Gravity in prehistoric times

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Animal and Human Sizes of Past Ages

There is a great deal of interest in questions of giant humans and/or hominids in past ages. Whatever the answer to those questions ultimately turns out to be, there doesn’t seem to have ever been an age in which ***ONLY*** giant humans and/or hominids inhabited our planet. Neanderthals were compactly built, heavy, and immensely strong, but their skeletons don't indicate that they ever grew much over 6 feet tall, if that. Cro-Magnon people appear to have been large, around 6 feet on average, but no more so than groups of larger humans today.

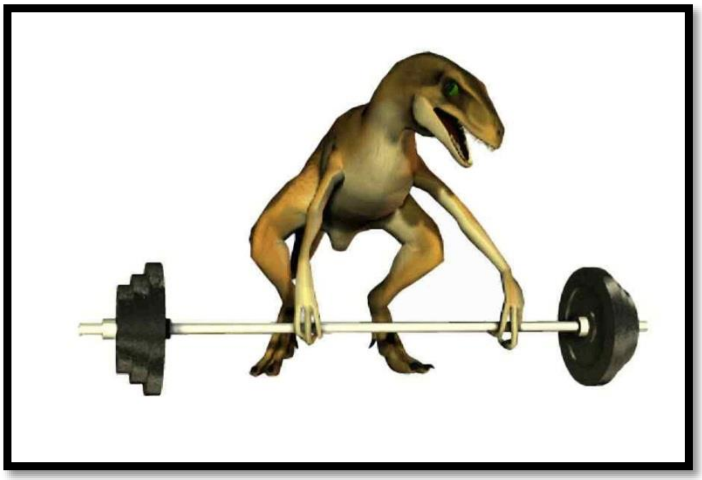
There actually is evidence of substantially larger humans and hominids in past ages but, before getting into that, we should take a look at the question of dinosaurs and their sizes and what made those sizes possible, since that is the simplest case.

The question that you never see in standard textbooks or even in popular literature is this: if those kinds of sizes were such a winning ticket for creatures that supposedly dominated the earth for tens of millions of years, then in the 65 million years that supposedly intervenes between that age and ours, why has nothing else ever re-evolved into such sizes? Or could it be that such sizes are no longer even possible? Or, did you ever wonder why it was always the littlest kid in your class in school who could do the most pushups and pull-ups, or why you never see 200-lb athletes competing in gymnastics?

The answer to all such questions concerning size ratios involves what we call square/cube phenomena, that is, ratios of volume or weight (which is proportional to volume) to some measure of strength or efficiency that is proportional to surface area or to body cross section. Volume, of course, is a cubed figure while cross section and surface area are squared figures. The radiators in cars are basically square/cube phenomena for that matter, since anything only gains or loses heat on its surface; a radiator is a heat transfer device that maximizes surface area for a given volume of coolant.

Weight is proportional to volume, which is a cubed figure (width times breadth times height) while strength is proportional to cross section of bone and muscle, which is a squared figure. Double your physical dimensions, and you have a factor of two that gets figured three times for volume and weight (you'll be eight times heavier), while it only gets figured twice for cross section and strength (and you'll only be four times stronger). You'll have cut your power/weight ratio in half. Clearly you can only halve your power/weight ratio so many times and still stand up and walk; the mathematical limit for that sort of thing in our present world and gravity is about 20,000 lbs., indicating that the largest elephants at something like 15000 lbs. are the largest animals that in actual fact are possible in our present world.

As you get larger, you lower your power to weight ratio no matter what you do. People who work out see this sort of thing in the gym occasionally, and this can be comical. You'll see a reasonably serious weightlifter walk-in with a girl he wants to impress and the first thing that happens (because girls are getting stronger now too) is that the girl walks over to the chinning bar and does 14 or 15 pull ups and the guy figures he has to do 20 or 25; in real life he's going to put himself in the hospital trying to do the 14 or 15 that the girl did and the girl needs some sort of a lecture on how to keep boyfriends alive (i.e. don't allow them to play keep-up with exercises that stress power/weight ***ratios***). But back to the case of dinosaurs...

