

Introduction

Pope Felix, a predecessor of Saint Gregory, built a noble church in Rome in honour of Saints Cosmas and Damian. In this church there was a man, a devoted servant of holy martyrs. One of the man's legs had been totally consumed by a cancer. While he was asleep, the two saints appeared to their devoted servant, bringing salves and surgical instruments. One of them said to the other: 'Where can we get flesh to fill in where we cut away the rotted leg?' The other said: 'Just today an Ethiopian was buried in the cemetery of Saint Peter in Chains. Go and take his leg, and we'll put it in place of the bad one.' So, he sped to the cemetery and brought back the Moor's leg, and the two saints cut off the sick man's leg and inserted the Moor's in its place, carefully anointing the wound. Finally, they took the amputated leg and attached it to the body of the dead Moor. The man woke up, felt no pain, put his hand to his leg, and detected no lesion. He held a candle to the leg and could see nothing wrong with it and began to wonder whether he was himself or someone else. Then he came to his senses, bounded joyfully from his bed, and told everyone what he had seen in his dreams and how he had been healed. They sent at once to the Moor's tomb and found that his leg had indeed been cut off and the aforesaid man's limb put in its place in the tomb.¹

Over time, Cosmas and Damian, twin brothers reportedly martyred for their Christian faith in 297 CE, part of the persecutions during the reign of the

¹ Jacob de Voragine, *Legenda Aurea/The Golden Legend* 2.143.4 (trans. W. G. Ryan, with minor adjustments): *Felix papa attavus sancti Gregorii in honore sanctorum Cosmae et Damiani nobilem ecclesiam Romae construxit. In hac ecclesia quidam vir sanctis martiribus serviebat, cui cancer unum crus totum consumserat. Et ecce dormiente illo sancti Cosmas et Damianus devoto suo apparuerunt unguenta et ferramenta secum portantes; quorum unus alteri dixit: ubi carnes accipiemus, ut absisca carne putrida locum vacuum repleamus? Tunc ait alter: in cimiterio sancti Petri ad vincula hodie Aethiops recens sepultus est, de illo autem affer, ut huic suppleamus. Et ecce ad cimiterium properavit et coxam Mauri attulit, praecedentesque coxam infirmi loco ejus coxam Mauri inseruerunt et plagam diligenter ungentes coxam infirmi ad corpus Mauri mortui detulerunt. Evigilans autem cum se sine dolore sensisset, manum ad coxam apposuit et nil laesionis invenit, apponensque candelam cum in crure nil mali videret, cogitabat, an non ipse, qui erat, sed alius alter isset. Rediens autem ad se prae gaudio de lectulo prosiliit et quid in somnis viderat et qualiter sanatus fuerat, omnibus enarravit. Qui conciti ad tumultum Mauri miserunt et coxam Mauri praecisam et coxam praedicti viri loco illius in tumulto positam repperunt.*

emperor Diocletian (283–303 CE), became venerated as the patron saints of medicine, surgery, pharmacy, and, perhaps somewhat surprisingly to a contemporary reader, organ transplantation.² The pair are said to have been born in the mid-third century CE at Aegae in the Roman province of Cilicia (modern-day Çukurova in Turkey) on the Bay of Alexandretta (modern-day Iskenderun), and to have studied medicine in Syria. Once they began practicing medicine, they became renowned for refusing to accept payment for their services. Their most famous healing episode, and the reason for their role as patron saints of organ transplantation, is known as the ‘miracle of the black leg’.³ This miracle involved the twins treating a white man suffering from a gangrenous wound in his leg by amputating the afflicted limb and replacing it with the limb of a deceased black man (in some versions described as an Ethiopian, in others a Moor).⁴ Whatever the original motivation for telling the story in this way and making a concerted effort to differentiate between the patient and the donor on the grounds of race, it is clear that the ‘miracle’ would have been at once apparent to an individual hearing or reading this story, or seeing a visual representation of it.⁵ The source for this episode, the writings of the archbishop of Genua Jacob de Voragine’s *The Golden Legend*, dates to the late thirteenth century (a specific date between 1252 and 1260 has been proposed), so well after the lives and deaths of Cosmas and Damian and the establishment of their cult. The earliest known illustration of this episode is found in a late-thirteenth-century manuscript of de Voragine’s work, and depicts Cosmas and Damian in the middle of the transplantation; they have removed the gangrenous white leg, which lies discarded to one side of the patient’s bed, and are in the process of attaching the black leg.⁶ However, it soon became a popular subject for medieval artists and numerous later depictions of the event survive.⁷

² On the association of the saints with organ transplantation, see Decker, 2016, pp. 51–4. See also Duffin, 2013.

