

**TALOS AND DAEDALUS:
A REVIEW OF THE AUTHORSHIP OF THE
ABOMINABLE BRONZE MAN**

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APOLLONIUS says in his *Argonautica*¹ that when the Argonauts, returning from their quest for the Golden Fleece, tried to put in at Crete, they were prevented from doing so by Talos, the bronze sentinel of Minos, who stood on the cliffs and hurled rocks at their ship.

Tradition has it that this strange metal man strode three times a day round the island of Crete, protecting it from intruders. And as he made his rounds on his tireless feet, he scanned the seas and the beaches for signs of them. If it was a ship that he saw, he would tear chunks off the crags with his bare metal hands and throw them at it and sink it; if, on the other hand, men had already come ashore, it is said that he would leap into a fire and make himself red-hot, then, running up to them and embracing them, scorch them to death. His victims, when they died, died with a grimace on their faces — and this, according to some etymologies, was the origin of the expression 'sardonic smile'.

The evidence on Talos has been brought together a few times before this by writers and commentators and some interesting conjectures have been made as to his mythological and religious significance. The discussion inevitably brings up the question of the identity of the Talos of Crete with the Talos of Athens, said to be the nephew of Daedalus. There is also the attempt, prompted by the ancient writers themselves, to associate the Greek Talos with Moloch of the Carthaginians and the practice of human sacrifice connected with him, in which the victims were roasted to death in the arms of a bronze statue of him.

At the same time Cook² has found an equally exciting rationalistic explanation of certain details in the make-up of Talos. He

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¹ iv. 1638 f.

² A. B. Cook *Zeus: A Study in Ancient Religion* Cambridge 1914 vol. I p. 723-724.

sees him as an embodiment of the *cire perdue* method of hollow-casting in bronze, "a process which was invented at a remote period and lasted throughout the whole history of Greek art."¹

Few, if any, of the numerous monsters, theriomorphic, anthropomorphic or of mixed form, can compare in the brilliance of their conception with the bronze man of Crete. For, even if he is spoken of metaphorically as though he was a human being, it is evident that Talos was not a mortal creature like the rest of them but a product of the bronze-founder's art. In other words, we have in him a robot—perhaps man's first conception of such—not only in the outer form but replete with an imaginary mechanical device which was thought to activate him. And in this capacity he does not draw his plausibility, as the other monsters did, from the wild and fantastic natures that belonged to prehistory. Rather, he is remarkably futuristic, anticipating the scientific possibilities of the present age, and even then, belonging more with the bizzare imaginings of the new mythology of science fiction² than with the mechanisms created and used in real life.

No attempt seems to have been made, however, to piece together the evidence on Talos so as to get a fuller idea of the anatomy and functioning of this metal man (— or rather, the imaginative conception that he was, since it would be naive to believe that a creation, such as he is described to have been, was within the possibilities of the science of such remote antiquity).

Talos becomes a more interesting subject of study when it is found that this bronze man, who had sprung from the mythopoeic imagination of archaic Greece like Athena from the head of Zeus, has not been left alone thereafter by subsequent ages but has continued to be tinkered with so as to become a somewhat more sophisticated piece of work than the original conception had made him. On the one hand, he is made a more diabolical creation by the addition of details and associations to the manner in which he slew his victims, on the other, a more ingenious one by the implications—found perhaps as far back as Sophocles at least and steadily gaining strength—that he was the product of the da Vincian

¹ *ibid.* p. 723.

² See particularly the range of supermen and incredible creatures, Spider Man, Iron Man and the like in the 'comics' (cartoon) magazines published by the Marvel Comics group and others and presently enjoying wide popularity in the U. S. and elsewhere with youths and adults alike.

imagination and subtle engineering skill of Daedalus, the master craftsman of Greek mythology.

This article seeks to discuss briefly the nature of Talos' construction and functioning (—as much, that is, as the evidence reveals—) the growth of his association with Daedalus, famed for making statues that walked, and the parallelism that has been developing between the nature of these Daedalic automata and Talos. In the course of this it may become apparent that, even if the original tradition was that Talos was the handiwork of Hephaestus, it did not discourage the intuition of some later writers and scholars that, viewed as an aspiration of science, he could equally well be the work of the mortal craftsman whose name was synonymous with science in archaic times, Daedalus. Daedalus and Talos both lived in the Crete of Minos; the tradition that Talos was made by Hephaestus may be explained as having meant no more than that he was the product of the bronze-founder's art, of which Hephaestus was the patron-deity.

The only episode in which Talos figures in mythology is also the one in which he meets his death. The fullest account of this is found in Apollonius,¹ who tells of how he hurled rocks at the Argo and of how Medea, by means of hypnotism reinforced by spells and imprecations, made him stumble and rupture the membrane at his ankle against a rock, thereby causing the vital ichor to drain out of his secret vein. Despite the dramatic elaboration, however, Apollonius seems to have followed a dubious tradition — if indeed he was not the author of it — when, in his description of Talos, he tries to make him a survivor of the mythical Bronze Race. For he writes:²

“A descendant of the brazen stock that sprang from ash-trees, he had survived into the days of the demigods. The son of Cronos gave him to Europa to be the warder of Crete and to go round the island three times each day on his feet of bronze.”

But then he goes on to add that his body and limbs were fashioned of bronze and invulnerable, all except a blood-red vein which lay beneath the senew of his ankle.³

¹ *loc. cit.*

² *ibid.* iv. 1641-1644.

³ *ibid.* iv. 1645-1647.

Evidently there are two accounts confused here. The first makes Talos a human being belonging to the Age of Bronze, which, according to Hesiod,¹ succeeded the Age of Silver and was itself succeeded by the Age of Heroes, or conversely, — and this would be a strange new interpretation found nowhere else — makes the men of that Age of Bronze, not men of flesh and blood but bronze Taloi. The other is the popular one which knew him as a metal robot turned out in some foundry.

Apollodorus² seems to have observed the incongruity that arose when the two traditions were conflated, for, in his own briefer account of the episode, he takes care to keep them apart. "Some", he says, "say that he belonged to the Bronze Race, others that he was given to Minos by Hephaestus; he was a brazen man (but some say he was a bull)."

Those who said that Talos was a brazen man found it quite apt that he should have been the gift of Hephaestus. On the other hand, Apollonius,³ whom Apollodorus no doubt included among the 'some' who said that he belonged to the Bronze Race, necessarily changed the donor to Zeus and, unnecessarily, the recipient to Europa. Zeus would, in that case, have been the creator of Talos, since it was he who brought into being the men of the Bronze Race (as also the succeeding race of heroes, to which Europa — and, for that matter, Minos belonged). Zeus, as Hesiod⁴ implies, had usurped power from his father, Cronos, some time during the second generation of men, the Silver, and it was he who destroyed them before going on to create the Bronze Race which succeeded them.

What other writers accepted this dubious tradition we do not know. Apollonius may himself have come across it in his researches in the great library at Alexandria. But it is more than likely that he himself was the author of this version of Talos' origin, being induced by his epic zeal to link up this solitary bronze man with the men of the Age of Bronze that had preceded him, and on a

¹ *Works and Days* 126-160, and on the Age of Bronze, more esp. 143-155.

² *Bibl.* i. 9.26 The question of Talos as a bull need need not concern us here. Possibly statues of a Minotauroic sort depicted in the act of throwing stones were a similar category of apotropaic symbols and regularly called, or identified with, Talos; see p. 42-43.

³ *ibid.* iv. 1643-1644.

⁴ *ibid.* 121-139.

mere nominal resemblance. His own phraseology sufficiently reechoes Hesiod¹ to confirm our suspicion on this point.

