⁹ D Turner, *Defence of the XIIIth chapter of the first part of a treatise, De morbis cutaneis, in A discourse concerning gleans*, London, J Clarke, 1729, pp. 97–8, quoted in Todd, op. cit., note 28 above, p. 114.

³⁰ Paré, op. cit., note 23 above, p. 54.

³¹ J A Blondel, *The strength of imagination in pregnant women examin’d*, London, J Peele, 1727, and *The power of the mother’s imagination over the foetus examined*, London, J Brotherton, 1729. D Turner, op. cit., note 27 above, and *idem*, *The*

force of the mother’s imagination . . . still further considered. London, J Walthoe, 1730. On the debate, see P Wilson, “Out of sight, out of mind?": the Daniel Turner—James Blondel dispute . . .”, in *Ann. Sci.*, 1992, 49: 63–85.

³² See for example M Howell and P Ford, *The true history of the Elephant Man*, London, Allison & Busby, 1980, pp. 43–52.

³³ Bondeson, op. cit., note 11 above, p. 155.

³⁴ The second ed. (London, W Hunt, 1653) is more extensive than the first of 1650.

Amazon jungle, although the motivation for this critique may simply be Puritan persuasions on the part of the author.³⁵

To what end are our breeches as wide at the knee as the whole circumferences of the waste? Or, why so long, do they make men Duck-leg'd? . . . To what end do Boots and Boot-hose Tops appear in that circumference between our Legs, that we are faine to use a wheeling stride, and to go as it were in orbe, to the no little hindrance of progressive motion . . .?³⁶

Adam and Eve were made by God, but all humans since then have been “made and born answerable to the discourse of Mans invention”.³⁷ The result is the danger of degeneration. According to Bulwer’s strangely Lamarckian theory of evolution, Man was “at first but a kind of Ape or Baboon, who through his industry (by degrees) in time had improved his Figure & his Reason up to the perfection of man”³⁸—but now he is at risk of falling back into an animal condition through indulging in absurd, subhuman distortions.

No part of the body is omitted from Bulwer’s systematic survey. The shape of the head can be stretched and bent.³⁹ Hairstyles range from “phantasticall tonsures” to “mad shavers”.⁴⁰ Eyebrows and beards are trimmed into extraordinary shapes, and even eyelids are decorated. There are people with “horrid great ears”⁴¹ hanging down to their feet, pierced noses, lengthened necks, and pendulous lips. Teeth are filed, tongues run through with spikes, fingernails carved. Grossly deformed breasts can be found quite close to home, amongst “the Irish-women at this day, whose Breasts . . . [are] fit to be made money-bags for East or West-Indian merchants, being more than half a yard long”.⁴² Genitals may be decorated with rings or strangely circumcized, and there are “men whose members hang down to their shanks”.⁴³ White bodies are painted black and black ones white; some nations are feathered, and some furred. Bulwer is a Pliny of the artificial world: his catalogue is exhaustive, entertaining, and clearly based on hearsay.

Today one can go further and transform one’s sex or one’s race, not merely by painting the skin or by cross-dressing, but by drugs, hormones, and surgery. A change in the shape of one’s body can bring about a radical mental transformation. Thus the despair of a transsexual who feels him- or herself to be “in the wrong body” can be cured by reforming the body to match the self-image. The Charles Atlas story, and the advertisements for the products that go with it, tells the classic tale of the shy, puny adolescent who decides he is not going to take it any more. Charles Atlas (then Angelo Siciliano) actually did get sand kicked in his face on the beach at Coney Island and, inspired by a picture of the professional strong man Eugen Sandow, threw himself into a programme of body-building which eventually won him the title “America’s Most Perfectly Developed Man”.⁴⁴

³⁵ See H J Norman, ‘John Bulwer and his Anthropometamorphosis’, in E A Underwood (ed.), *Science, medicine and history*, London, Oxford University Press, 1953, vol.1, pp. 82–99, especially pp. 91–3.

³⁶ J Bulwer, *Anthropometamorphosis*, London, W Hunt, 1653, pp. 558–9.

