

Introduction

In late November 1724 in Rome the sculptor Agostino Cornacchini was putting the finishing touches to his major endeavour, the equestrian monument of Charlemagne. The colossal group, commissioned by Pope Clement XI and completed under Benedict XIII, was to be placed in the atrium of St Peter's basilica as a pendant to Gianlorenzo Bernini's famous Constantine, created almost sixty years earlier (Fig. 1). An anecdote about the statue illustrates Cornacchini's temperamental nature. In the story, as told by the satirist Ludovico Sergardi, Cornacchini was bitterly annoyed by the comments that many viewers made about his nearly completed Charlemagne, especially those referring to the short column that he had left under the horse's belly. Would the group stand without it? Some believed this support was a testament to Cornacchini's unskilful design and his inability to create daring yet stable compositions in stone. Offended by these remarks, which were triggered by the striking difference between his statue and Bernini's rearing horse, Cornacchini secretly removed the support during the night at the risk of destroying his own work. To his critics' surprise, the statue did not crumble and has since stood safely on the horse's two slender legs.¹

Regardless of this technical feat, Cornacchini's Charlemagne has suffered criticism since the moment of its unveiling.² In the shadow of Bernini's dramatic monument to the first Christian emperor, Cornacchini's sculpture, which intentionally lacks narrative and drama, has paled in comparison with what is considered a masterpiece of equestrian sculpture. Notwithstanding the apparent facility of Bernini's audacious invention, he too had to resort to an expedient in order to stabilise his work, a sturdy bar-like strut between the rearing horse's front legs. Bernini seems not to have made any effort to disguise the conspicuous marble brace, although this

¹ Letter of Ludovico Sergardi to Giulio del Taja, Siena, Biblioteca Comunale degli Intronati, Autografi Porri, Busta XIV. The relevant passages are transcribed by Simonato (2005: 51). On the monument see Poeschel (2002–3).

² E.g. F. Valesio, *Diario di Roma* (Milan: Longanesi, 1978: vol. IV, 486). Rudolf Wittkower called Cornacchini's Charlemagne 'nothing but a weak and theatrical travesty of its counterpart' (1999: vol. III, 56). Cf. Wittkower (1961).



Figure 1 Agostino Cornacchini, Equestrian monument of Charlemagne, 1720–5. Marble. Vatican, south end of the atrium of the basilica of St Peter

actually remains invisible from the main point of observation, the right-hand side of the figure.³

³ Cole (2007: 64). Images of the strut between the horse's front legs are published in Bacchi and Tumidei (1998: 159, 161, 167) and Lavin (2012: 193 Fig. 167). Bernini's portrait of Louis XIV on horseback, completed in 1684, demonstrates that stability represented a crucial challenge for monumental equestrian statuary. In Bernini's project the rearing horse would rest on a mass of stone symbolising the Mountain of Virtue that only the worthiest few can ascend. See Lavin (1998: 206–8 and Fig. 25) and Körner (2010: 259).

The challenge faced by the two sculptors is nothing new. At least since Graeco-Roman antiquity, the problem of guaranteeing stability in marble statuary has often been addressed by the addition of supports. Especially in marble sculpture produced in imperial Rome, attributes and ancillary objects such as tree stumps, weapons, clubs, pieces of clothing, vases, dolphins and other animals often play a dual role as both supporting and compositional features; they reinforce the figure while providing information on its identity and qualities. In addition to these figural supports, in most Roman statues one or more non-representational props in the form of bars, rods, or cylinders, with no apparent narrative function, contribute to stability by linking volumes and projections. For the sake of clarity, in the following chapters the latter will be called ‘struts’ or ‘non-figural supports’ so as to distinguish them from the equally widespread – yet radically different in their visual effect – category of supporting attributes.

Most scholarship has tackled the issue of supports and struts in Greek and, above all, Roman sculpture by focusing on the very same set of questions that seem to have been central in the judgement of Cornacchini’s Charlemagne by his contemporaries: are supports always necessary for a statue to stand safely? What do eminently technical measures such as supports betray or reveal about the nature of the material and the skills of a sculptor?

Looking at Supports

The difficulties intrinsic to any attempt to answer these questions are exacerbated by our written sources’ apparent lack of interest in the technical challenges of marble carving. Whereas much is known, for instance, about Renaissance artists’ attitudes towards ingenuity, virtuosity, and their struggle against the limits of stone, the Greek and Latin literary sources only allow sporadic glimpses of the demands, material or technological constraints, and artistic choices that were daily practice in a Greek or Roman workshop of marble sculptors.