Yet Hesiod nowhere says, or even implies, that the men of that mythical Bronze Race were themselves made of bronze. They had "dauntless hearts like adamant" and "great was the strength and unconquerable the arms which grew from their shoulders on strong limbs"² and so on, but for all that, they were human and succumbed to death.³ If they were called 'bronze' it was because bronze was the metal in vogue with them — "their armour was of bronze and their houses were of bronze, and bronze were their implements".⁴ By way of further explanation Hesiod adds, "they had no black iron".⁵

A deliberate attempt at making Talos a human being by rationalizing both his bronze nature and his superhuman chore of circumambulating Crete three times each day is made by the author of the pseudo-Platonic *Minos*.⁶ Talking of Minos' brother, Rhadamanthys, he says:

"Minos used him as a guardian of the laws in the city, but in the rest of Crete he used Talos. Talos went round the villages three times a year, protecting the laws in them; and he had the laws inscribed on bronze tablets, whence he came to be called bronze."

¹ Cp. Apollonius' ref. to Talos as "a survivor of the brazen stock, of men sprung from ash-trees" (*ton . . . chalkeiōs meliegeneōn anthrōpōn rhizēs loipōn*) with Hesiod's "a brazen race of mortal men sprung from the ash" (*genos meropōn anthrōpōn chalkeion . . . ek melian*) and his ref. to the succeeding generation, that of heroes, as "demigod men" (*andrasin hēmitheoisin*) with Hesiod's "godly race of hero-men, who were called demigods" (*andron herōōn theion genos, hoi kaleontai hēmitheoi*) Hesiod, in the context, calls Zeus *Zeus Kronides*, and Apollodorus, following him, *Kronides*.

² *ibid.* 146-149.

³ *ibid.* 152-155.

⁴ *ibid.* 150-151.

⁵ *ibid.* 151. See Hdt. ii. 153. The easy confusion of men in bronze armour and bronze men forms the basis of an oracle given to Psammetichus at Buto. It said that bronze men would help him take vengeance on his enemies. These proved to be a band of sea-raiders clad in bronze armour, who happened to land on the Egyptian coast. An Egyptian, who had never seen such a thing, announced to Psammetichus that bronze men were plundering the country. Seeing in this the fulfilment of the oracle, he straightaway secured their aid and defeated his enemies.

320b-c.

For this writer there cannot have been anything very remarkable about Talos—he was a man like anyone else; he was not even a survivor of the Bronze Race, which he may very well have been deemed. But, as remarked before, the whole thing is a blatant piece of rationalization which attempts to give itself a Platonic flavour by reference to the details in the Platonic eschatology such as Minos' reputation as a law-giver, his association with Rhadamanthys as judges of the netherworld, and that of the tablet-carrying dead in the *Republic's* myth of Er.¹ If anything, it merely serves to emphasise the tradition that the mythical Talos was a man of bronze.

Evidence of the bronze constitution of Talos goes as far back as Simonides,² to whom the later writers owed the story of how he slew his victims by heating himself red-hot in a fire—a thing which he could not have done unless his body was made of metal.

Consistent with this nature of Talos is the description, often found, that he was made by Hephaestus, the god of forge and foundry. According to one source,³ Simonides seems to have referred to him as "Talos, whom Hephaestus made" (*hon Hephaistos edemiourgēse*), according to another,⁴ "Talos, the Hephaestus-fashioned" (*ton hephaistoteukton*), both expressions showing that Simonides had taken him to be a manufacture and belonging to the craft of the god Hephaestus. Apollonius himself agrees with this description of Talos, speaking of him as having been 'fashioned' (*tetukto*),⁵ where, if he had been consistent with his derivation of him from the mythical Bronze Race, some other word descriptive of a creative activity of a plastic nature, employed by Zeus or Prometheus in the creation of men, would have been more appropriate. As we will suggest later on, Talos may not even have been produced by any technique of bronze-casting involving moulds but put together out of metal sheets and bolts or rivets, using the arts of tinker and joiner than that of caster.

¹ See *Apol.* 41a, *Gor.* 523e-524a. In *Rep.* 614c-d all the dead carry tablets, the good in front, the bad behind them.

² Schol. Plat. *Rep.* 337a = Simon. fr. 202A.

³ Schol. Plat. *Rep.* loc. cit.

⁴ Phot. *lex.* p. 500, 24 = Suid s. v. *sardanioi gelōs*. Hephaistos is depersonalized, the proper noun being joined with *teuchein* to coin a new verb which may simply mean 'fashioned in the foundry'.

⁵ *ibid.* iv. 1645,

Despite the strength of his metal hands and the tirelessness of his feet, the mythical Talos was not conceived of as a giant. Reiu¹ implies that Apollonius took him to be such, remarking that the Colossus of Rhodes, that gigantic statue of the Sun-god, sheathed in bronze, was still standing when the writer visited the island. The evidence in Apollonius, however, does not support this, even if an exaggeration of the stature of the bronze man of Crete would have enabled him to have made him a closer parallel of the stone-throwing Cyclops of the *Odyssey*. The one writer who thought he was such, calling him 'bronze thrice-giant' (*chalkeion trigiganta*) and proving himself less circumspect, is the author of the *Orphic Argonautica*.² For even if the feat of tearing chunks off the crags and hurling them at ships called for gigantic strength, the evidence that Talos killed his pedestrian victims by hugging them to his red-hot chest, which we owe to Simonides and Sophocles,³ shows that he could not have been much larger than a man.

This is borne out pictorially by a magnificent painting of the death of Talos which appears on a *krater* with volute handles found in the nekropolis of Ruvo. Cook⁴ describes the scene as follows:

"The Argonauts have reached the Cretan coast. Zetes and Kalais are seen still on board their vessel. But a landing-ladder is put out from her stern across the water, which is suggested by a dolphin. A young hero, shrinking back in alarm from the central scene, springs up the ladder. On shore Kastor and Polydeukes with their horses have already pursued and caught Talos. Polydeukes grasps him, still attempting to run, within the circle of Medeia's magic spells. Medeia herself stands by, fixing her victim with her evil eye, while she holds a basket full of potent herbs and mutters her fatal formula. Talos, overcome despite himself, falls backward in a swoon. The nymph Krete flees in terror at the death of her watcher. Above her, in the background, appear Poseidon and Amphitrite as patrons of Argonautic prowess".

Talos, unlike the other figures in the scene, is painted white and his body-surfaces outlined rather thickly in varnish to suggest

¹ E. V. Rieu transl. *Apollonius: The Voyage of Argo*. Penguin Cl. reprint 1972 introd. p. 25, where he himself refers to Talos as 'the bronze giant'; see also his translation of the text p. 191, where he exceeds the Greek.

² 1359.

³ Schol. Plat. *Rep. loc. cit.* read together with Suid and Phot *ll cc*, Zenob. *Cent* v. 85 and schol. Homer *Od.* v. 302.

⁴ *ibid.* p. 721 and see plate xli with it.

that he is a man of bronze.¹ But it is evident that the artist did not think of him as any sort of giant, since he makes him no bigger than the gods and heroes who surround him. On the matter of the general appearance of Talos, however, he seems to have erred in the opposite direction in making him look no different from those around him, whereas, in our opinion, he must have presented an appearance more akin to that of a stiff-jointed robot or an animated suit of armour than a human being with the fluid contours of the human body.

The most interesting feature about Talos is, undoubtedly, the manner in which he was activated. One version of Simonides² gives him as having said that Talos, 'being alive' (*on empsychon*), killed those whom he met by scorching them. This need mean no more than that he manifested an elementary potentiality specific to *psyche*, which is also manifested in the living, the power of self-motivation.³ Qua self-motivated it has *psyche* and is *empsychon*, which is a remarkable reverse description of Aristotle's notion of a slave as an *organon*.⁴ It must be in this same sense that Apollonius⁵ spoke of 'life' in the case of Talos, when he described the secret vein at his ankle as possessing 'the issues of life and death' (*zoes peirata kai thanatoio*), and again Apollodorus⁶, when he used, the expression that Talos 'died' when the ichor flowed out of him.