³ In medieval eyes, this is an example of ‘incarnatyf’ medicine, which not only made new flesh but also required this new flesh to bind with existing flesh or non-flesh through a process equated with knitting that was analogous with grafting or soldering; for discussion, see Walter, 2016.

⁴ For Africans in classical antiquity, see Snowden, 1970, 1991. On racism in antiquity, see Isaac, 2004. On the racial implications of this version of the story, see Fracchia, 2013.

⁵ An alternative version of the myth, found in Greek sources dating from the fifth century, describes Cosmas and Damian replacing a patient’s gangrenous leg with the leg of a corpse, but it does not mention the ethnicity of the leg; for this, see Deubner, 1907. It is necessary for the legs to be exchanged so that upon the Day of Judgement and the Resurrection each man would be given back his own leg because of the importance of having a complete body; see Walter, 2016, p. 1354.

⁶ Huntington Library manuscript HM 3027, folio 132r.

⁷ Danilevicius, 1967; Zimmerman, 1998; Zimmerman et al., 2013.



Figure I.1 Page from Jacob de Voragine's *The Golden Legend* manuscript. Huntington Library manuscript HM 3027, folio 132 r. Image courtesy of the Huntington Library, San Marino, California.

Cosmas and Damian are part of a long tradition of miraculous healing in which the restoration of lost body parts serves as a demonstration of divine power. Inscriptions recovered from the healing sanctuary of Asklepios at Epidauros and dating to the fourth century BCE claim that visitors to the sanctuary underwent incubation rituals, and during these rituals the god appeared to them and cured their ailments.⁸ One man claimed that the god restored his missing eye:

Once a man came as a suppliant to the god who was so blind in one eye that, while he still had the eyelids of that eye, there was nothing within them and they were completely empty. Some of the people in the sanctuary were laughing at his simple-mindedness in thinking that he could be made to see, having absolutely nothing, not even the beginnings of an eye, but only the socket. Then in his sleep, a vision appeared to him. It seemed the god boiled some drug, and then drew apart his eyelids and poured it in. When day came he departed with both eyes.⁹

Another, Heraieos of Mytilene, claimed that the god restored his lost hair:

This man had no hair on his head, but plenty on his chin. Ashamed because he was laughed at by the others, he slept here. The god anointed his head with a drug and made it have hair.¹⁰

It was not just Asklepios, the Greek god of medicine, who was purported to restore lost body parts. Other examples include the goddess Minerva Medica reportedly restoring a woman named Tullia Superiana's lost hair at a sanctuary near Travo in the Trébbia valley in northern Italy during the Roman period.¹¹ Additionally, early Christianity was replete with tales of the restoration of lost body parts, with Jesus supposedly restoring the ear of a high priest's servant that was cut off by his disciple Peter in an attempt to prevent Jesus' arrest.¹²

There have been numerous attempts to rationalise ancient healing miracles.¹³ If one felt inclined to do so, one could rationalise these stories

⁸ The link between Cosmas and Damian and Asklepios is made explicit by Santing, 2013, p. 128.

⁹ Epidaurian iamata A9 (trans. L. R. LiDonnici): Ἀνὴρ ἀφίκετο ποιὶ τὸν θεὸν ἰκέτας ἀτερόπτιλλος οὕτως, ὥστε τὰ βλέφαρα μόνον ἔχειν, ἐνεῖμεν δ' ἐν αὐτοῖς μῆθεν, ἀλλὰ κενεὰ ἐ[τ]ι μεν ὅλως. ἐ(γ)ἐ(λῶ)ν δὴ τινες τῶν ἐν τῷ ἱερῶϊ τὰν εὐθηϊαν αὐτοῦ, τὸ νομίζεῖν βλεψεῖσθαι ὅλως μηδεμίαν ὑπαρχάν ἔχοντος ὀπτιλλοῦ ἀλλ' ἢ χώραν μόνον. ἐγκαθ[ε]ύδο[ν]τι οὖν αὐτῶι ὄψις ἐφάνη· ἐδόκει τὸν θεὸν ἐψησαί τι φά[ρμακον, ἔπε]ιτα διαγαγόντα τὰ βλέφαρα ἐγχείαι εἰς αὐτά· ἀμέρ[ας δὲ γενομένης] βλέπων ἀμέρ[ας δὲ γενομένης] βλέπων ἀμφοῖν ἐξῆλθε.