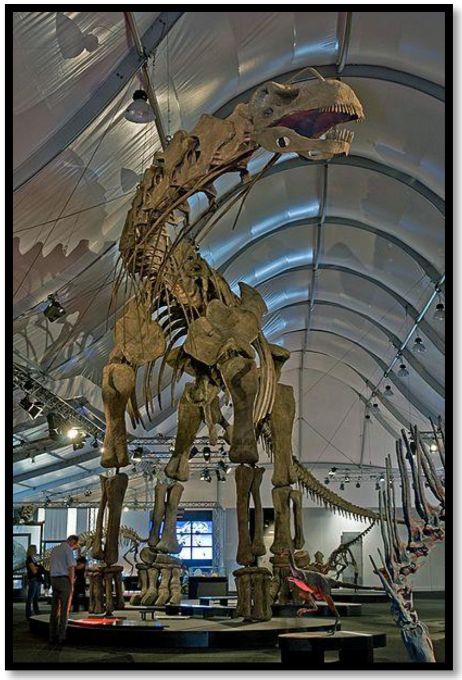


Frederick Malmartel's sketch of a dinosaur addressing the square/cube problem[1]...

It is a fairly easy demonstration (as we'll see shortly) that nothing any larger than the largest elephants could live on land in our world today, and that the largest dinosaurs survived ONLY because the environment on Earth and the structure of the solar system in their age were such that they did not experience gravity as we do today. They would have been crushed by their own weight were they to have experienced our gravity.

And they keep on finding larger and larger dinosaurs. The heavyweight dinosaur crown keeps changing hands with the brontosaurs and brachiosaurs giving way to supersaurs, ultrasaurs, seismosaurs... Christopher McGowan cites a 180 ton weight estimate for the ultrasaur, and describes the volume-based methods of estimating dinosaur weights[2]. He came in for a great deal of criticism for that estimate; more recent estimates are lower but the logic behind McGowan's original estimate has never been refuted to our knowledge. What seems to be the case is that newer sauropod weight estimates are generally low because scientists realize they have a problem.

[1] http://frederic.malmartel.free.fr/Fin_des_dinosaures/eedinosaures1.htm
[2] Christopher McGowan, "DINOSAURS, SPITFIRES, & SEA DRAGONS", Harvard, 1991, pp 104-118 McGowan is Curator of Vertebrate Paleontology at the Royal Ontario Museum.



Argentinosaurus, from Wikipedia article (human in lower left corner of photo):
http://en.wikipedia.org/wiki/File:Argentinosaurus_DSC_2943.jpg

An analysis of dinosaur lifting requirements involves a comparison to human lifting capabilities. One objection that might be raised to this would be to claim that animal muscle tissue was somehow "better" than that of humans. This, however, is known not to be the case:

> "It appears that the maximum force or stress that can be exerted by any muscle is inherent in the structure of the muscle filaments. The maximum force is roughly 4 to 4 kgf/cm2 cross section of muscle (300 - 400 kN/m2). This force is body-size independent and is the same for mouse and elephant muscle. The reason for this uniformity is that the dimensions of the thick and thin muscle filaments, and also the number of cross-bridges between them are the same. In fact the structure of mouse muscle and elephant muscle is so similar that a microscopist would have difficulty identifying them except for a larger number of mitrochondria in the smaller animal. This uniformity in maximum force holds not only for higher vertebrates, but for many other organisms, including at least some, but not all invertebrates."[3]

Another objection might be that sauropods were aquatic creatures. Nobody believes that anymore; they had no adaptation for aquatic life. Their teeth show wear and tear from eating branches and leaves; you wouldn't get that from eating soft aquatic vegetation. Tracks show them walking on land with no difficulty.