In particular, we know almost nothing about the ancient view of supports or any other stability devices for statues. Figural supports are occasionally mentioned as integral parts of a composition, without any references to their structural function. One example is Apuleius’ fictional account of the house of Byrrhaena at Hypata, in Thessaly. This passage from the *Golden Ass* satirically describes a luxury dwelling in a city of Apuleius’ own times, the second

century AD.⁴ Lucius, the protagonist of the novel, is astonished at the artworks displayed in the lofty atrium, in the centre of which stands a group of Diana and Actaeon in white Parian marble. As impressive as the image of the goddess alone may have been, striding forward with her garments blown up by the wind, Lucius' attention seems to be caught by other details: a pack of fearsome dogs in the act of running and barking that flanked Diana on each side, 'with their front feet ready to run, and their hind feet set firmly on the ground'. This description calls to mind the many second-century AD statues of Diana in the same attitude, derived from classical or Hellenistic prototypes.⁵ The goddess, upset and in haste, storms forward in fluttering drapery, ready to shoot an arrow at her enemies; her faithful companions, deer or hunting dogs, rush forward at the same pace. These attributes hint not only at the goddess' life in a natural environment and at a number of myths where her animal companions played a crucial role, but also offer structural support to the human figure in its lower section.

Whereas the narrative role of attributes is central to the presentation of the group in Byrrhaena's mansion, their static function remains obscure. In fact, no known text mentions statues being supported or in need of support, and it is left to our imagination what vocabulary could have been used to describe such features. In ancient Greek a 'support' could be variously called *hypereisma*, *sterinx*, or *anteris*. These words refer to an array of concepts – from animal bones (as supports for the body) to reinforcements of buildings and the stay-beams that strengthen a ship's bow.⁶ A Latin writer from the late republican and imperial age of Rome would also have had a number of options available to refer to supports. Participle forms of verbs such as *coniungere* ('to join'), *fulcire* ('to hold up, brace'), *supponere* ('to place beneath') would highlight the static function of a support. Besides, other and more specific words existed that stressed one specific use, regardless of form: walking sticks (*baculum* or *bacillum*), poles for plants and branches (*pertica*, *adminiculum*, *statumen*), and masonry structures (*fultura*).⁷ None

⁴ Apuleius, *The Golden Ass* or *Metamorphoses* 2.4 (tr. J. A. Hanson, Loeb Classical Library).

⁵ See E. Simon, s.v. *Artemis/Diana*, in *LIMC* (vol. II, 805–9 nos. 27–36) for the 'Versailles–Tripoli Artemis' and related types deriving from classical prototypes of the fourth century BC or later Hellenistic creations.

⁶ Bones as supports for the bodies of animals are called *hypereismata* by Aristotle (*Parts of Animals* 655a.10) and *sterigges* by Xenophon (*On Horsemanship* 1.5). *Sterinx*, in Diodorus of Sicily's history, is a supporting masonry structure for towers (18.70.5). With the word *anteris*, Thucydides describes the stay-beams fixed to a ship's bow that support and strengthen the projecting catheads (7.36.2).

⁷ *Fultura*, in particular, was used in a variety of contexts with regard to built structures and machines (sometimes together with *substructio*, 'foundation, supporting structure'): e.g.

of these, however, seems ever to have been used for the supports of statuary, whether figural or not. The ancient understanding of such structural or narrative additions remains a dimension to be almost entirely grasped through other methods, *in primis* the detailed contextual analysis of individual artworks.

This oblivion of supports by the ancient authors may also explain the singular reticence of modern scholarship. The first scholar who explicitly – yet cursorily – addressed the issue of supports was Ennio Quirino Visconti, papal Prefect of Antiquities in the late eighteenth century and a leading expert of his time in the field of ancient sculpture. This earliest assessment of supports appears in the short section of his *Museo Pio-Clementino* in which he discussed the famous marble group of Ganymedes abducted by Jupiter's Eagle (Fig. 2). Visconti examined the possibility that this small-scale group derives from a fourth-century BC bronze masterpiece, made by the Greek artist Leochares and mentioned by Pliny the Elder in his *Natural History* (34.79). According to Visconti the sculpture should, in fact, be considered the copy of some lost (Greek) bronze original, as indicated by the striking prominence of its support, a large tree trunk behind the Trojan prince and the Eagle. Supports, Visconti argues, are peculiar to Roman marble copies of Greek bronze originals that reproduce in heavy stone the loose and expansive postures of lighter prototypes made of metal.⁸ Ganymedes' pose presents in itself major challenges for a work in marble. This is demonstrated by the measures taken by Vincenzo Pacetti, the neoclassical sculptor and restorer who recreated this piece around an ancient nucleus consisting of a human torso, the claws and neck of an eagle, and most of the tree trunk. To secure the statue's balance, Pacetti had to include a slightly curved strut beneath Ganymedes' right foot. However, the unusual size of the tree trunk is due to the fact that the figures were carved as decoration on a table leg.