¹⁰ Epidaurian iamata A 19 (trans. L. R. LiDonnici): Ἡραιεὺς Μυτιληναῖος. οὗτος οὐκ εἶχε ἐν τῇ κεφαλῇ τρίχας, ἐν δὲ τῷ γενεῖωι παμπόλλας. αἰσχυνόμενος δὲ [ὥς] καταγελάμενος ὑπ[ὸ] τῶν ἄλλων ἐνεκάθευδε. τὸν δὲ ὁ θεὸς χρίσας φαρμάκωι τὰν κεφαλὰν ἐπόησε τρίχας ἔχειν.

¹¹ *CIL* XI 1305 = *ILS* 3135; for discussion of the epigraphic evidence for this sanctuary, see Sauer, 1996.

¹² Luke 22.50–1. See Hamilton, 2012, p. 4, for a selection of other examples.

¹³ See, for example, Cilliers and Retief, 2013.

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of restored body parts – whether extremity, eye, or hair – by referring to prostheses.¹⁴ Thus, the man supposedly operated on by Cosmas and Damian was in actual fact given an extremity prosthesis, the man who claimed that Asklepios restored his lost eye was in actual fact given a prosthetic one (after all, no mention is made of his vision having been restored, just his eye), and the man who claimed that Asklepios restored his lost hair was in actual fact given a wig or hairpiece. This potential connection between ancient healing miracles and prostheses can be traced through the use of so-called ‘anatomical’ votives – that is, votive offerings in the form of body parts both external (such as fingers, hands, arms, toes, feet, legs, etc.) and internal (such as viscera, uteri, etc.) made from substances including, but not limited to, precious and semi-precious metal, marble, ivory, terracotta, and wood. The traditional interpretation of these objects is that they served as a representation of the part of the body that was ill, injured, or impaired in some way; they were offered to the god either in the hope that the god would heal the afflicted part, or as thanks for the afflicted part having been healed. See, for example, Figure I.2: this marble votive relief found near the Enneakrounos fountain in Athens, originally from the sanctuary of the hero-physician Amynos and dating from the late fourth century BCE.¹⁵ It was dedicated by Lysimachides, son of Lysimachos, from Acharnai, and depicts him holding what appears to be an anatomical votive leg displaying a prominent varicose vein, with two anatomical votive feet on the left-hand side. Ever after, or at least until the sanctuary was cleared out and the votives ritually disposed of, the votive body part remained with the god, a visual representation both of the dedicant’s faith in the god and the god’s power.¹⁶ The isolated body part contrasted with the now whole real body of the dedicant.¹⁷ However, it has been suggested that anatomical votives can be viewed as an attempt to signify the metaphorical representation of the body in illness and pain.¹⁸ In this way, they were used to represent the fragmentation or disaggregation of the ailing body of the person who was dedicating them, with the healing process conceived of as the reintegration of the fragmented parts leading to the reconstitution of the body of the person who was dedicating them.¹⁹ One example of this

¹⁴ See, for example, Walter, 2016 for discussion of the ‘miracle of the black leg’ in relation to medieval theories of prosthesis. However, on occasion, explicit mention is made of an individual using a prosthesis before undergoing miraculous healing which thereby renders the prosthesis obsolete – see Gregory of Tours, *VM* 3.9, 4.41.

¹⁵ National Archaeological Museum of Athens inv. 3562.

¹⁶ For discussion of this practice, see Glinister, 2000. She refers to this material as ‘sacred rubbish’.

¹⁷ Pazzini, 1935; Rynearson, 2003, pp. 9–10. ¹⁸ Hughes, 2008, p. 226.

¹⁹ Hughes, 2008; this argument is expanded in Hughes, 2017, pp. 25–61.