Upon this vein of ichor, then, depended the activity of Talos. It itself, Apollonius⁷ says, was blood-red (*haimatoessa*), in contrast to the rest of his body, which was of bronze, and it was covered by a thin membrane. Apollodorus,⁸ on the other hand, implies that Talos was completely bronze, even to the vein and the nail which, according to his account, stopped it. But this is not the

¹ See also Cook *ibid.* p. 271 n. 6.

² Schol Plat. *Rep. loc. cit.*

³ So Thales "The magnet has soul (*psyche*) because it moves iron". Aristot. *De Anim.* 405a19 f. = Thales fr. A22 Diels.

⁴ *Pol.* 1253b29-34; for the helmsman, he says for example, the rudder is a lifeless tool and the look-out man a live tool—for an assistant in the arts belongs to the class of tools. Naturally, the technicians of our University, in a recent *News Review* of theirs, show relief that a professor who had earlier equated them with 'inanimate furniture' was gradually learning the difference!

⁵ See also schol. Apoll. Rhod. iv. 1638.

⁶ *loc. cit.* Cp. Sophocles fr. 161 Pearson, schol. Apoll. Rhod. *loc. cit.* etc.

⁷ *ibid.* 1645-1648

⁸ *loc. cit.*

only point of difference between the two on the vein. Apollonius only observed it's presence beneath the senew of the bronze man's ankle. On the other hand, Apollodorus says it began as high up as the neck and extended all the way down to the ankles. (It must have bifurcated at the base of the trunk).

There need be no contradiction here. Apollodorus says the vein stretched from the neck down to both ankles. But when he comes to the blocking of it, he speaks of only one end (*terma*) and one nail (*helos*) used for the purpose. This must have been the vein-end through which the ichor was poured into the entire vein, before it was closed up by the bronze nail. It was possibly to this vein-end that Apollonius adverted, the only visible part of the vein; by 'beneath the senew' (*hupai . . . tetonos*) he may not have meant that it lay parallel with the senew but that it projected spur-like beneath it at the heel. Perhaps both writers derived their description from some single famous painting of the scene, and what seemed to one a projecting vein-end, covered by a membrane, the other took to be a nail. As for the vein's extension through the body, Apollodorus may have got his information from some other source; Apollonius limits himself to the vital vein-end visible externally.

It was ichor that this vein carried and powered Talos, an ethereal liquid which is said to have flowed in the veins of the gods. But in the case of Talos divinity seems hardly to have been intended. On the contrary, the thought seems to have been one of animating an inanimate mechanism. As one of the earliest of mechanisms, it is interesting that Talos was conceived in the likeness of a man, both in his external form and in the nature of his animation. Here ichor recommends itself to the imagination on its mythic reputation as a sort of blood-equivalent of high potency. It was perhaps just as well that its existence was no more than mythical, thus putting it out of the reach of reality standards.

As if the idea of a bronze robot powered by a secret vein and ranging the cliffs and beaches of the grim island of Minoan Crete was not wierd enough, we have the macabre manner in which he slew his unfortunate victims. The tradition connected with this, like that of his destruction of ships, seems to have been old and genuine. The intuition is sound in either case when it sees the mythical Talos as owing his imaginative conception to some impressive statutory fraught with associations of death. The stone-throwing of Talos seems to have adverted to certain statues of winged youths,

depicted, for instance, on the coins of Phaestus,¹ which we think may have been set up on rocky eminences in Crete and elsewhere. On the other hand, scholarship overreaches itself when, in its pursuit of the 'sardonic smile' of Talos or his victims, it tries to identify him with the Carthaginian Moloch by a weak concatenation of evidence.

The scholiast on Plato *Republic* 337a, commenting on the expression 'sardonic smile', observes:

"Simonides (derived it) from Talos, the man of bronze, whom Hephaestus made for Minos as a guardian of the island. They say that, being alive, he killed those whom he met by scorching them. From the grimace they made due to the searing heat, they say, was named the sardonic smile."

He adds that Sophocles tells much the same thing in his *Daedalus*.

Plato² used the expression in the same sense as Homer³ to mean 'a sinister smile which bodes pain to others.' It was a smile in which the lips were drawn back to the extent of baring the teeth, so that the scholiast's own derivation of it from *sairein* (Lat. *ringi*, as of an angry dog), suited the meaning which the phrase bore in them.⁴ Simonides' use of it to denote the involuntary grimace of the victim appears more frequently among later authors.⁵

Interesting in the light of the earlier use of the phrase is the attempt by the scholiast on Homer *Odyssey* v. 302 to make the evidence of Simonides read that when Talos, leaping into a fire and making himself red-hot, scorched his victims to death, it was he who wore the sardonic smile.⁶ The grimace of pain on the part of the sufferers has become, in accordance with the older usage, the leer of sadistic pleasure on the part of the killer. As we shall

¹ See p. 41-42.

² *Rep.* 337a, of Thrasy-machus, when, as anticipated, he found Socrates 'shamming ignorance' and not letting himself be questioned but seeking to question others.

³ *Od.* xx. 302 f. of Odysseus among the suitors.

⁴ Photius (*loc. cit.*) *sardazōn: meta pikras gelōn* preserves the *d*.

⁵ The explanations volunteered by them apply only to the non-Homeric usage. See also Cic. *Fam.* vii. 25-1.

⁶ He calls Talos a watchman made by Hephaestus and given by Zeus to Europa to punish anyone landing on Crete. For he leaped into a fire and, heating his breast, burnt them: "and as they scorched, he laughed" (*hōn kaiōmenon ekeinon seserenai*).

see, there may have been a basis for this in the physical appearance of the bronze Talos which made the interpretation plausible.

Of the two popular explanations resorted to by those who took *sardanios*, or *sardonios*, as derived from Sardinia, one referred to a plant which grew there and made those who tasted it screw up their faces, for one reason or another, in an involuntary smirk.¹ Selinus, for instance, in his second book *On Syracusean Matters*, says that the plant, which resembled parsley, made the marrows and flesh dissolve.² Possibly it caused a paralysis of the facial muscles and no more. But there were those who suggested that the victims died, thus complying with the associations which the smile had developed with its proverbial usage.³ The other derivation, however, emphasises this fatal aspect as a smile of death. Timaeus⁴ tells the story of old men of that island being buried alive and laughing at their prospective happiness, or, again,⁵ of being driven over the edge of a pit with sticks by their sons and smiling as they went to their doom. Demon⁶ likewise speaks of the most handsome captives and old men over seventy being sacrificed by the Sardi to their Cronos and of how they smiled to show their steadfastness and courage.

Simonides,⁷ whether he used the expression 'sardonic smile' for the smile of pain of the victims or that of triumph or pleasure of the avenger, simply derived *sardanios* from *sairein*. Someone in antiquity,⁸ however, seems to have heard otherwise and thought that

¹ cf. Paus. x. 17.13, Tzetz. *Lycophr.* 796, Serv. *Vir. Ecl.* vii. 14 etc. The spelling *sardonion* came into vogue through the popular etymology involving this bitter Sardinian herb.

² *apud* Suid. *loc. cit.*

³ e.g. schol. Hom. *Od. loc. cit.* He says those who tasted it seemed to smile and died of a spasm.

⁴ Fr. 29 = *Fr. Gk. Hist.* 1.199.

⁵ Fr. 28 = *Fr. Gk. Hist.* 1.199. Some writers make the sacrificers, not the victims, smile, thus complying with the original implications of the *risus sardonicus*.

⁶ Fr. 11, in a work *On Proverbs*.

⁷ Schol. Plat. *Rep. loc. cit.* See J. Adam *The Republic of Plato* Cambridge (1920) p. 25 comment *ad. loc.* and A. C. Pearson *The Fragments of Sophocles* Cambridge (1917) vol. 1 p. 112 comment on fr. 160.

