

# When *were* the first Olympics?

The date of the first-ever Olympic Games seems unimpeachable. But recent analysis shows that it is nothing more than a statistical approximation – one of the earliest ever made. The approximator – our proto-statistician – was Hippias of Elis. Before statisticians claim him as one of their own, they should know that he fudged his data. **Paul Christesen** tells all.

It what year were the first Olympic Games held? It is tempting to say 1896; but that was only the origin of the Games in their modern incarnation, as reinvented by Baron Coubertin. He got his idea from the ancient Greeks and the Games that were held at Elis (which, confusingly, is not near Mount Olympus at all), every four years, for a period of roughly a thousand years. And the first of those ancient Olympics was held in 776 bc.

How do we know that date? One Hippias of Elis – that same Elis – told us so. And how did he know? He worked it out.

The main event of the Greek Olympics – its signature race, and in the early days perhaps its only race – was a roughly 200-metre sprint of a single length of the course. The course was called the *stadion*, as was the race – *stadium* is the Latin version of the word – and its winner was crowned with laurels and prestige to match that of a Usain Bolt today. His name went down in history. Rather literally. We still know the *stadion* victor of the first Olympics of all. His name was Koroibos.

Our man Hippias was born some three hundred years after Koroibos won his race; and to establish the date of the first Olympiad all he had to do was to gather up the names of past victors<sup>1</sup>. He made a list of all the winners of the *stadion* race. He counted the number of names on the list; the Games were held every four years; therefore he multiplied by 4 to find the number of years before his time that the first Olympics of all were held. Which got him to 776 bc. So that was the year in which Koroibos won. And Hippias' date has been accepted ever since. Straightforward, authoritative, definitive. And it invites the conclusion that his date for the first Olympiad, taken directly from the list of the names of Olympic victors, is accurate and exact.

We no longer have Hippias' list as he wrote it, though later writers updated it and incorporated it into lists of their own. But since he was born about 460 bc there must have been about 300

years of Olympic winners on it, say 75 names altogether. And if that list of names is complete, and if the ancient Olympics did indeed take place every four years – which seems certain – then his date is unimpeachable.

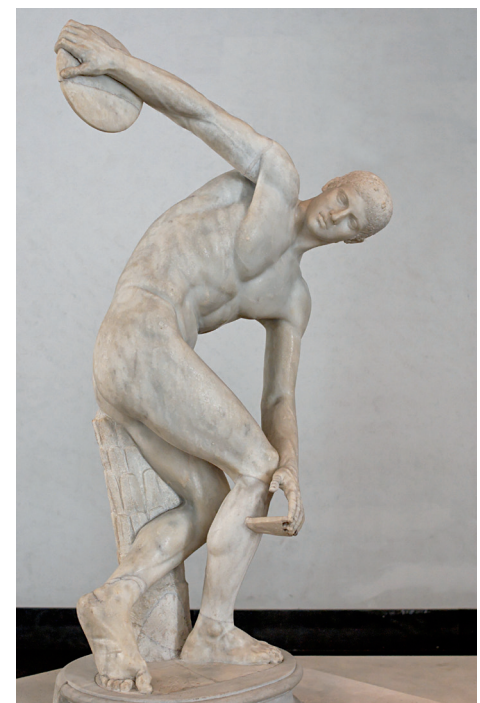
But there is of course one very glaring source of possible error. How complete and accurate was his list? Which in turn raises the question: where did he find his names? Victorian historians debated that question somewhat passionately. Some declared that he had access to written archives – perhaps a list of victors carved in stone or on bronze at the Olympic site. Certainly there was at one time a discus there, as used in competition but with the story of the founding of the Olympics carved upon it. Aristotle – yes, *that* Aristotle – saw it and wrote of it. But it was almost certainly carved sometime after 550 bc, two or three hundred years after the founding of the Olympics, and was hardly old even in Hippias' time. Certainly also a writer named Pausanias described, much later, a list of victors carved on the wall of a building called the Gymnasium; but the Gymnasium was excavated by modern-day archaeologists and proved not even to have been built when Hippias was alive.

Scholarship has moved on since those Victorian debates, and excavations have taught us much. It is now known with fair certainty that carved public inscriptions were not made in Greece in any quantity before the sixth century bc – and even then the region around Elis and what we might as well call the Olympic village lagged behind much of the rest of Greece in such things. That means that for most of the 300 years which separated Hippias from the first Olympics he could have found no written records. Hippias could not have dated the first Olympics on that basis.

We fall back on the alternative source for the names of the victors: that for the earlier years at least he must have relied on oral traditions and memories handed down in the families of

winners. Olympic victories were significant achievements, and memories of such victories were maintained in the oral traditions of successful competitors' families. We know that Hippias travelled extensively and was of the social class to have mixed with the prominent, long-established families that would have produced Olympic victors and preserved memories of their ancestors' triumphs, sometimes over many generations.