Figure I.2 Greek votive relief. National Archaeological Museum of Athens inv. 3562.
Image courtesy of Alamy.

process can be seen on a votive relief found in the Asklepion at Athens and dating from the fourth century BCE.²⁰ It depicts what appears to be the offering of anatomical votives to Herakles Menytes by a female dedicator; if all of the disparate parts on display were put together, they would form a complete female body.²¹ It has been interpreted as ‘a kind of “non-amputation” underscoring the integrity of the absent, cured dedicator’.²² In some cases, anatomical votives represented an amputated part.²³ They have been considered to serve as ‘ritual prostheses, deployed to render the body whole and healthy again’.²⁴ They have also been described as ‘a psychological prosthesis . . . an aid to feeling whole . . . an aid to the healing

²⁰ National Archaeological Museum of Athens inv. 7232.

²¹ See van Straten, 1981, p. 106, n. 1.1 for this observation.

²³ van Straten, 1981, p. 76.

²⁴ Adams, 2017, p. 199.

²² Rynearson, 2003, p. 10.

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process'.²⁵ It has been observed that anatomical votives rarely depict the illness, injury, or impairment; rather, they usually represent the body part in its normal or desired state.²⁶ Interestingly, a documentary papyrus from Egypt dating to around 118 CE can be seen as making this link explicit through its reference to a maker of artificial limbs manning a healing shrine.²⁷

But what of actual prostheses in classical antiquity?²⁸ While literary, documentary, archaeological, and bioarchaeological evidence for congenital and acquired amputation of various parts of the body in ancient Greece and Rome is plentiful, evidence for prostheses, prosthesis use, and prostheses users is somewhat harder to come by, and the evidence that exists is open to debate. The earliest surviving mention of a prosthesis in Graeco-Roman literature can be found in Pindar's recounting of the myth of Pelops in the first *Olympian Ode* (circa 522–433 BCE), but this is obviously a mythological rather than an historical episode, and so we should proceed with caution when using this as a source for the lived experience of an actual ancient person in possession of a physical impairment.²⁹ While the finer details of the myth vary from source to source, ancient authors are generally in agreement regarding the main points: Pelops' father Tantalus wished to make a suitable offering to the gods of the Olympian pantheon, so he killed his son, cut him up, and cooked him in a stew, which he then served to them.³⁰ All of the gods except for Demeter declined the stew, but since she was distracted by the loss of her daughter Persephone following

²⁵ Adams, 2017, p. 200.

²⁶ Petsalis-Diomidis, 2006, pp. 210, 220. As a result, attempts have been made to argue that individual healing sanctuaries specialised in healing particular parts of the body, or particular health problems, based on the proportion of particular types of anatomical votives found at them. For example, since 40 per cent of the anatomical votives found at the sanctuary of Asklepios in Athens are eyes, it follows that the sanctuary specialised in healing eye problems; for this, see Oberhelman, 2014.

²⁷ *P. Giss.* 20. Draycott, 2014; for further discussion of this papyrus and its contents, see Chapter 4.

²⁸ Parts of this section of the Introduction use material from Draycott, 2019b as a starting point.

²⁹ Somewhat confusingly, Pindar's account first relates and then refutes that Pelops' ivory shoulder was a prosthesis, and yet still retains this as a key feature of the myth, arguing that he was born with it as a sort of birthmark rather than he somehow acquired it later in life. According to Paley, 1868, p. 3 n. 2, since the name Pelops means 'dark faced', this could be seen to refer to a pale shoulder that is revealed when clothing is removed. According to Gerber, 1982, p. 58, since Pelops' ivory shoulder is one of the most consistent and conspicuous features of the myth, whatever it actually was, it was probably considered to be a mark of beauty. For further discussion of this, see Noel, 2019. This is not, however, the earliest mention of prostheses in world literature: that honour belongs to the iron leg of Vishpala, which is referred to in the *Rig Veda* (circa 1200–900 BCE): see 1.118.8; Vishpala is mentioned in several other places in the *Rig Veda*: see 1.112.10, 1.117.11, and 10.39.8. For similarities between the Greek of Pindar and the Sanskrit of the *Rig Veda*, see Watkins, 2002.