⁸ Suid., Phot. II. cc. The account says that Talos killed Sardinians "not wishing to cross over to Miasos", which is silly. Bernhardt (on Suid.), who records other conjectures, is for the omission of 'not' (*ou*). Pearson (*loc. cit.*) adds that he would rather omit *sardanios* altogether as "the blundering addition of someone who wanted to bring in Sardinia at all hazards", as if *epichaskontas* (men with mouths agape) was not enough, and read *tous boulomenous* (those wishing) for *ou boulomenous* (those not wishing).

Simonides himself had known of the associations of the word with Sardinia. Accordingly he insinuates Sardinians into the evidence of Simonides by way of the intruders whom Talos slew in Crete, thus also conflating the two etymologies.

“Simonides (says) that Talos, the Hephaestus-fashioned, used to kill Sardinians wishing to cross over to Minos, by leaping into a fire (in as much as he was of bronze) and embracing them; they died with their mouths agape.”

An interesting improvement upon this is supplied by Zenobius,¹ again citing Simonides as the source — which makes us doubt if any of these ancient writers and commentators had read Simonides himself on the point. According to him,

“Simonides says that Talos lived in Sardinia before he came to Crete and had already destroyed many of them (i.e. Sardinians) there. These men died smiling, whence the expression ‘sardonic smile’.”

Where the former version took the Sardinians to Talos in order that we might eke out a ‘sardonic smile’ from the context, this one takes Talos to the Sardinians. Talos, it says, in fact lived in Sardinia before he came over to Crete!

If there was an independent tradition of Talos in Sardinia, we know nothing of it. The whole thing seems to have resulted from a desire, by those who suspected that the etymology of the smile had something to do with Sardinia, to explain Talos’ associations with it found in the evidence of Simonides and Sophocles. On the other hand, it results in an uncanny coincidence which lends support to our hypothesis of the nature of Talos and his relationship with Daedalus so as to make us suspect that, even so, the author of this story may have had grounds for his own peculiar exegesis of the evidence attributed to Simonides.

With Sardinia brought into the picture, some recent scholars have been led to think that in Talos we have a Greek mythological redaction of the worship of the Phoenician Cronos, the Semetic

¹ *loc. cit.*

deity El.¹ For the story is told by Cleitarchus² that the Carthaginians, in their most devout prayers, used to place a boy in the outstretched arms of a bronze idol of the god, with a brazier underneath, and to roast him alive. The boy, scorched by the heat of the fire, gave the appearance of smiling as he died.

The parallelism here is, no doubt, striking. It is also interesting in that it traces the origin of Talos and the story of the manner in which he killed his victims to a bronze statue and the sacrifice of human victims associated with it.

It is, however, one thing for later writers to have suspected the existence of Talos in Sardinia from the etymology of the sardonic smile, a suspicion which grew stronger in their minds along with their intuition that he was associated with Daedalus, but quite another to attempt to derive him from the Phoenician god thereafter at the expense of overexerting the obviously tentative and flimsy nature of the evidence. Diodorus³, in his own reference to this sacrificial rite, merely says that the child was rolled off the hands of the statue into chasm of fire below; likewise, the detail of the victim's smile appears an invention in this context — he would hardly have remained roasting and smiling upon the idol's outstretched arms, if he could have helped it. It is more likely that the mythological origin of Talos is linked with a different sort of statues, or class of statues, able, by their nature, to account for the stories connected with Attica and Crete as well.

That which is specifically Cretan and tells of how Talos destroyed ships by hurling rocks at them recalls vividly a statue which appears as the type on certain coins mentioned earlier, of the Cretan town of Phaestus. Silver coins struck by this town in the fourth century B.C. show Talos as a winged man in the act of throwing a stone with his right hand, while, at the same time, he holds another ready in his left. He is striding to the left, meanwhile, the stride perhaps suggesting his circumambulations of Crete.⁴

¹ M. Mayer in Roscher-*Lex. Myth.* ii, 1504 f and E. Meyer *ibid* i, 1228. See J. G. Frazer *Pausanias's Description of Greece* London (1913) vol. II p. 233 comment. on i. 21.4., and Cook *ibid.* p. 722-723.

² *apud.* schol. Plat. *Rep. loc. cit.*, Suid. *Phot.*, II, cc. Cp. Ps. Plat. *Minos* 315b-c, Diod. xiii. 86, xx. 14, Plut. *De Superstit.* 13, Just. xviii. 6.11 f.

³ Diod. xx. 14.

⁴ *Brit. Mus. Cat. Coins.* Crete etc. p. 64 plate 15.11; P. Gardner *Types of Greek Coins* Cambridge (1883) p. 163 f. and plate 9.9; V. Head *Coins of the*

Third century bronze coins of the same town exhibit Talos in a similar attitude but striding to the right.¹ It is not impossible that both coin-types depict one and the same statue viewed from two different angles. The legend beneath the stone-thrower calls him Talōn.

The evidence of these coins suggests that the myth of Talos, the bronze sentinel of Minos, originated with certain statues in the attitude of throwing stones and called Taloi. These statues, we believe, were set up on acropolises and the rocky eminences of islands as apotropaic symbols, like the stone-throwing Minotaurs and Cyclopes, to ward off evil from the surrounding land or sea.² Their winged nature, like that of the sphinxes, gorgons and female deities who served as *akroteria* in temple-architecture, is an indication

Ancients London (1881) p. 47 plate 22.40. The legend at the feet of the figure reads TALŌ (N). In the specimen in the Hunter collection (*Hunter Cat. Coins* ii. p. 194 plate 42.15) the hand is extended without a stone and the name is written in reverse. Gardner (*loc. cit.*) observes that the winged character of Talos does not at all agree with his function in the story of his opposition of the Argonauts and thinks they may owe themselves to his connection with Daedalus, whose nephew he is in one account (the Attic) said to have been.

¹ *Brit. Mus. Cat. Coins*. p. 64 plate 16.6; *Hunter Cat. Coins loc. cit.* Cook *ibid.* p. 720 fig. 535 depicts a specimen from his own collection.

² A versified inscription found near Retimo at the foot of Mt. Ida in Crete records a dedication to Hermes 'established on the Tallaian heights' (*Corp. Inscr. Gr.* ii no. 2569). The coins referred to above suggest a Talos in Phaestus. Apollonius sets the Talos of the Argonautica on the cliffs overlooking Dicté's harbour. So, in Laconia Taleton is the name of the culminating peak of Mt. Tygetus. Cook, who takes Talos to be some sort of sun-god identified with Zeus, writes (*ibid.* p. 730) "It would appear, therefore, that the Laconians too had a sun-god akin to Talos. But Zeus, whose worship spread by degrees over most of the mountain-tops of Greece, naturally usurped the position of that ancient deity." Our friend, S. V. Kasynathan, draws our attention to a female counterpart of Talos in India. This is Kolli-Pavai, a statue of a woman, capable of movement, set up on a hill covered by the giants. She was indestructible and gleamed in the light of the sun (bronze?). Made by the craftsman-god, she destroyed the enemy by smiling — not sardonically but seductively, being a woman. And they, enchanted in eye and mind, fell in a faint and died. See the 3rd-7th cent. Tamil epic *Shilappadikaram* 1.6.60 and *Nattinai* 192 f. *Kolli* interestingly means 'hill' or 'killer', *pavai* 'statue' or 'woman': see *Fabricius Tamil-English Dictionary* p. 307 and 693. The hill itself was located in the west of S. India, but the dance of the murderous statue is alluded to in a description of the city of Puhar on the east, a city excited by the commercial presence of the Greeks.

of this role.¹ It must have been the aspect of such Taloi, fused in the imagination with the armed patrols which performed coast-guard duty for the thalassocrat Minos in his island stronghold, that gave rise to the myth of a stone-throwing bronze man called Talos, who circumambulated Crete and protected it from hostile intruders.