But again there are snags. Oral traditions preserve the outline of stories but notoriously lack chronological precision. *When* exactly was it that great-great-great-grandfather won his great race? Secondly, families tend to exaggerate the prowess of their forebears. A particularly well-documented case is known from the Pythian



Discobolus, National Museum of Rome

Games at Delphi – one of three or four rivals to the Olympics – in which one victor's family claimed their ancestor had won five times. Unfortunately the written records showed him winning only three times.

Third, oral traditions – almost by definition – contain gaps as well as errors. Modern studies

**Hippias could not possibly have found every family that could claim an Olympic winner in its past**

have shown that oral traditions rarely preserve accurate memories of past events for more than three generations. Some 13 or 14 generations separated Hippias from the earliest figures that appeared in his victor list. All memory of some Olympic victors, particularly those from earlier periods, was inevitably lost through the passage of time. And Hippias could not possibly have spoken with every family in every Greek community that remembered an ancestor who had won at Olympia.

In sum, whatever information Hippias did derive from oral traditions could not be easily assembled into a neat, chronologically ordered listing of victors. He had to work around major gaps and deal with potential distortions. Even in cases where he did acquire accurate information he still had to find a way to start with a statement such as 'my great, great-grandfather Aristonikos won an Olympic victory in boxing' and then attach Aristonikos to a specific Olympiad. The inherent problems with oral traditions would have made it nearly impossible to determine when the first

## Hippias

In his *Life of Numa*, Plutarch wrote: 'It is difficult to make precise statements about chronology, and especially chronology based on the names of Olympic victors. They say that Hippias of Elis produced the list of Olympic victors at a late date, starting with nothing authoritative that would encourage trust in the result.'

Hippias was a politician and rhetorician who seems to have made a living travelling as an ambassador for his home town of Elis, which administered the Olympic Games, and lecturing on poetry, politics, astronomy and much else. He certainly attended the Games and would have known of their inner workings. He also gave public speeches there. It is said that he brought to Olympia 'only the things he had made', including sandals, his ring and an oil flask, and that a performance he regularly gave there was to offer to speak on any topic that a member of the audience chose. Another was to recite long genealogies from memory.

A considerable mathematician, he devised a curve which could be used to trisect any angle, but since his curve could not be constructed with only compasses and ruler it did not fit the classical criteria for solving the trisection problem.

Plato wrote of him in two books, calling him a 'polymath' but not intending it as a compliment and characterising him as vain and arrogant, with a wide but superficial knowledge.

Olympiad had been held by counting the number of victors.

## The king lists

Hippias seems to have been well aware that his sources for the early Olympiads were hopelessly incomplete – indeed, as their compiler, trying to build up a list of early victors from scratch, how could he not have been? There was, however, a much more reliable and accurate list of past generations available to him: the list, not of Olympic winners, but of kings.

Which king follows which is information that a nation or a city-state takes care to preserve. Indeed, Greeks (who did not assign numbers to their years) used it as a prime method of

dating historical events. A Spartan might say, for example, 'The Peloponnesian war began in the reign of King Archidemos II' to identify its year. The list of successive kings of Sparta had been compiled and put into circulation well before Hippias' time.

We know that Hippias knew that list, and indeed memorised it and used to recite it in public to draw an audience. (He had a prodigious memory, and invented a system of mnemonics. One of Plato's dialogues tells us he memorized 'genealogies of heroes and men'.) One of the things he also knew (or thought he knew) was that a Spartan law-giver named Lycurgus was instrumental in founding the Olympic Games. It formed part of the story engraved on the discus stone that Aristotle – and almost certainly Hippias – saw, though the story may have been myth as much as history. He also 'knew' that Lycurgus had been guardian to the Spartan King Charilaos. Here, then, was a ready-made system of dating for him: he knew exactly the number of kings of Sparta between his time and Lycurgus; Lycurgus founded the Olympics. No missing data now, no need to juggle the gap-filled memories of rambling family stories. (The complication that Sparta, extraordinarily, had two kings at a time, drawn from the two most powerful families, we shall ignore.)

He would have believed, quite reasonably, that the Spartan king list would generate a more accurate date than any of the alternatives at his disposal – and when he had found that date he could adjust his uncertain and contradictory victor list to fit it as happy confirmation. For 'adjust' read also tweak, fix, manipulate, or select from. Those of course are modern terms. There is statistical evidence that he fudged his victor list. There are a surprisingly large number of Spartans in the early parts of it; one might well suspect that he was not averse to appeasing



Ancient Olympia today. © iStockphoto.com/Alexandr Tkachuk



the Spartans by using names of ancestors from powerful Spartan families to fill the gaps in his list. Modern historians, and statisticians, would disapprove. His Greek readers, even had they known, would not have minded.

And his king-list method, to modern ears, would again seem to offer near-complete accuracy. Which it would do, but for one factor: the Spartan king list did indeed give each king's name; but it did not tell how long each king reigned. We need not be too surprised at this. British readers can set themselves a test. Most will have learned at school the names of the Norman kings of England: William I, William II, Henry I and Stephen. But can you remember – were you ever told – how long each of them ruled?