A final objection would be that dinosaurs were somehow more "efficient" than top human athletes, or that they somehow had better "leverage." Superposed images of sauropods and power lifters at roughly equal-weight sizes show the sauropods' legs to be puny compared to the human athletes'. That is not surprising, since a sauropod's body was mostly digestive system (for processing leaves and vegetation), while a

[3] Knut Nielson's, "Scaling, Why is Animal size So Important", Cambridge Univ Press, 1984, page 163

human athlete's body is mostly muscle. The better-leverage argument would require the sauropod to be a spectacularly knob-kneed sort of a creature with knees and other joints wider than those of the human athletes, even though the rest of their legs were spindly by contrast. Juxtaposed images of human weightlifters and sauropod dinosaurs at roughly equal sizes do not support this idea.

The normal inverse operator for the square/cube phenomenon is to simply divide by 2/3 power of body weight, and that is indeed the normal (isometric) scaling factor for all weight lifting events.

Suppose for instance that a weightlifting tournament consisted of several different exercises or kinds of lifts (squat, bench-press, deadlift), and that there were several different weight divisions for the athletes of various sizes. For any particular lifting event there would be a best left for each weight division. If you were to divide each of those best lifts by the two thirds power of the corresponding athlete's weight, then the numbers would almost become the same number. One of the numbers would stand out a little bit and that would be the best lift amongst all weight divisions on a scaled basis. In other words, for human athletes built along similar lines, which includes weightlifters from about 140 to about 220 pounds, the maximal numbers for a particular lift for the champions of the various weight classes all become nearly the same number when divided by the 2/3 power of each athlete's mass. Scaling in this manner eliminates the effect of the athletes' sizes and allows one to determine which athlete, regardless of weight class, has actually achieved the best lift.

The Weightlifter and the Witch

For a quick and dirty look (as opposed to a formal proof…) at how isometric scaling works, let us suppose that John weighs 200 lbs. and can press 300 lbs.

While John is asleep, the wicked witch of the East sneaks into his room and, with her wand, doubles his physical dimensions. As we know, he will be eight times heavier and four times stronger. He now weighs 1600 lbs. and can press 1200 lbs.

Using our calculator, we note that:

$200^{.67} = 34.8$
$1600^{.67} = 140.2$

and that $300 / 34.8 = 8.62$
and $1200 / 140.2 = 8.56$

In other words, dividing by the two thirds power of weight/mass eliminated the difference due to scaling and the square/cube problem and the experiment yielded the same result in both cases within the limits of the two digit accuracy. Basically, dividing by the 2/3 power of mass (or weight since mass is proportional to weight for all cases in this sort of example), simply eliminates the effect of the different sizes.

Again, this sort of isometric scaling is generally used to compare maximal lifting event efforts by athletes of different sizes and works quite well so long as the athletes are built along similar lines. Note however that for any sort of a thought experiment involving scaling the ***SAME*** athlete to different sizes, this isometric scaling would work perfectly.

Consider the case of Bill Kazmaier, the king of the power lifters in the 1970s and 1980s. Power lifters are amongst the strongest of all athletes; they concentrate on the three most difficult total-body lifts, i.e. bench-press, squat, and dead-lift. They work out many hours a day and, as is fairly common knowledge, use food to flavor their anabolic steroids. No animal the same weight as one of these men could be presumed to be as strong; certainly no herbivore could be presumed to be a strong. Kazmaier was able to do squats and dead lifts with weights between 1000 and 1100 lb. on a bar, assuming he was fully warmed up.

How heavy can an animal still get and survive on land in today's world, then? This amounts to the same thing as asking the question of how heavy Mr. Kazmaier would be at the point at which the square-cube problem made it as difficult for him just to stand up as it is for him to do 1000 lb. squats at his competitive size of 340 lb.? The answer is simply the solution to:

$$1340/340^{.667} = x/x^{.667}$$

Or just under 21,000 lb. In fact, that would be the point at which just standing up would represent the same level of effort is a fully warmed up, one-shot, go for the gold maximal total body lift. In real life, standing and walking have to come more easily than that.

Now, if you were to put a top power lifter like Kazmaier next to a sauropod dinosaur that is equal in size, what you would be looking at would be one animal at the top of the food chain and another near the bottom. The human athlete's body is mostly bone and muscle; the herbivore's body is mostly made up of a digestive system for processing leaves, grass, and other very low value foods. And if Kazmaier couldn't make it past 20,000 pounds in our world's present gravity, the herbivore certainly could not. Again, in all cases, we are comparing the absolute max effort for a top human weight lifter to lift and hold something for two seconds versus the sauropod's requirement to move around and walk all day long with a scaled weight greater than these weights involved in the maximum, one-shot, two-second effort.

