

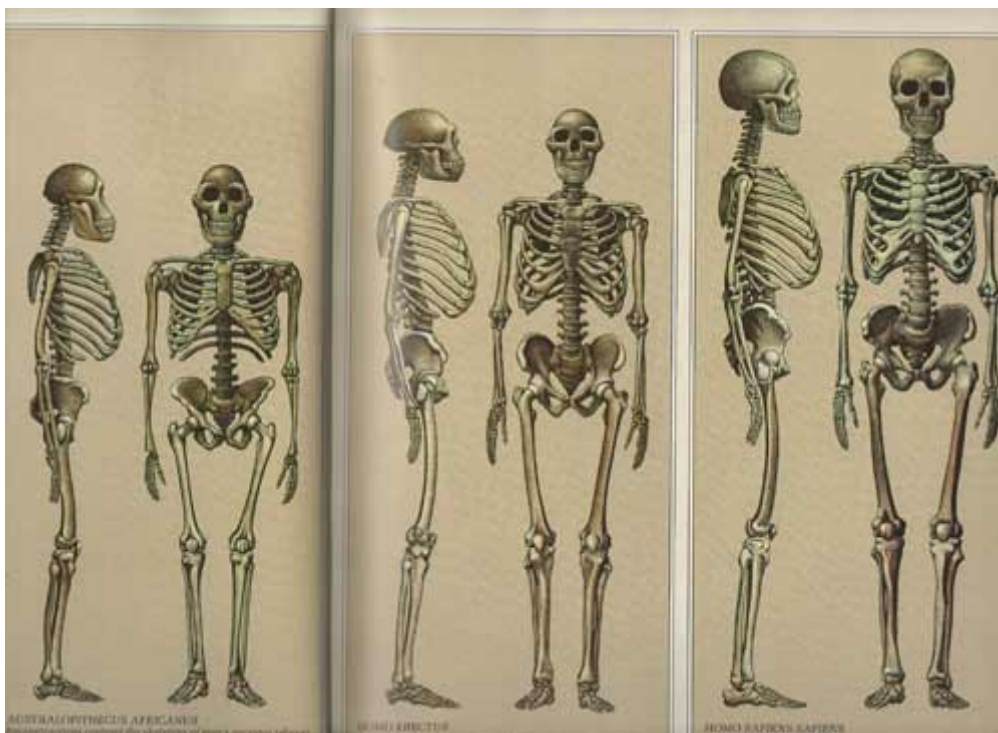
## The changing height of *Homo erectus*

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Gretchen picked up a partial set of Time-Life volumes, from 1973, part of the series “The Emergence of Man”. She found them at a garage sale. There’s a lot of fun stuff in them, and some very useful illustrations.

For example, I’m looking through the volume titled, *The First Men*, which is basically about *Homo erectus*. The meat of the book is a series of descriptions of fossil and archaeological finds – Dubois on Java, Terra Amata, Torralba and Ambrona. No surprise, each of these has a very different theme than we would give them today!

Here’s a fun comparison:



This is a two-page spread in the book; really a fine illustration by Roger Hane.

*Homo erectus*, in the middle, is reconstructed with a stature pretty much right in between *Australopithecus* and *Homo sapiens*.

If you open up most recent textbooks, you’ll find *Homo erectus* illustrated as the same height or *taller* than us. This is mostly due to the KNM-WT 15000 (Nariokotome) skeleton, discovered in 1984. This skeleton was estimated to have a moderately tall adult stature – around 185 cm (6 feet 1 inch). There are three or four other femora from the Lower Pleistocene that also correspond to stature estimates up around 180 cm, in particular KNM-ER 736 and KNM-ER 1808.

Now one might reasonably wonder, what’s the big deal about 185 cm? The Nariokotome skeleton hardly represents a giant – at 6’1” he would have been an inch shorter than me, for goodness’ sake! And with only one fossil specimen within 2 inches, it shouldn’t be churlish to point out that the Nariokotome estimate is not based on a real femur length – it’s an estimate based on an estimate. Most Lower Pleistocene fossil femora were much shorter, and yield stature estimates well under 180 cm. So why did anthropologists so eagerly cling to the tallest estimates for *Homo erectus*?

Few Lower Pleistocene postcranial bones are associated with skulls, so it's difficult or impossible to assign smaller bones to a species. How do we know whether a short femur belongs to *Homo erectus* or *Homo habilis* – which we know from OH 62 is much smaller in body size? Or *A. boisei*, which it would appear from KNM-ER 1500 is also smaller? We don't really know – so the bones that correspond to mid-range stature estimates, say around 160 cm, might belong to any of the above. But the tall ones – well, we *know* that those must represent the largest-bodied hominin. So there was a tendency to assume that the tall specimens were near the *average* for *Homo erectus*.

It was a hypothesis. It has turned out to be false.

The illustration in the Time-Life book is based on entirely different fossils. The Turkana fossils were unearthed during and after the early 1970's. Before that, *Homo erectus* stature could be estimated from the Trinil (Java) and Zhoukoudian (China) femora. These are later than the early African Lower Pleistocene sample. The Zhoukoudian femora in particular give stature estimates at or under 5 feet (152 cm). We might read it as a decline, and some people did as recently as 5 years ago. But the Dmanisi postcrania are also short, a bit shorter than the Zhoukoudian femora. And they're *earlier* than Nariokotome. And we now know of smaller crania of *Homo erectus* in the East African Lower Pleistocene. So the tallest statures aren't the average; they're the tallest.

It ain't rocket science, I know. But this is progress.

Today, I think it's fair to say that the variation of stature in *Homo erectus* was more or less like the variation within living people. There are short and tall populations today, varied in ecology and latitude. The *average* stature of young men in the Netherlands today is 184 cm. Adult women in the Philippines average only 150 cm. So the best way to compare statures is to illustrate the range.

That being said, I don't think we know how stature has evolved over time. We do have some data points – the Neandertals were shorter than Upper Paleolithic Europeans, for example, but seem to have been around the same height as Mesolithic people (and a shade *taller* than Neolithic Europeans). The Dmanisi people were on the short end of the human range, but not unusually so. The variability within Lower Pleistocene East Africans seems high, but I'd want to see a serious test compared to human populations.

It's a case in the fossil record where discovering more seems to have resulted in us knowing less. But that's just because we can now reject several categorical statements that people used to accept uncritically.



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