Hippias was by no means the first to encounter this problem. He was in good company. The two most influential chronographers in the ancient Greek world, Eratosthenes (c.285–c.195) and Apollodoros (c.180–c.110), later used that exact approach to date a number of early events. Herodotus, who finished his famous *Histories* about 30 years before Hippias compiled the Olympic victor list, made heavy use of the Spartan king list to reckon time. And they all ran into the same problem: how long did each king reign? Unsurprisingly – the Greeks did invent mathematics after all – they used a perfectly proper mathematical – or statistical – solution: they used what they hoped was an average.

The assignment of a fixed number of years to each generation is inevitably inaccurate due to the inconvenient untidiness of biology. In addition, ancient Greek scholars argued with some vigour about what exactly that average should be. How many years should be assigned to each royal generation? Their answers ranged from 25 years to 40 – with predictable effects on their results<sup>2–4</sup>.

What, then, of the uncertainties in Hippias' result? How great should the error bars be? How

### How long did each king of Sparta reign? Greek chronographers did not know, but needed to

widely might we expect the true founding date of the Olympics to differ from his date of 776 BC?

We do not know what length of reign he chose as his average. We can, though, use data from another list of kings, one that is completely documented although from a very different time and place, to give an indication of what true values might have been. The kings and queens of England from William the Conqueror to George VI reigned for an average of 22.15 years each, with a standard deviation of 16.29 years. If we assume that those figures are not unreasonable

for Spartan kings also, we can estimate how accurate Hippias might in fact have been (see box).

The archaeological data gives us a benchmark to compare him against. Olympia became a sanctuary of Zeus – that is, a religious site but not necessarily an athletic one – by 1000 BC; votive bronze tripods that may have been athletic prizes or religious offerings began to appear there by 875 BC. By 725 BC visitors from a wide area were leaving their offerings. Around the year 700 BC major work was carried out to accommodate a clearly increasing number of spectators: the river Kladeos was diverted to give them space, and wells were dug to provide water. There may well have been purely local games there before that, but this is the date that excavators suggest for the start of the four-year cycle of Olympiads. Hippias, then, gave a date that was three-quarters of a century too early. Hippias suggested 776 BC, modern archaeology suggests 700 BC. In modern terms, his method had a final standard deviation of around 61 years, and his error was no more than 1.25 standard deviations – a perfectly acceptable result for any statistical investigation.

Can we claim him as a statistician? He had a practical quantitative question to answer, and data that was incomplete and unreliable. If he used king lists, then he also used averages. And a confirmatory check from another, independent, source of data – his victor list – is something that modern statisticians would envy – even if Hippias did treat it somewhat dubiously.

If not a statistician, then perhaps we can call him a proto-statistician. Working to establish an occurrence which was some 300 years before his time, he came up with a date that was three-quarters of a century too early. Given the huge limitations in the material at his disposal, he deserves credit for getting as close as he did.

#### Kings of England, kings of Sparta: How long do monarchs reign?

There are 886 years separating the accession of William the Conqueror in 1066 and the death of King George VI in 1952; in that period England was ruled by 40 monarchs. (We count William III and Mary as one; include Oliver Cromwell, though he was a protector, not a king; and exclude the nine-day reign of Lady Jane Grey since it is not generally recognised.) This gives an average of 22.15 years per reign. The longest reigns were of Victoria (64 years) and George III (60 years); the shortest, of Edward V (the prince in the Tower) and of Edward VIII (who abdicated), were less than a year each. The standard deviation in length of reign is 16.29 years. The variance – the standard deviation squared – is 265.33.

If we apply those figures (for want of any better) to Spartan kings we can make an estimate of how accurate Hippias' dating of the first Olympics might be.

If he used the king lists to put a figure on the 300-odd years for which he had no written inscriptions, he would have needed about 14 reigns from it. Adding together 14 reigns of uncertain length will give a total with still greater uncertainty in it – mathematically, that uncertainty is given by the variances added together. The variance of his final figure is therefore  $14 \times 265.33 = 3715$ , so its standard deviation is the square root of that, which is 61 years.

The date he came up with was 776 BC. The date that archaeologists have come up with, based on excavations at Olympia, is 700 BC. If we take their date as the 'correct' one, Hippias was 76 years too early in his estimate – out by 1.25 of his final standard deviation. A modern statistician would feel quite pleased to have come so close.

In fact Hippias did even better than a modern statistician. Hippias did not have 40 kings of England to average, but many fewer kings of Sparta. A key assumption we have made is of comparable reign lengths. It seems plausible that Greek kings survived longer in the job than the turbulent Plantagenets of England. If so, whatever average Hippias took would have been larger than in our calculation, and it is reasonable to suppose that the true Spartan standard deviation would also have been larger. A 76-year error could therefore have been less than 1.25 standard Spartan deviations – so Hippias could claim more credit still.

#### References

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