³⁷ *Ibid.*, fol. B3r.

³⁸ *Ibid.*, fol. B3r.

³⁹ *Ibid.*, pp. 12–13.

⁴⁰ *Ibid.*, pp. 54–5.

⁴¹ *Ibid.*, pp. 149.

⁴² *Ibid.*, p. 312.

⁴³ *Ibid.*, p. 403.

⁴⁴ D J Mrozek, ‘Sport in American life’, in K Grover (ed.), *Fitness in American culture*, Amherst and Rochester, Margaret Woodbury Strong Museum, 1989, p. 35.

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Implicit in such processes is an image of the body as plastic and malleable, a dynamic structure which can be moulded to whatever form is desired. The well-known illustration from Nicolas Andry's *L'orthopédie*, showing a bent tree gradually being straightened by being bound to a stick and allowed to grow,⁴⁵ vividly demonstrates this conception.

Morphology

Nothing is constant but change! All existence is a perpetual flux of "being and becoming"! That is the broad lesson of the evolution of the world . . . Substance alone is eternal and unchangeable . . . It reveals itself to us in an infinite variety of forms, but . . . its essential attributes, matter and energy, are constant.⁴⁶

The study of morphology concentrated not on the "substance" of life itself, but on the principles of its development and growth. There was a search for the mathematical laws which governed life's eternal flux. Structures such as shells, horns, leaves and petals were studied from the point of view of dynamic geometry and the numerical relationship between their parts. A jellyfish with its hanging tentacles, for example, could be compared with an inverted picture of a droplet hitting the surface of a bowl of water to show the similarity of their formal structure.⁴⁷

The form, then, of any portion of matter, whether it be living or dead, and the changes of form which are apparent in its movements and in its growth, may in all cases alike be described as due to the action of force. In short, the form of an object is a "diagram of forces" . . . In an organism, great or small, it is not merely the nature of the *motions* of the living substance which we must interpret in terms of force (according to kinetics), but also the *conformation* of the organism itself, whose permanence or equilibrium is explained by the interaction or balance of forces, as described in statics.⁴⁸

Thus an animal or plant is a map, frozen in a state of high tension, of the physical and historical forces which created it.

Goethe, in his *Versuch die Metamorphose der Pflanzen zu erklären* (1790), set out to consider a plant "as it expresses its life force"⁴⁹ through growth and reproduction. All parts of the plant, according to Goethe, are modifications of the basic leaf structure, except for the stem, and the production of its various shapes is a matter of alternating cycles of expansion and contraction. Thus metamorphosis is the "process, by which one and the same organ presents itself to our eyes under protean forms",⁵⁰ and "we can just as well say that a stamen is a contracted petal, as we can say of a petal that it is a stamen in a state of expansion".⁵¹ The first seed-leaves "appear shapeless, crammed, as it were, with crude matter",⁵² but as they develop they become more slender and develop veins, taking on a more leaf-like appearance. "The same organ which on the stem expands itself as a leaf, and assumes a great variety of forms, then contracts in the calyx—expands again in the corolla—contracts in the

⁴⁵ N Andry, *L'Orthopédie*, Paris, La veuve Alix, Lambert & Durand, 1741.

⁴⁶ E Haeckel, *The wonders of life*, tr. J McCabe, London, Watts, 1904, p. 100.

⁴⁷ D W Thompson, *On growth and form*, 2nd ed., Cambridge University Press, 1952, vol. 1, pp. 394–8.

⁴⁸ *Ibid.*, vol. 1, p. 16.

⁴⁹ J W von Goethe, 'The metamorphosis of plants', tr. A Arber, in A Arber (ed.), *Goethe's botany*, [Waltham, Mass., 1946], sect. 113, p. 113.

⁵⁰ *Ibid.*, sect. 4, p. 91.

⁵¹ *Ibid.*, sect. 120, p. 115.

⁵² *Ibid.*, sect. 12, p. 93.

reproductive organs—and for the last time expands itself as the fruit.”⁵³ It is a matter of ebb and flow, with the life force always pushing the process onwards.