Visconti's conjecture that supports point to the translation from bronze largely depended on recent achievements in the study of ancient sculpture.

Vitruvius, *On Architecture* 6.8.3, 10.1.2, 10.16.11; Columella, *On Agriculture* 1.5.9; Pliny the Younger, *Letters* 10.39.2. In his account of the *Civil Wars* (1.54), Caesar mentions as *statumina* the ribs of a ship, made of light timber.

⁸ Visconti (1782–96: vol. III, 65–6 no. 49). On the statue (Galleria dei Candelabri, inv. no. 2445) see Lippold (1956: 216–19 and Pls. 103–4) and Spinola (2004, 173–4 no. 83). Giuseppe Antonio Guattani made similar remarks about the struts (*puntelli*) of the Lancellotti discus thrower: 'Egli [Pliny] lo [the Discobolus] annovera fra le statue di bronzo. Dunque dovrà dirsi una copia di quello. Che sia così, un tal soggetto eseguirsi non potea, che col porre un grandissimo puntello sotto il braccio destro ... il che siccome dovea produrre uno svistamento notabile, non è da supporre, che avrebbero tenuta simile idea, facendola di prima intenzione in marmo' (1784: XII–XIII = Guattani in Cancellieri 1806: 31–2).



Figure 2 Statue of Ganymedes abducted by the eagle. Marble. H. 103 cm. Vatican, Museo Pio Clementino, Galleria dei Candelabri, inv. no. 2445

During the eighteenth century it had become increasingly clear that the list of Greek masterpieces handed down by ancient literary sources, above all by Pliny the Elder, and the surviving statues from Rome were not one and the same. The simple observation that many images existed that repeated the same subject grew into the understanding that they may be copies after famous, lost masterpieces.⁹ Supports, Visconti believed, provide the most blatant indication that a given statue not only is a Roman copy of a lost Greek original, but also that the prototype was in bronze.

Visconti's explanation, however, did not immediately inspire broader accounts and comprehensive appraisals of supports. Over a century had to pass before figural supports would be examined in more detail, in a lengthy article published by Ada Maviglia in the *Römische Mitteilungen* of the German Archaeological Institute.¹⁰ Maviglia's study mainly addressed

⁹ See Anguissola (2012: 25–31) for the 'discovery' of Roman copies in the eighteenth century and Gallo (1992–3) on Ennio Quirino Visconti and his father Giovanni Battista.

¹⁰ Maviglia (1913). The necessity of a comprehensive work on (figural) supports had already been explicitly advocated a few years earlier by E. Löwy (1905: 271).

questions of iconography and narrative coherence. Supporting attributes, she argues, generally conform to the character of the human figure – e.g. training tools are the prerogative of athletes, weapons of warriors and emperors, writing instruments and scrolls of intellectuals, whereas individual gods and characters of Greek and Roman mythology would be paired with their usual companions and attributes. Supports that had no apparent effect in characterising the subject, such as drapery, generic tree trunks, vases, pilasters, or columns, fall outside the scope of the study. The assumption is that figural supports are created explicitly to identify the subject.

The ‘hermeneutic exercise’ attempted by Maviglia left a number of key questions unaddressed, especially about technology and chronology.¹¹ In his 1926 doctoral dissertation and a larger and more ambitious book published twenty-five years later, Fritz Muthmann, a student of Ludwig Curtius, set off from radically different premises and expanded the reach of Visconti’s assumptions.¹² Muthmann argued that figural supports are not only reliable indicators of derivation but, because of their being extrinsic, they also play a crucial role in dating Roman copies of Greek statues. Copyists’ additions, he argued, reflect the taste of the period when they were carved. In contrast to Maviglia, Muthmann concentrates on shape and carving techniques rather than the narrative role of supports. He identified distinctive features in the treatment of figural supports, which should allow artworks created in the earlier imperial period of Rome to be distinguished from those produced in the Hadrianic and Antonine age. Although revolutionary for its time, Muthmann’s research is limited. It does not account for the traditions of workshops in the shaping of supports or for the possibility that support-types also followed patterns of circulation similar to body types and iconographies.