The Athenian myth of Talos can also be explained in terms of such statutory. According to this, Talos was the nephew of Daedalus. Perhaps he apprenticed under Daedalus, but at any rate his own genius and skill made him a rival of the master. So Daedalus, out of envy, pushed him off the Acropolis and killed him. Thereafter Daedalus fled from Athens to Crete, or as other versions have it, was detected in the act of burying Talos, convicted before the Areopagus, and exiled.²

The fact that many writers call the nephew of Daedalus Kalos rather than Talos³ suggests the possibility that the story of the murder may be the outcome of a conflation of two different anecdotes connected with the life of the craftsman. One of these was surely on the existence of a nephew of Daedalus called Kalos, who rivalled the uncle as a craftsman and inventor, the other, of a Talos-statue which had been set up on the Acropolis and had fallen off it. Mythological economy, aided by the fair similarity of the names,

¹ Robert Graves, in his *Greek Myths* Pelican ed. (reprint 1969) vol. ii 92b p. 312 interestingly says, "Leading Talos up to the roof of Athena's temple on the Acropolis, he (Daedalus) pointed out certain distant sights, and suddenly toppled him over the edge." See p.41 n.4 Gardner thought Talos owed his wings to his association with Daedalus. But it may be the other way round; the winged Talos could easily have evoked the myth of Icarus; and if Daedalus made wings for Talos/Icarus, why not a pair for himself? See also p.51 n.1 below.

² Cp. Diod. iv. 76. 4-7; Paus. 1.21.4; 1.26.4; vii. 4.5. Tzetz. *Chil.* i.490 f. Suid., Phot. *ibid.* s. v. *Perdikos hieron*; Apostol. *Cent.* xiv. 17; schol. on Eur. *Or.* 1648; Ovid. *Met.* viii. 236-259; Hygin. *Fab.* 39 and 244; Serv. on Vir. *Georg.* i. 143 and on *Aen.* vi. 14; Isidore *Orig.* xix. 19.9.

³ See schol. Soph. *Oed. Col.* 1320. The form Kalos is used by Paus. i.21.4, i.26.4; Suid., Phot. *ll. cc.*; Apostol. *loc. cit.*, perhaps also schol. Eur. *Or. loc. cit* Clem. of Alex. *Protrep.* iv. 47. On the other hand, Sophocles, in his lost play *Camicians* (cited by Phot. and Suid. *ll. cc.*) calls him Perdix (Partridge) and this name has been accepted by Ovid, Hyginus, Servius and Isidore. But according to a different tradition, followed by Apollodorus, Perdix was the name of, not the murdered nephew, but his mother, Daedalus' sister, who hanged herself in grief at the death of her son; the Athenians dedicated a sanctuary to her beside the Acropolis. The grave of Talos, or Kalos, was shown near the theatre, probably the spot where he had fallen to his death (Paus. 1.21.4).

would have had much to do with running these two separate details into each other so as to make a single story out of them. A motive is found in the common one in antiquity, where the relationship between master and pupil was intimate and vibrant, of master envying and fearing the growing reputation of an exceptionally brilliant pupil.

Talos in Attica, Talos in Crete and Talos in Sardinia. But the remarkable thing is that Daedalus too appears in all these three places, and at least in two of them, the more definite ones, is in some way closely associated with Talos. In Attica he was said to have been the uncle of Talos. When he murdered him and fled, or was exiled, and went to Crete, he was once again associated with Talos, as the *Daedalus* of Sophocles¹ evidences. On his flight from Crete, he stopped over with Cocalus in Sicily, but also with Iolaus in Sardinia, where, as in other places, many of his works, called *daedaleia*, were shown to visitors. And here also ancient writers, pursuing the etymology of the *risus sardonius*, thought there was evidence of the presence of the hateful bronze man.

Apollonius says Zeus gave Talos to Europa as a gift. But, as said earlier, this tradition is suspect, as it seems to have originated in consistency with the dubious account that Talos was a member of the Bronze Race, of which Zeus was the creator. The scholiast on Homer *Odyssey* v. 302 attempts a compromise of the two traditions about the authorship of Talos by saying that it was Hephaestus who made him, but Zeus who gifted him to Europa. The older, and surely the more genuine version, is that he was the work of Hephaestus, who gave him to Minos, to whom surely the defence of the island was more pertinent.

Notwithstanding this, in the evolution of their mythology, Talos and Daedalus seem inevitably to draw towards each other, the former in his capacity as a statue that walked, the latter as a craftsman famed for making such statues. The saying that Hephaestus made Talos merely clouded in divine authorship the mystery surrounding the origin of the bronze man. The god stood for the art which produced him and was, in that sense and in view of the

¹ The plot of this play is not known, but, to judge from the extant fragments, Talos seems to have been involved in it. C. Robert (in *Pauly-Wissowa* iv. 2906) merely says that the play "auf Kreta gespielt zu haben scheint." Wagner (*Poet. Trag. Gr. Frag.* Vratislav. (1852) vol. I p. 239) suggested that the plot was similar to that of Euripides' *Cretans*. The play is generally called *Daedalus* but once (schol. on Apollon. *Argo*. iv. 1638) *Talos*.

anonymity of the human agency which was responsible for him, deservedly treated as the creator of Talos.¹ With the awakening of an interest in mechanisation and, consequent upon it, in Daedalus and his works, the suspicion seems to have steadily gained ground that the original Talos, who gave rise to the myth of the bronze robot who walked and acted like a human being, was also the creation of the craftsman.

Consequently, the imagination of writers and commentators begins to insinuate features into the daedalic eidola and into Talos, which, by their similarity, tend to include Talos in the class of the daedalic eidola as the work of a single genius. These features themselves are the science—fantasies created by the imagination of various writers, like the ideas of Leonardo da Vinci, and were collectively attributed to Daedalus, who personified for them the hope of scientific achievement.

Apollodorus says that it was Daedalus who invented statues.² This need mean no more than that the earliest statuettes, made of wood, were called *daedala*; indeed, it would be more true to say that these statues invented him.³ But it seems as if his name was given to a class of archaic statues which succeeded these and emulated in wood the striding statues of the Egyptians, perhaps shortly before the creation of the marble kouroi. Pausanias,⁴ who in his day saw six of them and evinced great interest in the works of Daedalus, observes that they were somewhat crude but that there was, all the same, something divine about them. There can be no

¹ Some have considered Daedalus a representative title of Hephaestus. See Pearson *ibid.* p. 110. But he himself admits that the evidence is slight. It seems more true to say that Daedalus came to be a human representative of the skills and crafts of which Hephaestus was the divine. Once again Robert Graves intuition seems right when he writes (*ibid.* 92.7 p. 317) "Since this Talos came from Sardinia, where Daedalus was said to have fled when pursued by Minos, and was at the same time Zeus' present to Minos, the mythographers have simplified the story by giving Hephaestus, rather than Daedalus, credit for his construction", though he too falls for the explanation that Hephaestus and Daedalus are the same character.

² *ibid.* 15.8.

³ See Paus. ix. 3.2. He mentions a feast called the Daedala held in Plataea, so named by the ancients after the wooden figures they called *daedala*. "I think they used the word even before Daedalus, son of Palamaon, was born in Athens. I think he was named after *daedala* later, and not called by that name from birth". On the myth and the feast see Paus. ix. 3.1 and 3-4 and Plut. in Euseb. *De Praep. Evang.* iii. 1.6).