Morphologists were particularly interested in the development of the animal embryo, and sought to find similarities between species.⁵⁴ A special physical force was believed to hold sway over the embryo’s transformations as it grew towards the adult form. Ernst Haeckel’s doctrine that ontogeny recapitulated phylogeny, i.e. that the development of the individual re-enacted the evolution of the species, rested on the belief that all developmental forces were essentially the same. Thus the force that governed growth was the same that governed evolutionary change. Haeckel also postulated an “embryology of the soul”, according to which the soul underwent a process of growth driven by the same laws.⁵⁵

Evolution

Among those fascinated by the process of transformation within and between species was Charles Darwin. He kept pigeons, and had colleagues and friends send him skins so that he could study the huge variety of forms which they displayed.

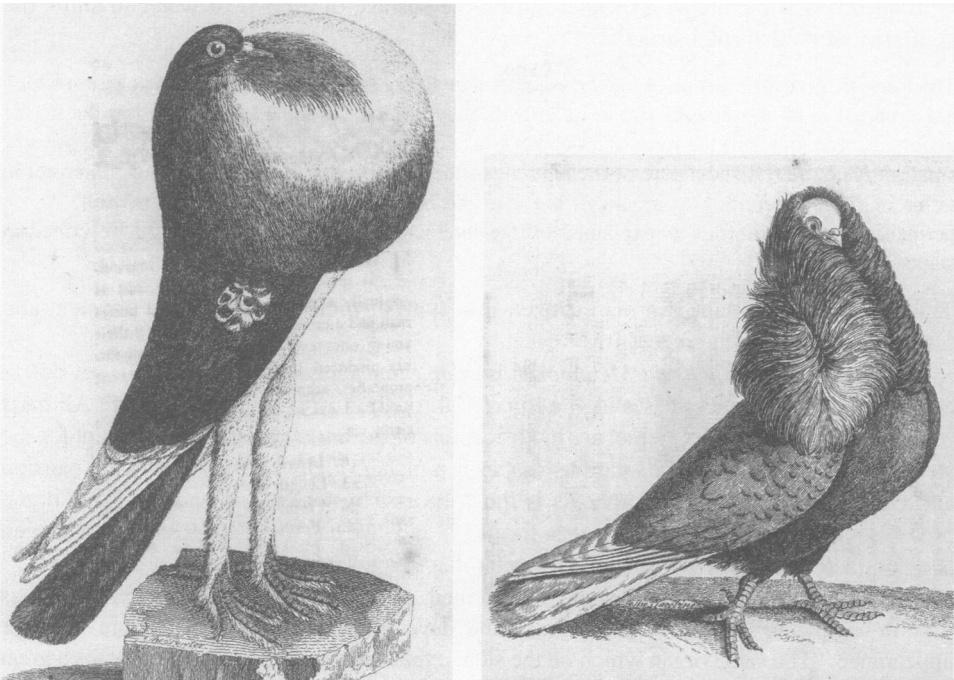


Figure 2: Pigeon varieties produced by artificial selection: a pouter pigeon (left) and a Jacobin (right). [J Moore], *A treatise on domestic pigeons*, London, C Barry, 1765, plates facing pp. 93 and 114. (Wellcome Institute Library, London.)

⁵³ *Ibid.*, sect. 115, p. 114.

⁵⁴ See Ernst Haeckel’s famous comparative illustrations in his *Natürliche Schöpfungsgeschichte*, Berlin, G Reimer, 1898, tables II-III.

⁵⁵ E Haeckel, *The riddle of the universe at the*

close of the nineteenth century, tr. J McCabe, New York and London, Harper, 1900, p. 138. See also, S J Gould, *Ontogeny and phylogeny*, Cambridge, Mass., Belknap Press of Harvard University Press, 1977.