³⁰ Lycoph. *Alex.* 149; Ov. *Met.* 6.405; Sen. *Thyestes* 145; Apollod. *Bibl.* 2.1–3; Hyg. *Fab.* 83; Eugentius, *Mythologies* 2.15.

her abduction by Hades, she ate the portion she was offered, and it so happened that this portion contained Pelops' left shoulder. Upon discovering what Tantalus had done, the gods reassembled and resurrected Pelops, replacing his missing shoulder with an ivory prosthesis. However, the earliest mention of a prosthesis in Graeco-Roman literature that can be classed as historical and attributed to a genuine historical figure can be found slightly later than Pindar's *Olympian Odes* in Herodotus' *Histories* (circa 485–484 BCE).³¹ According to Herodotus, Hegesistratus of Elis, the most distinguished soothsayer from among the Telliads, a Greek clan renowned for their knowledge of prophecy, was captured and imprisoned by the Spartans and, in an attempt to avoid the torture and execution which they undoubtedly had in store for him, amputated enough of his foot to enable him to remove his shackles. He then broke through the wall of his cell and escaped to the safety of Tegea. Once his wound healed, he acquired a wooden foot and continued to work against the Spartans, actions which led to his subsequent recapture and execution after the battle of Plataea.³²

Precisely how useful either of these episodes are as a source of information on any aspect of ancient prostheses, prosthesis use, or prostheses users is debatable.³³ Yet while there are some obvious differences in the fine details of these two accounts, there are also some notable similarities. Both the myth of Pelops and the account of Hegesistratus demonstrate an individual losing a body part and subsequently replacing it with an artificial substitute; ancient authors emphasise the fact that their incomplete bodies are rendered complete through these actions, thus contextualising and rationalising the decision to do it.³⁴ They demonstrate a particular emphasis being placed upon the material from which the prosthesis is manufactured; Pelops' prosthesis is made from the exotic and luxurious imported substance ivory; ever after, this ivory shoulder serves to distinguish its bearer by its gleaming, shining and glowing, while Hegesistratus' prosthesis is made from ubiquitous, utilitarian, hardy wood, a material that was readily available even in wartime.³⁵ They demonstrate that subsequently these prostheses are what they are famous for (in the case of Pelops, reference to his prosthesis

³¹ Hdt. 9.37; some details of this episode are also included in Plut. *Mor. De frat. amor.* 3.1.

³² Hdt. 9.38. For discussion of Hegesistratus, see Dillery, 2005.

³³ See Draycott, 2019b for discussion.

³⁴ Pelops: Ov. *Met.* 6.405; Hyg. *Fab.* 83. Hegesistratus: Hdt. 9.37; Plut. *Mor. De frat. amor.* 3.1.

³⁵ Pelops: Pind. *Ol.* 1.37; Tib. 1.4.63–4; Philostr. *Imag.* 1.30.7–11. According to Lorimer, 1936, pp. 32–3, the gods utilise ivory because, when suddenly called upon to provide a spare part, they can only produce one made from their own substance. According to Kenna, 1961, p. 100 n. 10, this could be an allusion to a seal stone worn either around the neck or on the upper arm that, due to being made from a tusk, resembled a shoulder blade. For discussion of the origin of the elephant or possibly

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serves almost as a heroic epithet; in the case of Hegesistratus, his act of self-mutilation is described in the language of heroic accomplishment and his prosthesis is an eternal indicator and reminder of that act).³⁶

The English term ‘prosthesis’, which is used today to refer to an artificial device that replaces or augments a missing or impaired part of the body – whether lost or impaired because of trauma, disease, or a congenital condition – is a compound of the Greek preposition πρὸς (‘on the side of’) and noun θέσις (‘setting’ or ‘placing’). It seems to have first entered the English language in 1533, and at that time was used in a grammatical capacity to designate the addition of a syllable to the beginning of a word; it was not until 1704 that it seems to have been first used in a medical capacity, and only in the middle of the nineteenth century that it came to mean this almost exclusively.³⁷ Despite its Greek origins, it is not a term that was readily utilised by ancient authors, or at least not quite in the way that we use it today.³⁸ When the word πρόσθεσις (‘application’) is used in Greek literature, it indicates the application of an object for a specific purpose, as in the application of a medicinal remedy such as a pessary or a piece of medical equipment such as a cupping vessel, both of which would have been temporary.³⁹ No ancient Greek or Latin medical treatise mentions what we would recognise as prostheses, however; clearly, the application of a prosthesis to the body for the purpose of replacing a missing part, whether temporary in the sense of applying it for a period of time each day, or permanent in the sense of applying it every day for the remainder of one’s life, was not considered a medical remedy. The nearest any ancient Greek or Latin medical writer gets to this is recommending that gold wire be utilised to fix loose teeth in place; there is, however, no mention of the possibility of utilising a dental prosthesis to replace these loose teeth if the gold wire is unable to secure them and they are lost.⁴⁰ Whereas in the twenty-first century we tend to refer to prostheses using the noun ‘prosthesis’ or the adjective ‘prosthetic’, whatever the type of

hippopotamus ivory utilised in Bronze Age Greece, the time that Pindar was writing about, see Hayward, 1990.