⁴ Paus. ii. 4.5.

doubt that they were a great improvement on the sculpture that preceded them, which was perhaps the reason for their reputation. Describing these statues, Diodorus¹ writes:

"In the sculptor's art he so far excelled all other men that in after times the story was told of him that the statues he made were like human beings; they could see, they said, and walk, and in a word, preserved so well the composition of the whole body that his handiwork seemed to be a living creature. And being the first to give his statues open eyes and parted legs and outstretched arms, he was naturally admired by men, for before his time artists made statues with closed eyes and hands hanging down and cleaving to their sides."

The myth that his statues were alive and walked of course arose from the innovations attributed to him of depicting the eyes open, the feet parted and the arms outstretched and no longer cleaving to the body. It is not quite clear what the arrangement of the arms described here meant, whether they were stretched downwards at the side of the body, though not now cleaving to it, or whether they were extended in different attitudes in front of it. The same problem arises with respect to the feet. Suidas² says Daedalus set the feet apart (*tas podas dihisteke*), commenting on which Kustero³ says this should not be taken to mean that one foot was ahead of the other, as in striding, but that they were merely dissociated from each other (*divaricata et diducta*).

Such an interpretation would have been more in keeping with the nature of the daedalid eidola and absolved ancient writers like Diodorus from having given the credit for the phenomenal transition from the primitive geometrized renderings of the eighth century to the archaic kouroi to Daedalus.⁴

¹ iv. 76. 2-3. Apollodorus (ii. 6.3) tells of a statue of Hercules which Daedalus made at Pisa which the hero mistook at night for living and hit with a stone. Apparently Daedalus, like the Egyptian sculptors he emulated, went in for portrait statues as well.

² s. v. *Daidalou poemata*.

³ ed. *Suid. Lexicon* Cambridge (1705) vol. i. p. 514 n. 5 *ad loc.*

⁴ See G. M. Richter *The Sculpture and Sculptors of the Greeks* New Haven (ed. 1950) p. 196.

But it is just some such 'phenomenal transition' that is implied in Daedalus' reputation as a sculptor, and if we cannot attribute to him the creation of marble kouroi, it must be presumed that he personified a period of Greek sculpture, brief though it may have been, in which Greeks emulated in wood the striding figures of the Egyptians. Daedalus was reputed to have visited Egypt, but was himself mostly working in wood.

We must presume some such thing if we are to make sense of the stories that his statues took life and walked. Plato, in his *Euthyphro*¹, makes Socrates compare Euthyphro's definitions of holiness (*hosiotēs*) to the statues of Daedalus and say that if he (socrates) himself had put them forward, Euthyphro might suggest that it was because of his relationship to Daedalus that his "works in words ran away and refused to stay where they were laid down." Then, later on, he observes:²

"Can you be surprised, when you say that, if your words do not remain fixed but walk about? And you will accuse me of being the Daedalus who makes them walk, when you are yourself much more skilful than Daedalus and make them go round in a circle? Do you not see that our definition has come round to the point from which it started?"

Euripides, in his *Hecuba*³, observed the wondrous vitality of the works of Daedalus and elsewhere⁴ remarked that all his statues seemed to see and move—so clever was the man. Consequently Socrates of the *Meno*⁵ compares true opinions to the statues of Daedalus, which, he says, must be bound to prevent them running away like fugitives.

The popular legend that the statues of Daedalus took life and walked must surely indicate a stance more expressive of movement than one in which the feet were merely *divaricata et diducta*. We must accordingly accept the possibility that the feet of the wooden statues of Daedalus were arranged in a stride, like those of the archaic kouroi of marble, but that due to the perishability of wood,

¹ 11b-c

² *ibid.* 15b

³ 836-840

⁴ Fr. 373 and schol. on Eur. *Hec.* 838

⁵ 97d and schol. *ad. loc.*

unlike the marble figures, hardly any of these have survived. It will also be recalled that the Egyptian hieroglyph showing two feet in striding position was the symbol for walking and that the arrangement assured the dead man's statutory substitute the power of locomotion, and thus, life. This explains well enough the stories current about the statues of Daedalus, though it must be admitted that if Talos too was his creation, as later writers felt, they surely surpassed even Socrates' expectation, being able, not merely to walk in a straight line but, like the definitions of Eüthyphro, to come round to the same place! For Talos, it would be recalled, used to walk round and round Crete.

Talos, however, was of bronze and this was the one reservation which Lucian had about attributing him to Daedalus. In his *Philopseudēs*¹ Eucrates, the pathological liar, tells of a bronze statue of one Pellichus by Demetrius, which every night descended from its pedestal and roamed around the house; upon which, Tychiades, the narrator here, had asked:

"Are you sure it's a statue of Pellichus? It sounds more like the Talos of Minos. He was also made of bronze and was the watcher of Crete. Had he not been made of bronze but of wood, there is no reason why he should not have been a work of Daedalus rather than of Demetrius; he (Talos) too is in the habit leaving his pedestal in the way you describe."

Cook,² in his study of Talos, interprets the bronze man as a mythic embodiment of the *cire perdue* technique of hollow-casting. Here a rough model in clay or plaster, carefully coated with wax, was worked over by the sculptor till it obtained the appearance he required. The whole was then systematically covered with layers of pottery to form an outer mould. Bronze pins were used to keep the outer mould from collapsing upon the inner core when the wax was drained out. The shapeless mass was then exposed to a furnace or lowered into a pit with fire at the bottom. The melting wax drained off through holes left in the outer mould, and into the intervening space molten bronze was poured in. Later the outer mould was broken off and the inner core extracted in pieces through the soles of the feet of the statue.

¹ 19

² *ibid.* p. 723-724

In his review of the Attic myth of Talos, Cook implies that Daedalus was familiar with this technique and that in the detail of his attempt to bury Talos, whom he had pushed off the Acropolis, is cryptic the idea that he had cast Talos out of bronze by this method.¹

Even if the *cire perdue* method of hollow-casting in bronze, as described by Cook, does not yield the features of Talos in exactly the way they appear in him, the draining out of the wax from holes in his body, the bronze pins, the lowering of the mould into a pit of fire, when viewed in the context of the making of a statue, could well have given rise to the dramatic account of the Cretan robot and his *modus operandi* in dealing with intruders. The difficulty about this, however, is that the *cire perdue* method, though it lasted throughout the history of Greek art *after* it came into vogue, came into vogue in Greece later than one would suppose. The earliest bronze statues, statuettes rather, were chiselled, wrought and welded before they came to be solid-cast, presumably from wax or clay models. In the latter technique bronze was poured in from the heels into a mould held upside down, the tang resulting from the channel from which it was poured in being used to serve as a mounting for the statuette. Statuettes of this nature belonging to the archaic period have been found in Crete. Many of these are so good that Lamb remarks the surprising absence of full sized statues.² This cannot, he says, be explained by the ignorance of the process of hollow-casting, since they might have employed plates of beaten copper for the purpose.³

Possibly this technique *was* used in Crete as elsewhere, even if hardly anything made of copper or bronze sheets can be expected to be found, since they are liable to perish easily. The system, as observed by Levy,⁴ sounds primitive and may have been much

¹ *ibid.* p. 725 and n. 4. Daedalus, detected in the act of burying Talos, whom he had killed, and asked what he was burying, said he was burying a snake (*ophin katachōnneuein*: Diod. iv. 76.6). In his note Cook writes, "The words involve a joke: *katachōnnoo* is 'I bury beneath a mound of earth', but *katachōneuō* is, 'I pour molten metal into a mould', a phrase appropriate to the *cire perdue* process described above; hence Daedalus' remark would suggest, not only 'I am burying a snake', but also 'I am hollow-casting a snake', I am applying to Talos the treatment that is peculiarly his own.' (He connects Talos with the snake through the name Kalos, which means 'rope').