Thus, in real life, elephants do not appear to get to that 20,000 lb. point. Christopher McGowan claims that a Toronto Zoo specimen was the largest in North America at 14,300 lb.[4], and Smithsonian personnel once provided a weight estimate of about eight tons for the huge bush elephant whose body stands in the Museum of Natural History.

There are other square/cube problems aside from the ability to lift weights. Oxygen consumption (the ability to breathe), the ability to digest food, and wing-loading and hence the ability to fly, are all things that vary with a squared figure and yet must support mass, which varies with a cubed figure, as noted. All of these things impose size limits on animals of various kinds.

How Much Attenuation of Gravity was Needed to Account for Dinosaur Sizes?

Thus we observe and conclude that dinosaurs were only able to exist because gravity was attenuated during their age; the next question is, how much attenuation was required for the largest sauropod dinosaurs to exist?

From physics, weight = mg, or mass times the acceleration of gravity at the Earth's surface. We assume that the Smithsonian elephant at 16,000 lbs. is ballpark for the heaviest creature our world will support today and also that the ultrasaur, for which Christopher McGowen gives a 360,000-lb weight figure[5] (we believe that original volumetric calculation was correct) was the heaviest or near the heaviest of their world. We also assume that the level of effort for the sauropod to stand in his world cannot have been more than it is for the elephant in ours. Using our athletic scaling factor again, we use **gd** for gravity-dinosaur, **ge** for gravity-elephant, **md** for mass-dinosaur, **me** for mass-elephant, and note that:

$$me * ge = 16000$$
$$md * ge = 360{,}000$$

[4] Christopher McGowan, "DINOSAURS, SPITFIRES, & SEA DRAGONS", Harvard, 1991 page 97

[5] Ibid, page 118

i.e. we note that, in our gravity, the elephant weights 16,000 lbs. while the dinosaur would weigh 360,000 lbs., so that:

$$md = (360/16) * me$$

We also observe that:

$$(md * gd)/md^{.67} = (me * ge)/me^{.67}$$

(scaled lifts for standing are equal)

$$gd * md^{.34} = ge * me^{.34}$$

$$\begin{aligned} gd/ge &= me^{.34} / md^{.34} \\ &= me^{.34} / (360/16 * me)^{.34} \\ &= me^{.34} / (me^{.34} * (360/16)^{.34}) \end{aligned}$$

Thus 2.8 * gd = ge, i.e. the ratio of gravity then vs. now is the cube root of the ratio of the weights of the two animals. In other words***, it would take almost a three to one attenuation of the acceleration due to gravity in order for the largest dinosaurs to exist!***

Sauropod Necks and the Problem of Torque

A second category of evidence for the attenuation of gravity in prehistoric times arises from the study of sauropod dinosaurs' necks. Scientists who study sauropod dinosaurs have claimed that they held their heads low, because they could not have gotten blood to their brains had they held them high. McGowan goes into this in detail on this topic[6]. He mentions the fact that a giraffe's blood pressure, at 200 - 300 mm Hg, far higher than that of any other animal, would probably rupture the vascular system of any other animal. This pressure is maintained by thick arterial walls and by a very tight skin, which apparently acts like a jet pilot's pressure suit. A giraffe's head might reach to 20'. How a sauropod might have gotten blood to its brain at 50' or 60' is the real question.