The reach of Muthmann’s landmark essay was such that over the following fifty years the issue of supports was largely neglected. Most research since has focused on two questions: how do figural supports match, explain, or specify the subject of a composition, and to what degree are certain attributes and their treatment indicative of chronology?

¹¹ See Albizzati (1916: 386 n. 31) and Lippold (1923: 254 n. 1). In particular, C. Albizzati recommends for the first time joint consideration of supports (i.e. figural supports) and ‘puntelli’ (i.e. non-figural supports).

¹² In his dissertation, defended in 1926 and published one year later, Muthmann focused on a narrower choice of figural supports (tree trunks with or without additional attributes or drapery and palm-tree trunks) from the Hadrianic to the Antonine period. The larger 1951 monograph includes earlier examples that reach back to classical Greek art, as well as a larger selection of shapes (pilasters, herms, tripods, weapons, vases, animals, and Cupids).

Only in recent years has consideration expanded to include Greek sculpture of the classical and Hellenistic periods. Interest, understandably, has shifted from the relationship between Greek prototypes and their Roman copyists to questions about the development of the human body and the origins of leaning postures in Greek classical art.¹³ Such a change in perspective matches a parallel evolution in both Greek and Roman art history during the late twentieth century, which led, on one hand, to de-emphasising the role of copies for the history of Greek art and, on the other, to their ‘rediscovery’ in the sphere of Roman civilisation. Since the 1970s, historians of Roman art have underlined the importance of viewing images created according to Greek styles and iconographies as genuine expressions of Roman culture and values.¹⁴ Whereas the two lines of inquiry tackle a set of crucial (and complementary) problems – the dating and coherence of supports and the origins of leaning bodies in Greek classical art – they both ultimately fail in addressing the visual and communicative dimensions of supports.

Functional Implements

The questions raised by supports – related to necessity, technology, and ingenuity – prove all the more poignant in the case of non-figural supports, those that are generally called ‘struts’ – ‘Stützen’, ‘Stegen’, and ‘Streben’ in German, ‘tenons’ in French, and ‘puntelli’ or ‘tenoni’ in Italian.¹⁵ It seems that struts add little or nothing to the narrative. They respond to the practical need of securing projections to the main, generally vertical, axis of a marble figure. That this was a major concern to sculptors in stone in all periods is made clear in the words of Benvenuto Cellini, perhaps the most informative early modern writer on the craft of bronze and marble statuary. According to Cellini, ‘Extravagant attitudes’ and the ‘undercuts’ of waving

¹³ Schoch (2009), Weinstock (2012), Koçak (2013), are all derived from doctoral dissertations defended in German universities over a short span of time. Whereas K. Schoch and M. Koçak concentrate on well-known classical types of Aphrodite, H. Weinstock aims to provide a broader account of both ‘dekorative Attribute’ (i.e. figural supports) and ‘die einfachen, ungeschmückten Stützen’ (i.e. struts). His analysis, however, is limited to the most widespread types of tree-trunk supports, integrated by a limited selection of struts near figures’ legs. See also the review by S. Kansteiner (2013).

¹⁴ Anguissola (2012: 25–66 and esp. 44–57 for the recent debate).

¹⁵ In the scholarly literature, the vocabulary remains largely discretionary. ‘Strut’, ‘support’, and ‘prop’ are generally used as synonyms, like their German counterparts. The Italian ‘puntello’ may also refer to a different device, the stone projection that copyists used as a fixed point to take measurements.

garments, with sections of marble projecting outward from the main surface or core, are the most challenging points to carve.¹⁶ The sixteenth-century painter Pontormo also noted that such passages were anything but peripheral. Rather, they constituted the achievements that most impressed viewers, even those who were not practising marble-cutters and therefore unaware of most technical struggles. In his words, overcoming the *difficoltà d'un braccio in aria* without damaging the stone is a paramount example of artistic ingenuity.¹⁷

In the study of Greek and Roman marble sculpture, these concerns for the difficulties of a composition and the dexterity of its carving have received little consideration. Instead, struts have been investigated mainly – if not exclusively – as reliable cues for derivation. The point was explicitly raised by Rhys Carpenter concerning the statue of Hermes and the infant Dionysus at Olympia, the origins of which have been disputed since its discovery in the late nineteenth century. The horizontal bar strut connecting the polished body of the god to the massive tree trunk at his left side, ‘running brutally into the naked flesh’, excludes that the statue may be a Greek original carved by Praxiteles. On the contrary, it is ‘eloquent of the needs of the copyist afraid of his more brittle medium’, that is, marble.¹⁸ Rhys Carpenter sees the sophisticated system of supports as an intruder in an otherwise harmonious ensemble.