² *Greek and Roman Bronzes* London (1929) p. 19

³ *loc. cit*

⁴ *Pausanias: Guide to Greece* Penguin ed. (1971) vol. ii p. 60 n. 148. See also Lamb. *ibid.* p. 99-100; *Encycl. Brit.* s. v. Bronze and Brass Ornaments (Fine Arts) p. 242. The most conspicuous instance of this process is the bronze

in vogue before it was replaced by *cire perdue*. The figure would be comprised of hammered sections (*sphurēlata*), like domestic utensils, each part being worked separately in repousse, and the whole assembled with rivets.

This method seems to have been the oldest used in the making of large statues. Pausanias,¹ describing a statue of Zeus the Highest in Laconia made in this way, remarks that it was the most ancient of bronze statues and that it was fitted together and held in place with bolts (*hēloi*). Elsewhere² he says that the time Daedalus spent in Cnossus made Crete famous for a very long period for the carving of wooden idols. But it seems as if tradition sought to trace back this most primitive method of hollow-casting in bronze too to Daedalus and his stay in Crete. For Clearchus of Rhegium, to whom the above-mentioned bronze statue of Zeus the Highest was attributed, was said to have been his pupil.³ Some said he was a pupil of Dipoinus and Skyllis; but then, these two were themselves either apprentices of Daedalus or, according to another tradition, his own sons by a Cretan wife.⁴ Daedalus himself was famed for the making of a hollow cow for Pasiphae and a golden ram for the Aphrodite of Mt. Eryx. The golden ram may have been hollow-cast in the manner of the statue of Zeus the Highest of Clearchus.

Mythology, interwoven with art history, then makes it possible that the Taloi of Attica and Crete were the creations of Daedalus, and with Daedalus in Sardinia and the 'sardonic smile', for a Talos to have been thought to have existed in Sardinia too. These Taloi, made, as we think, of metal plates joined with rivets, would have been set up by him as apotropaic figures on rocky eminences, like the one on the Acropolis, which happened to dislodge from its pedestal and fall over its precipitous side.

bust found in the Polledrara tomb at Vulci along with imitations of Egyptian hieroglyphics and a porcelain scarab with the cartouche of Psammetichus I (early part of 7th cent. B. C.) See G. Murray *History of Greek Sculpture I* p. 40 n.

¹ iii. 17. 5

² viii. 53. 8

³ iii. 17. 5. See also vi. 4. 4. *He is known to us only through Pausanias. P. Brun dates him between 540 and 500 B. C.

⁴ As pupil of Dipoinus and Skyllis see Paus. iii. 17. 5, and of them themselves as apprentices or even children of Daedalus, see ii. 15. 1. Pliny *Nat. Hist.* xxxvi. 9 says they were the first to carve marble statues. They flourished about 530-577 B. C. and were, interestingly enough, natives of Crete as well.

The ungainly appearance a statue of this nature would have had, with its smooth surfaces and jointed limbs as in a suit of armour, would have made it look like an enormous beetle — which is perhaps the allusion in one of the fragments of Sophocles' play, *Daedalus*.¹ If the facial features, rendered in repousse, imitated the periodic 'archaic smile', as the legs the striding posture, of the Egypt-influenced kouroi, there may have been a physical basis for the origin of the wierd smile which (according to one version) Talos smiled when he killed his victims.

So much, then, for the outward appearance of the robot. However, the inner workings by which an automaton of this nature could have been activated seem to have given rise to as much speculation among later writers. The statues of Daedalus, as we saw, were reputed to have been so lifelike that the story had grown that they could see and walk. The idea may have at first been that they became living beings, like the Galatea of Pygmalion. There was, however, no getting past the fact that they were artifacts, and this, together with Daedalus' reputation for inventing gadgets and mechanical devices, seem to have excited the thought that they were automata activated by some internal mechanism and led to the imaginative conception of the nature of this.

The dream seems to have been growing for some time of inanimate objects being imbued with a power to serve man of their own accord. The poets of the Old Comedy delighted in imagining the utensils of the kitchen and the household doing what they were bidden, the fish cooking itself and so forth, and slaves thus becoming unnecessary. The Greeks, in fact, like Crates and others in Athenaeus' *Deipnosophistes*,² looked back to a Golden Age when there were no slaves.

The metaphor of feet had already given rise to the idea of locomotion in the case of inanimate things which had them, as when Homer talked of the tripods of Hephaestus which moved by them-

¹ Fr. 162 Pearson "Well, it certainly isn't a beetle - not one from Aetna anyhow." R. Holland (*Die Sage von Daidalos und Ikaros* Leipzig (1902) p. 21) thinks the remark was made by Talos of Daedalus as he flew away from Crete. But see Pearson *ad loc.*: he thinks it was a comment on the appearance of Talos himself. It appears from the comedians that a talk or joke existed that the beetles of Aetna were huge, even bigger than a man. This fragment is the only literary evidence on the wingedness of Talos, otherwise seen on the coins of Phaestus.

² 267c.

selves.¹ Remarkably the wish of automation is brought together with the nature of the Daedalic statues by Aristotle in his *Politics*² when he remarks:

“Suppose every tool could perform its function, either at our bidding or itself perceiving the need, like the statues made by Daedalus or the tripods of Hephaestus, of which the poet says that ‘self-moved they enter the assembly of the gods’—and suppose that shuttles in a loom plied back and forth and plectrums played the lyre (all by themselves), then manufacturers would not need workers nor masters slaves.”

How to make an *organon* become *empsychon*, then, or in the alternative, how to make a slave who was an *organon* seems to have been the question which set the imagination on to the idea of mechanisation. It is little wonder, in the light of this, then, if the earliest conception of a machine which could perform the functions of man took the shape of a man!

Partially mechanical devices were of course in use among the Greeks from quite early times, most of them adopted from older civilizations. But these, together with their own primitive inventions, were naturally attributed to the name of Daedalus. Notable among these was a folding stool which was shown in the temple of Athena Polias on the Acropolis.³ Thus, when the question of the activation of the Daedalic statues came up, some attributed it to internal mechanisms (*mechanai*), which perhaps plied the limbs in the manner of the folding-stool attributed to him, but in accordance with the syntax of motion in living men, so that they moved around like walkie-talkie dolls. Perhaps the words used by Apollonius (*dineonta*) and Apollodorus (*peritrochazon*) to describe the motion of Talos applied to the rolling gait of such a robot than to his circumambulation of the huge island of Crete.

The mechanism-theory is known to us through Callistratus,⁴ though he fails to tell us how the mechanism was powered. If he

¹ *Il.* xviii. 376

² 1253b33 f.

³ Paus. 1.27.1

⁴ *Ekphr.* 8

presumed some clockwork mechanism, it is altogether alternative to the notion given by Philip,¹ a trainer of comic actors, that Daedalus made his statues move by pouring quicksilver into them, a thing which he is said to have done in the case of a wooden statue of Aphrodite.

Talking of the soul as moving itself in imparting motion to the body, Aristotle² observes that this sort of motion would then belong to the essence of soul. And then he goes on to add:

“Some say that soul in fact moves the body, in which it is, in the same way in which it moves itself. Democritus is in close agreement on this point with Philip, the trainer of comic actors. For he says that Daedalus made his wooden Aphrodite move by pouring quicksilver into it. And Democritus says the same thing.”

With what exactly Democritus was in agreement with Philip — whether it was the legend of Daedalus or the theory of soul discussed here — it is difficult to say. At any rate, it is interesting to observe that Daedalus' statues have been brought into the discussion of the activation of the limbs by something within the body. The view implied (a) that the soul was in body (b) that the soul had definite spatial motions and (c) that these it communicated to the body in which it resided.

The imagination's choice of quicksilver as the substance which Daedalus used to enliven his statues is undoubtedly based on its agility and liquid smoothness, which gave the illusion that it was alive (quick). It easily lent itself as a more realistic, even if not realistically conceived, substitute for the mythic ichor which had powered Talos. On the other hand, it had also a similitude to the soul-substance of the atomists, appearing as a conglomerate of small, smooth, spherical atoms which seemed self-moved.