Two articles that mention this problem appeared in the 12/91 issue of Natural History. Harvey B. Lillywhite of Univ. Fla., Gainesville, noted:

> "...in a Barosaurus with its head held high, the heart had to work against a gravitational pressure of about 590 mm of mercury (Hg). In order for the heart to eject blood into the arteries of the neck, its pressure must exceed that of the blood pushing against the opposite side of the outflow valve. Moreover, some additional pressure would have been needed to overcome the resistance of smaller vessels within the head for blood flow to meet the requirements for brain and facial tissues. Therefore, hearts of Barosaurus must have generated pressures at least six times greater than those of humans and three to four times greater than those of giraffes."[7]

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[6] Christopher McGowan, "DINOSAURS, SPITFIRES, & SEA DRAGONS", Harvard, 1991 pp 101 - 120

[7] Natural History, December 1991: "Sauropods and Gravity", Harvey B. Lillywhite

In the same issue of Natural History, Peter Dodson noted:

> "Brachiosaurus was built like a giraffe and may have fed like one. But most sauropods were built quite differently. At the base of the neck, a sauropod's vertebral spines unlike those of a giraffe, were weak and low and did not provide leverage for the muscles required to elevate the head in a high position. Furthermore, the blood pressure required to pump blood up to the brain, thirty or more feet in the air, would have placed extraordinary demands on the heart (see opposite page) [Lillywhite's article] and would seemingly have placed the animal at severe risk of a stroke, an aneurysm, or some other circulatory disaster. If sauropods fed with the neck extended just a little above heart level, say from ground level up to fifteen feet, the blood pressure required would have been far more reasonable."[8]

It turns out, however, that a problem every bit as bad or worse than the blood pressure problem would arise, gravity being what it is now, were sauropods to hold their heads out just above horizontally as Dodson suggests. Try holding your arm out horizontally for more than a minute or two, and then imagine your arm being 40' long and 30,000 lb. . .

An ultrasaur or seismosaur with a neck 40' - 60' long and weighing 25,000 – 40,000 lb., would be looking at 400,000 to nearly a million foot pounds of torque were one of them to try to hold his neck out horizontally. That's basically impossible. You don't hang a 30,000 lb. load 40' off into space even if it is made out of wood and structural materials, much less flesh and blood. In fact, if you set out to research the question of what, if anything, in our world involves torques on the order of half a million to a million foot pounds, you'll find that no nut or bolt on anything in the world involves more than a few thousand foot-pounds of torque. The only thing in the ballpark would be the combined maximum torque of all the engines of a WW-II battleship or a modern aircraft carrier, that is, sufficient torque to drive a 60,000 ton ship through the water at 30 knots or better. The idea of anything made of flesh and blood holding that much torque is very far removed from reality.

A cursory look at an elephant's skeleton reveals a structural system much like Roman architecture with one and only one purpose in mind, i.e. bearing the elephant's great weight. The legs are columns and the spine is a Roman arch. A sauropod's neck, however, particularly in the case of the recent ultrasaur and seismosaur finds, weighed several times the weight of a large elephant and, if held outwards horizontally, would actually arch downwards (the **wrong** way). Reconstructions actually depict them like that, no thought whatever given to the consequences, either by the scientists or the artists involved.

And so, sauropods (in our gravity) couldn't hold their heads up, and they couldn't hold them out either. That doesn't leave much.

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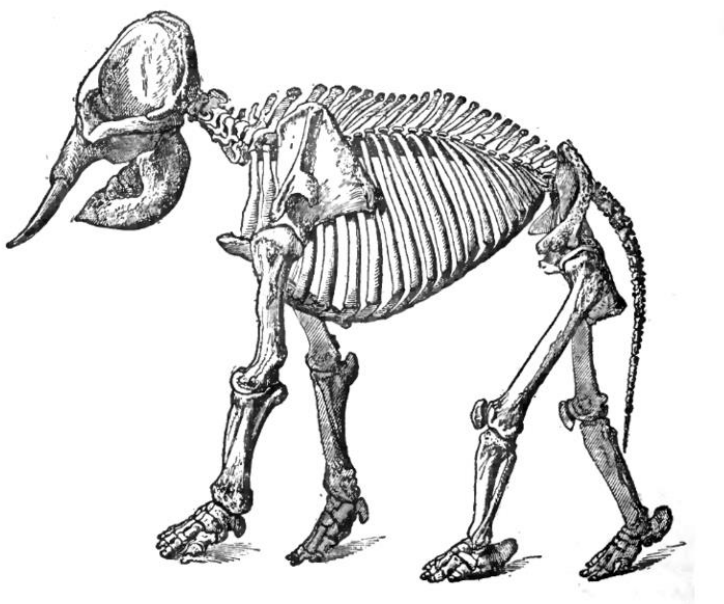
[8] Ibid: "Lifestyles of the Huge and Famous", Peter Dobson



(above) An elephant's body build is termed "graviportal," and consists of the basic elements of Roman architecture, the legs serving as columns, and the spine serving as a Roman arch for supporting weight.