Images of Bodily Transformation

The diversity of the breeds is something astonishing. Compare the English carrier and the short-faced tumbler, and see the wonderful difference in their beaks, entailing corresponding differences in their skulls. The carrier, more especially the male bird, is also remarkable from the wonderful development of the carunculated skin about the head, and this is accompanied by greatly elongated eyelids, very large external orifices to the nostrils, and wide gape of mouth. The short-faced tumbler has a beak in outline almost like that of a finch; and the common tumbler has the singular and strictly inherited habit of flying at a great height in a compact flock, and tumbling in the air head over heels. The runt is a bird of great size, with long, massive beak and large feet . . . The pouter has a much elongated body, wings, and legs; and its enormously developed crop, which it glories in inflating, may well excite astonishment and even laughter . . . The Jacobin has the feathers so much reversed along the back of the neck that they form a hood . . . The trumpeter and laughter, as their names express, utter a very different coo from the other breeds . . .⁵⁶

All these variations on the theme “pigeon” were generated by deliberate breeding, and it fascinated Darwin that breeders could achieve such a cornucopia of forms in such a short period of time. “That most skilful breeder, Sir John Sebright, used to say, with respect to pigeons, that ‘he would produce any given feather in three years, but it would take him six years to obtain head and beak’.”⁵⁷ Natural selection operated more slowly, but with an equal degree of precision and efficiency; Darwin spoke of it in terms of “workmanship”.⁵⁸

It may be said that natural selection is daily and hourly scrutinizing, throughout the world, every variation, even the slightest; rejecting that which is bad, preserving and adding up all that is good; silently and insensibly working, whenever and wherever opportunity offers, at the improvement of each organic being . . . We see nothing of these slow changes of progress, until the hand of time has marked the long lapses of ages.⁵⁹

In contrast to the bursting force of vitalism, which spews forth new creatures like so many fireworks, Darwinian processes are patient and craftsmanlike. They work by whittling at the edges, rather than by generating ready-moulded forms.

The relevance of the “plastic power” of natural selection to human concerns was quickly realized. Soon there were rampant fears of degeneration and calls for eugenic improvement. For evolution was not an inevitable upward path towards perfection. Things could go wrong, especially in a denatured modern world in which the weak and unfit were allowed to reproduce freely. There was something of a panic about the future of an over-cosseted human race. In H G Wells’ “Time machine”, the time traveller discovers a future in which humanity has diverged into two forms, the bestial Morlocks and the debilitated Eloi, a “wretched aristocracy in decay”.⁶⁰ Both are degenerate: the Eloi, though beautiful and refined, are weak, mentally backward, and helpless against the attacks of the Morlocks. Writers such as Benedict Morel predicted a long decline for future humanity, beginning with an accumulation of defects such as deafness, blindness, stunted growth, club-feet, goitres, effeminacy and apathy, and finishing in complete idiocy and sterility.⁶¹

⁵⁶ C Darwin, *On the origin of species by means of natural selection*, London, J Murray 1859, p. 21.

⁵⁷ *Ibid.*, p. 31.

⁵⁸ *Ibid.*, p. 84.

⁵⁹ *Ibid.*, p. 84.

⁶⁰ H G Wells, ‘The time machine’, in his *Selected*

short stories, Harmondsworth, Penguin, 1982, p. 59, quoted in D Pick, *Faces of degeneration*, Cambridge University Press, 1993, p. 159.

⁶¹ B Morel, *Traité des dégénérescences physiques* . . . , Paris & London, Baillière, 1857. Discussed in Pick, *op. cit.*, note 60 above, p. 50ff.

The fear of degeneration and reversion to animality was evident in, for example, Cesare Lombroso's description of criminal physiognomy.⁶² Here is his account of the moment of illumination in which the theory came to him, whilst examining the skull of the famous criminal Vilella:

At the sight of that skull, I seemed to see all of a sudden, lighted up as a vast plain under a flaming sky, the problem of the nature of the criminal—an atavistic being who reproduces in his person the ferocious instincts of primitive humanity and the inferior animals. Thus were explained anatomically the enormous jaws, high cheek bones, prominent superciliary arches, solitary lines in the palms, extreme size of the orbits, handle-shaped ears . . . insensibility to pain, extremely acute sight, tattooing, excessive idleness, love of orgies, and the irresponsible craving for evil for its own sake, the desire not only to extinguish life in the victim, but to mutilate the corpse, tear its flesh and drink its blood.⁶³

This werewolf-like creature returns us to the eternal fear of sliding back into the animal world, of transformations or *deformations* that rob us of our hard-won humanity.