³⁶ Pelops: Verg. *G* 3.7; Hegesistratus: Plut. *Mor. De frat. amor.* 3.1.

³⁷ Wills, 1995, p. 218; Davis, 2013, p. 68.

³⁸ One occasion on which it is used that is perhaps relevant to our purposes here is in reference to the wings that Daedalus made for himself and Icarus to facilitate their escape from Crete; see Palaephatus, *On Unbelievable Things*, p. 12. Intriguingly, there seems to have been an ancient proverb in which the term ‘the wings of Daedalus’ was used to describe those who employ delay as a tactic because they lack a prosthesis; see the *Suda*, delta,109; Diogenianus 4.25.

³⁹ Pessary: Hippoc. *Mul.* 1.11, and Hippoc. *Nat. mul.* 11; cupping vessel: Arist. *Rhet.* 1405b3.

⁴⁰ See Hippocrates, Hippoc. *Art.* 33.9–10; Celsus, *Med.* 6.12.1; this process is discussed in more detail in Becker and Turfa, 2017 and Turfa and Becker, 2019.

prosthesis under discussion, when prostheses are referred to in ancient literature, they are described in a very different way, which involves using the combination of the substitute body part and the substance from which it is made. So, for example, Pelops has a shoulder of ivory (ὤμος ἐλεφάντου or *umerus eburno*), Pythagoras has a thigh of gold (μηρός χρυσοῦ), Hegesistratus has a foot of wood (πούς ξυλίνου), Marcus Sergius Silus has a hand of iron (*manus ferrea*), and Statyllius has the hair belonging to another (ἄλλότριος πλόκαμος).⁴¹

Prostheses in the Twenty-First Century

In a monograph dedicated primarily to the subject of prostheses, prosthesis use, and prosthesis users in classical antiquity, it would be helpful at the outset to clarify to what am I referring when I use the term ‘prosthesis’. What, exactly, *is* a prosthesis?⁴² To the twenty-first-century reader, a prosthesis is a device that replaces a missing body part, usually (but, crucially, as we shall see, not always) designed and assembled according to the individual’s appearance and functional needs, and usually (but, again, crucially, not always) as unobtrusive and as useful as possible so as to maximise the chances of their acceptance of it.⁴³ The missing body part can be missing due to a congenital or an acquired impairment, although in the case of the former scenario it could be argued that the individual is not, in their opinion at least, impaired as they have never known any different.⁴⁴ Studies have shown that if an individual both mentally and physically accepts their prosthesis and is satisfied with it, they will be more likely to use it: the prosthesis needs to ‘fit’, in all senses of the word, its user.⁴⁵ A user is more inclined to accept a prosthesis that is aesthetically pleasing to them than not and consequently considerable effort is expended on the part of

⁴¹ Interestingly, the first well-known modern prosthesis user, Gottfried von Berlichinger, a German knight who lost his right hand at the siege of Landshut at the age of twenty-five, was likewise referred to in this way, as ‘*Götz mit der eisernen Hand*’ (‘Götz with the iron hand’). During the Second World War, the 17 SS Panzer Grenadier Division, was named after him and used an iron hand as its emblem.

⁴² This section of the Introduction uses material from Draycott, 2019b as a starting point.

⁴³ Murray, 2005.

⁴⁴ On the relationship between parts of the body and the whole body, and the extent to which the body can be fragmented or considered fragmented, see Adams, 2017; on the issue of whether individuals born with a condition such as deafness are, in fact, impaired or disabled, see Adams, 2019.

⁴⁵ The reasons why individuals abandon their prostheses are complex and are as much to do with the individuals themselves (for example, age, sex, gender, ethnicity, level of education, etc.) as the prostheses, but studies have made the importance of comfort and functionality in successful prosthesis use clear; see, for example, Murray and Fox, 2002; Pezzin et al., 2004; Biddiss and Chau, 2009.