The argument of derivation, with its corollary of assumptions about bronze and marble, is only one aspect of modern scholarship on ancient struts. Where it cannot be posited that a marble statue with struts is a copy of an earlier bronze work, then an alternative explanation has been put forward to frame struts within the dynamics of Roman marble workshops. Struts, it has been argued, were security measures for transport. According to this line of thought, struts indicate that a given statue was produced in a place distant from its context of display.¹⁹ Some have

¹⁶ *Due trattati, uno intorno alle otto principali arti dell'oreficeria, l'altro in materia dell'arte della scultura*. Florence: Valente Panizzi & Marco Peri, 1568: 57v (anastatic reprint Modena: Edizioni Aldine, 1983 = *The Treatises of Benvenuto Cellini on Goldsmithing and Sculpture*, tr. C. R. Ashbee, New York, 1976: 136). An unfinished statuette from Aphrodisias of the type called Versailles Diana offers an example of the type of *sottosquadri* which Cellini describes as points of potential fragility: see Rockwell (1991: 139 Figs. 21–3). N. Penny (1993: 76) uses the same definition of ‘extravagant’ to describe the expansive poses of certain Roman statues, such as the Belvedere Apollo.

¹⁷ Letter to Benedetto Varchi, 1548, on which see Barocchi (1960–2: vol. I, 67).

¹⁸ Carpenter (1931: 254–5, 257). On this statue and the controversy about its large supports see Chapter 2.

¹⁹ So Lippold (1923: 43, 72–3, 133–4), Studniczka (1926: 142), Richter (1954: 31), Stewart (1977b: 89), R. Bol (1984: 21), Linfert (1979: 781). The two latter refer in particular to the

proposed that struts were (expected to be) removed once the statue was in place.²⁰

That struts would be eliminated once a statue was set up is an assumption suggested by early modern practices of marble carving. The corpus of marble sculpture from the sixteenth century onwards leaves little doubt that most stone connectors, bridges, and brackets used for the carving were later carefully amputated. This final touch was occasionally omitted, due to economic and practical constraints. One example is the statue of St Sebastian made by Nicolas Cordier in 1604 for the Aldobrandini chapel of Sta Maria sopra Minerva, in Rome. The hair, beard, and right foot were left unfinished and struts remain between the splayed fingers of the raised left hand. Cordier's apparent indifference to struts is unlikely to be an aesthetic choice, but may rather depend on his disappointment with unsatisfying financial conditions. After Pope Clement VIII died in 1605, the work on his family chapel was interrupted and the artists were compelled to accept lower fees than agreed, something that may have prevented Cordier from putting the finishing touches on this statue.²¹

Even more conspicuous are the struts left on the statue of St Paul carved by Francesco Mochi for the Benedictine monks of Montecassino (1638–52), who had commissioned twin images of St Peter and St Paul for the Basilica of San Paolo fuori le Mura. Rejected by the patrons, who refused to pay for them, the marbles were acquired by Pope Alexander VII after the sculptor's death and found a place for display only years later, on the outer façade of the Porta del Popolo.²² A bulky, irregular strut runs from St Paul's raised right hand to the drapery around his shoulder, about as large as the arm it is supposed to sustain. Four minor bridges connect other points of

so-called 'neck struts' or 'nape struts', on which see Chapter 4. Doubts about struts being evidence for transport are expressed by B. Andreae and B. Conticello (1987: 14 n. 38) who believe that, in the case of the sculptures at Sperlonga, struts were specifically required by the challenges of the compositions, with projecting sections and outstretched limbs.

²⁰ This view had already been expressed by Ennio Quirino Visconti (1782–96: vol. III, 36). Commenting on the sculptural group of Artemis and Iphigenia at Copenhagen (see Chapter 2), Bieber points out that 'struts should be eliminated, as they were probably made for the transportation of the group and through neglect were not removed after the work had been set up' (1961: 77). Studniczka believes that sculptors removed struts according to their customers' preferences (1926: 142). Lippold (1923: 73) and Blinkenberg (1933: 23–4) are sceptical about struts being removed once the statue was in place. The latter suggests that they were rather painted so as to pass unnoticed.

²¹ Montagu (1989: 45 and Fig. 50) and Cole (2007: 58–60 and Fig. 3.2). Unfinished areas can also be detected on Cordier's Charity for the same chapel. See also Pressouyre (1984: 377–80 nos. 4–5).

²² De Luca Savelli (1981: 80–2 no. 23), Montagu (1989: 44–5 and Fig. 48), Favero (2008, 93–6 no. 27).