¹ apud Aristot. *De Anim.* 406b18-19. Philip was a son of Aristophanes and a poet of the Middle Comedy. Among others he wrote a play called *Daedalus*. Themistius (xix. 10.4: 34, 27 Sp.) says Daedalus in this play claimed to have made his wooden Aphrodite move in this manner. Philip may merely have produced a play of Euboulus (Athen. vi. 247a). This Aphrodite is certainly not the one Ariadne carried to Delos; far from walking, that had a square base instead of feet!

² *ibid.* 406b8 f.

In Talos the vital liquid, ichor, acting as a blood-substitute on a theory of physiology that made blood the bearer of life, was poured into the secret vein through the opening at the heel. In the case of Aphrodite too it may have been a vein into which the quicksilver was poured to activate the statue; but under the influence of atomic philosophy and the notion of soul-atoms as imparting motion to the body directly, the vein idea may have been ignored and the liquid been thought of as filling the entire body cavity.¹

At least four versions are given by writers as to the manner in which Talos was killed, but all alike involve letting out the ichor from his secret vein. The version that Poeas shot him in the ankle merely parallels the death of Achilles, with Poeas as Paris. Similarly, the story that Medea promised him immortality and tricked him into letting the nail be drawn off his vein recalls the ruse by which she killed Pelias. None of these merits serious consideration. The other two versions both talk of Talos as having been overpowered by Medea's magical powers. Thereupon, according to Apollonius, Talos stubbed his heel against a rock and damaged the membrane which covered the vein, according to Apollodorus, she (and the Argonauts) put to shore and extracted the nail which stopped it. Apollonius' account may have been his interpretation of a painting (perhaps the same one which we suspected earlier) showing the bronze man collapsing amidst some boulders which he was using to throw at the Argo. The more authentic tradition seems to be the one followed by Apollodorus, and in its own peculiar depiction of the episode, the Ruvo vase seems to support this.

The most fascinating piece of information about the statues of Daedalus comes to us from Aristotle. He suggests that they were able to carry out tasks which they 'had been instructed to do or had learnt beforehand' (*keleuthen e proaisthanomenon*).² One immediately recalls Talos and the manner in which he destroyed ships and slew intruders. If surely he was a robot with no ability

¹ In the atomists soul — atoms were arranged alternately with the atoms which made the body. Such a thing is surely not possible with a wooden effigy, so that we must think that the quicksilver was poured into the hollow inside the body. Cook, in his conjecture on the evolution of Talos from the *cire perdue* technique, suggests that the idea of the secret vein must have owed itself to the hollow passing from head to foot in a statue so cast.

² *Pol. loc. cit.*

to think on his own, was he not acting under some form of remote control (*keleuthen*) or as programmed (*proaisthanomenon*)? The deadly silence, the impersonal efficiency, the tireless thoroughness with which he executed his gory tasks mark him out as a machine without a speck of thought or feeling. Would this mean that Daedalus was not only the creator of Talos but also his master, who ordered or otherwise controlled him from afar?

This also raises another matter — Medea's entrancing of the bronze man. How, it may be asked, could anyone subdue another from long distance? How, in any case, could magic overpower machine? Both these things, when effected by Medea, raised the wonder of poet Apollonius, making him exclaim:¹

“Father Zeus, surely great wonder rises in my mind, seeing that dire destruction meets us not from disease and wounds alone, but lo! even from afar, may be, it tortures us.”

For Medea had told the Argonauts that she could subdue for them that man, ‘whoever he be, even though his frame be of bronze throughout, unless his life be everlasting’²

Apollonius³ tells us Medea worked her magic on Talos by means of incantations and a hypnotic gaze which bewitched his eyes. The Ruvo vase shows her holding a basket of magical herbs as she stares fixedly at the collapsing bronze man. Apollodorus⁴ mentions the incantations (*pharmaca*), but the ambiguity of the word may suggest the use of herbs as well.

Talos was not immortal; he was, as a fragment from Sophocles' *Daedalus* observes, ‘fated to die’ (*Talō heimarto teleutēsai*),⁵ and Medea in Apollonius claimed she was able to subdue him therefore, ‘even though his frame be of bronze.’ It is the use of magic against the metal man by Medea that is most remarkable about the episode. Another fragment,⁶ from the same play of

¹ *ibid.* 1673-1675

² *ibid.* 1654-1656

³ *ibid.* 1659-1672

⁴ *ibid.* i.9.26

⁵ Fr. 161 Pearson

⁶ Fr. 158 Pearson. The same phrase, but in the plural — *achalkeutois pedais* (with fetters not made of bronze, or, by a smith) is used by Aeschylus *Cho.* 491 for the net in which Agamemnon was ensnared by Clytemnestra, and by Euripides fr. 595 for the constraint imposed by *aidōs*. The oxymoron is telling in its application to the man of bronze.

Sophocles, must allude to this magical binding of Talos by the invisible bonds woven by spells and curses. "She confines him," it says, "with fetters not made of bronze." If anything, then, this must suggest that, in its evolution, science was itself viewed as some kind of diabolical work, which, on that account, came within the pale of magic. The satyr leader of the chorus in Euripides' *Cyclops*,¹ it would be recalled, informs Odysseus of his knowledge of a charm of Orpheus which was able to cause the firebrand to move by itself into Polyphemus' eye, showing similar mastery of magic over physical things.

To these spells and execrations, Medea added the power of her hypnotic gaze. She shaped her soul to mischief, and with her hostile eyes she bewitched the eyes of Talos, the bronze man.² The evidence of this in Apollonius is supported by the aspect of Medea in the scene on the Ruvo vase, which shows her glaring at him from under her brows, while holding in her hand her basket of magic herbs. A single word, meaning 'flashing' (*gorgadon*), coming down to us from Sophocles' *Daedalus*, may have described the eyes of Medea when she directed them at Talos.³ The look is not one of 'evil eye' merely; Apollonius says she fixed her eyes on those of Talos, thus suggesting a concentrated hypnotic gaze. Talos succumbed to the magic of the spells and curses, but the idea seems to underlie this that the mechanism in him failed, or was thrown out of control, whereupon the Argonauts were able to approach him and let the ichor out of his vein.

To go beyond this would make us guilty of overinterpretation of the evidence on Talos and the Daedalid automata. But from what has already been elucted, there is reason to think that the plot of Sophocles' *Daedalus* had confirmed the relationship between Daedalus and the bronze robot. Indeed, it may have worked out into a remarkable parallel of a modern science fiction, of a bronze man created in his workshop by an ingenious scientist for a powerful tyrant, who keeps him prisoner in a grim island and compels

¹ 646 f. This magic, which causes the brand to move by itself (*automaton*), is an interesting opposite of Medea's which makes an automaton cease to function. The power of magic over inanimate things was notably displayed by Orpheus himself.

² *ibid.* 1669-1670. See 1661-1663: for effect Medea mounted the deck of the ship with the fold of her purple mantle screening the lower portion of her face, so that the eyes could flash fiercely over it.

³ Fr. 163 Pearson. Cp. Eur. *Phoen.* 146 n. The transition to 'fierce, terrible (to look at)' is easy, says Pearson *ad. loc.*

him to do his bidding. The main episode, however, may have been of the death of Talos, including evidence of his ship-destroying, the sardonic smile with which he slew his pedestrian victims, Medea's overpowering of him with her bonds of magic and her hypnotic gaze. The fact that the play deals with Talos but is called *Daedalus* must, if anything, imply a close connection between the master craftsman, known for his statues that walked, and the artificial man who walked. If this association between the two is, as we suppose, the obvious one of maker and creation, it must have been Sophocles who took Talos from Hephaestus and gave him to Daedalus.

Was he then also responsible for the tradition that the automata of Daedalus were made to function with quicksilver? and the tradition that they were able to do what they were ordered or taught beforehand?