If an elephant's spine were to arch downward as is the case with most quadrupeds, the elephant would collapse. (public domain image[9])

Public Domain Image

Diplodocid (sauropod which held its neck outwards) reconstruction. Notice that the neck arches the wrong way. (public domain image)[10]

Ancient Flying Creatures

A third category of evidence for attenuated gravity in antediluvian times arises from studies of creatures that flew in those times, and of creatures that fly now. In the prehistoric world, thousand-pound flying creatures soared in skies that no longer permit flying creatures above 30 lb. or thereabouts. Modern birds of prey (the Argentinean teratorn) weighing 170 -200 lb. with wingspans of 30' also flew in ages past, while within recorded history central Asians have been trying to breed hunting eagles for size and strength, yet have never gotten them beyond approximately 25 lb. At that point they are able to take off only with the greatest difficulty.

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[9] http://en.wikipedia.org/wiki/Asian_elephant

[10] http://tinyurl.com/cazntcn

A book of interest here is Adrian Desmond's "The Hot Blooded Dinosaurs.” Desmond has a good deal to say about the pteranodon, the 40 - 50 lb. pterosaur that scientists used to believe was the largest creature that ever flew:

> "Pteranodon had lost its teeth, tail and some flight musculature, and its rear legs had become spindly. It was, however, in the actual bones that the greatest reduction of weight was achieved. The wing bones, backbone and hind limbs were tubular, like the supporting struts of an aircraft, which allows for strength yet cuts down on weight. In Pteranodon these bones, although up to an inch in diameter, were no more than cylindrical air spaces bounded by an outer bony casing no thicker than a piece of card. Barnum Brown of the American Museum reported an armbone fragment of an unknown species of pterosaur from the Upper Cretaceous of Texas in which 'the culmination of the pterosaur... the acme of light construction' was achieved. Here, the trend had continued so far that the bone wall of the cylinder was an unbelievable one-fiftieth of an inch thick Inside the tubes bony crosswise struts no thicker than pins helped to strengthen the structure, another innovation in aircraft design anticipated by the Mesozoic pterosaurs.
>
> “The combination of great size and negligible weight must necessarily have resulted in some fragility. It is easy to imagine that the paper-thin tubular bones supporting the gigantic wings would have made landing dangerous. How could the creature have alighted without shattering all of its bones How could it have taken off in the first place It was obviously unable to flap twelve-foot wings strung between straw-thin tubes. Many larger birds have to achieve a certain speed by running and flapping before they can take off and others have to produce a wing beat speed approaching hovering in order to rise. To achieve hovering with a twenty-three foot wingspread, Pteranodon would have required 220 lb. of flight muscles as efficient as those in humming birds. But it had reduced its musculature to about 8 lb., so it is inconceivable that Pteranodon could have taken off actively.
>
> “Pteranodon, then, was not a flapping creature, it had neither the muscles nor the resistance to the resulting stress. Its long, thin albatross-like wings betray it as a glider, the most advanced glider the animal kingdom has produced. With a weight of only 40 lb. the wing loading was only I lb. per square foot. This gave it a slower sinking speed than even a man-made glider, where the wings have to sustain a weight of at least 4 lb. per square foot. The ratio of wing area to total weight in Pteranodon is only surpassed in some of the insects. Pteranodon was constructed as a glider, with the breastbone, shoulder girdle and backbone welded into a box-like rigid fuselage, able to absorb the strain from the giant wings. The low weight combined with an enormous wing span meant that Pteranodon could glide at ultra-low speeds without fear of stalling. Cherrie Bramwell of Reading University has calculated that it could remain aloft at only 15 m.p.h. So takeoff would have been relatively easy. All Pteranodon needed was a breeze of 15 m.p.h. when it would face the wind, stretch its wings and be lifted into the air like a piece of paper. No effort at all would have been required. Again, if it was forced to land on the sea, it had only to extend its wings to catch the wind in order to raise itself gently out of the water. It seems strange that an animal that had gone to such great lengths to reduce its weight to a minimum should have evolved an elongated bony crest on its skull."[11]