Yet, simultaneously, there continues the imagery of creative flux, of a wheel of life or a “plastic power” that generates a phantasmagoria of forms out of the dull clay of matter. It is as if the same force that threatens to engulf us in the animal past also drives us forward. In the words of Charles Darwin:

Thus, from the war of nature, from famine and death, the most exalted object which we are capable of conceiving, namely, the production of the higher animals, directly follows. There is grandeur in this view of life, with its several powers, having been originally breathed into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved.⁶⁴

The Collections of the Wellcome Institute Library

There is a wealth of material in the library illustrating the themes discussed here. The works of Paré and Liceti, for example, can be found in the Early Printed Books collection, as well as similar compilations of monsters and marvels such as Gaspar Schott's *Physica curiosa* and Boaistuau's *Histoires prodigieuses* (1568). The library also possesses the pamphlets exchanged between Turner and Blondel during their argument over the maternal imagination.

The Western Manuscripts collection holds a fine handwritten copy of Boaistuau's work,⁶⁵ originally belonging to the author himself and illustrated with 42 beautifully coloured miniatures. It may have been a presentation copy to Queen Elizabeth; if so, she must not have been amused, because when the printed version came out the dedication to her was removed and replaced by one to a French nobleman. The department also has a strange eighteenth-century manuscript entitled *Compendium rarissimum totius artis magicae sistematizatae per celeberrimos artis hujus magistros*,⁶⁶ which contains vivid illustrations of

⁶² C Lombroso, *L'uomo delinquente*, Milan, Hoepli, 1876.

⁶³ G L Ferrero, *Criminal man according to the classification of Cesare Lombroso, briefly summarized by Gina Lombroso Ferrero*, New York & London, G P Putnam, The Knickerbocker Press,

1911, pp. xiv–xv. Quoted in Pick, op. cit., note 60 above, p. 122.

⁶⁴ Darwin, op. cit., note 56 above, p. 490.

⁶⁵ WMS 136.

⁶⁶ WMS 1766.

Images of Bodily Transformation



*Figure 3: A demon from *Compendium rarissimum totius artis magicae . . .*, c. 1775, folio 18, Western MS 1766. (Wellcome Institute Library, London.)*

the demons of hell in all their zoological complexity. Some of them look quite merry and likeable, others completely terrifying. The Iconographic Collections have a splendid selection of mermaids, harpies and other monsters. There are also some interesting items dealing humorously with fears of animal contamination: people sprouting horns after being vaccinated with cowpox, for example,⁶⁷ and men turning into vegetables after taking patent “vegetable pills”.⁶⁸ The dangers of animal magnetism are revealed in a scene showing a goat-headed doctor caressing an obliviously sleeping, ewe-headed woman.⁶⁹

The interpretation of physiognomy is discussed and copiously illustrated in the works of Giambattista della Porta (1535?–1615), Johann Caspar Lavater (1741–1801) and Cesare Lombroso (1835–1909), all well represented in Early Printed Books and the Modern Collections. Many of the illustrations categorize human features by their resemblance to various animals. John Conolly’s “physiognomy of insanity” is particularly interesting in relation to the theme of transformation, showing as it does the physical changes wrought by mental states. Some illustrations show the distinctive appearance of a condition such as melancholy passing into another, such as mania.⁷⁰

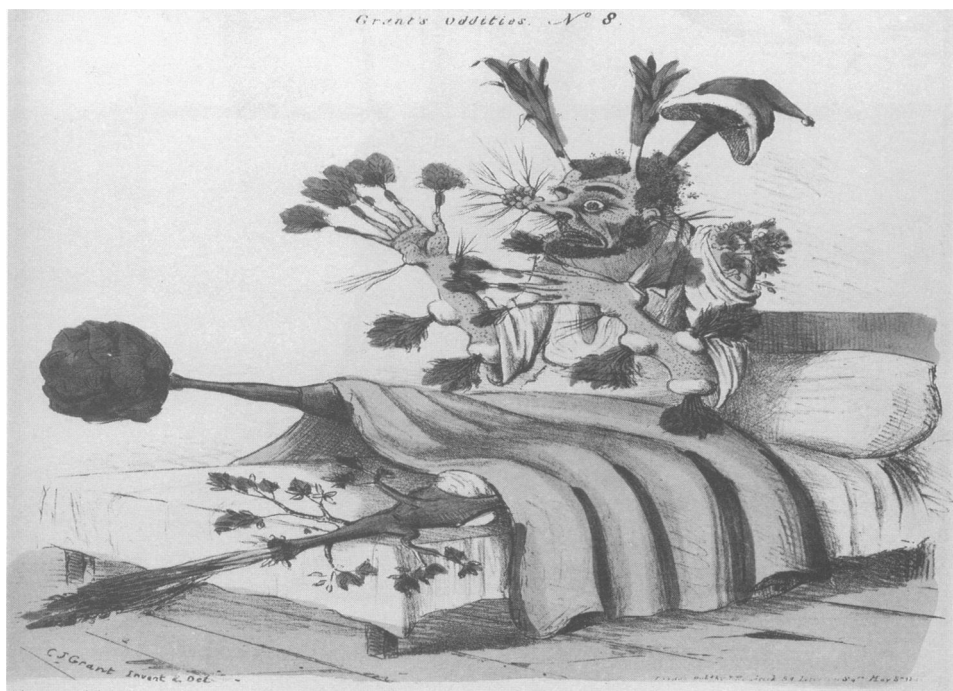


Figure 4: A man with vegetables sprouting from all parts of his body, as a result of taking J Morison’s vegetable pills. Coloured lithograph by C J Grant, 1831. (Wellcome Institute Library, London.)

⁶⁷ Iconographic Collections, cat. nos. 16164, 11756.

⁶⁸ Iconographic Collections, cat. nos. 11851, 11852.

⁶⁹ Iconographic Collections, cat. no. 17847.

⁷⁰ John Conolly, ‘The physiognomy of insanity’, *Med. Times Gaz.*, n.s., 1858, **16**: 2–4, 56–8, 134–6, 238–41, 314–16, 397–8, 498–500, 623–4; and n.s., 1858, **17**: 81–3, 210–12, 367–9, 651–3.

Images of Bodily Transformation

The library has a great range of material discussing the history of cosmetics, hairdressing, dieting, body-building, plastic surgery, transvestism and change of sex. Items in the Iconographic Collections show outrageous wigs, dramatic contrasts between fat and thin people, and husbands bringing their ugly wives to a magic windmill to have them transformed into beautiful ones.⁷¹

Morphology and evolutionary theory are amply covered in the Modern Collections, and there is a wealth of material on eugenics and degeneration.

There has not been space to discuss all the topics relating to the theme of physical transformation which can be found in the library. Alchemy, which is strongly represented in the Western Manuscripts and Early Printed Books collections, particularly deserves mention as it involves the transmutation and refinement not only of metals, but also of the human soul. In the field of natural history, there are works on the metamorphoses of insects, and on growth generally; a related genre is the "ages of man" diagram, of which several are held in the Iconographic Collections.⁷² These typically show babies, children and youths advancing up steps on the left hand side, and increasingly elderly figures tottering downhill on the right, graphically illustrating the ravages of time on the human form. Also of great importance is the theme of transformation in Eastern science and philosophy, which has not been discussed here, and which is represented in the Oriental Department's collections.

This has necessarily been a whirlwind trip through far-flung territories, and makes no claim to be anything other than tentative and superficial. However, there is vastly more to be explored in this terrain, and the Wellcome Institute Library collections provide an excellent starting point from which to travel.

⁷¹ Iconographic Collections, cat. no. 26373.

⁷² Iconographic Collections, cat. nos. 26285, 26288, 26361.