Desmond has mentioned some of the problems that even the pteranodon faced at 50 lb. or so; no possibility of flapping the wings for instance. And then:

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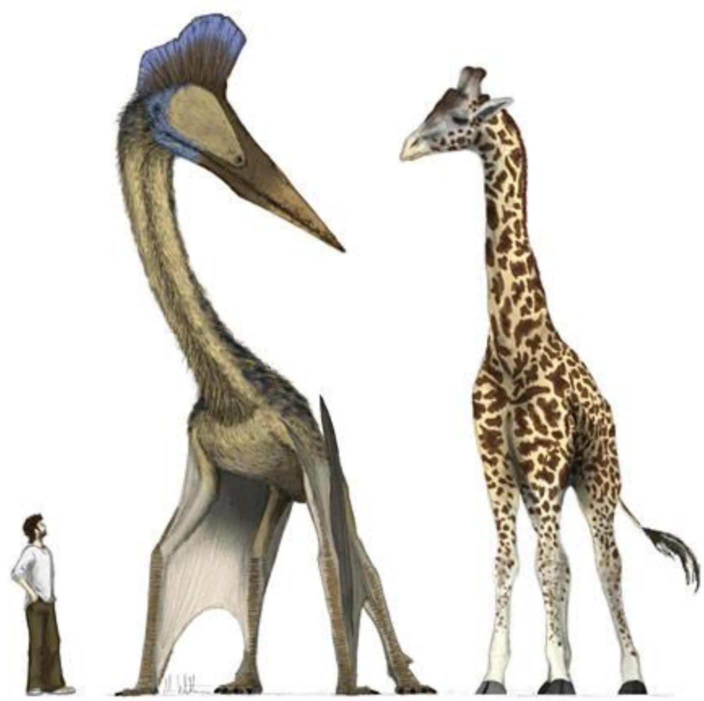
[11] Adrian J. Desmond, The Hot-Blooded Dinosaurs: A Revolution in Paleontology, New York, 1976, pages 178 - 183

> **“Calculations bearing on size and power suggested that the maximum weight that a flying vertebrate can attain is about 50 lb.** (emphasis ours)**:** Pteranodon and its slightly larger but lesser known Jordanian ally Titanopteryx were therefore thought to be the largest flying animals."

We are not aware of any demonstration of a fatal flaw in those calculations, other than for assuming that gravity in prehistoric times would have been the same as it is now.

The giant teratorn finds of Argentina were not known when Desmond's book was written, they came out in the eighties in issues of *Science Magazine* and other publications. The aforementioned teratorn was a 160 - 200 lb eagle with a 27' wingspan, a modern bird whose existence involved flapping wings, and aerial maneuver. And then there is the case of the Texas pterosaurs.



(Image: http://www.jhu.edu/~gazette/2009/12jan09/12pterosaurs.html)

Robert T. Bakker has this to say about the Texas Pterosaurs:

> "Immediately after their paper came out in Science, Wann Langston and his students were attacked by aeronautical engineers who simply could not believe that the Big Bend dragon had a wingspan of forty feet or more. Such dimensions broke all the rules of flight engineering; a creature that large would have broken its arm bones if it tried to fly... Under this hail of disbelief, Langston and his crew backed off somewhat. Since the complete wing bones hadn't been discovered, it was possible to reconstruct the Big Bend Pterodactyl [pterosaur] with wings much shorter than fifty feet."[12]

[12] Robert T. Baker, “The Dinosaur heresies", Zebra Books, pp 290-291

The original reconstruction had put wingspan for the pterosaur at over 60'. Bakker goes on to say that he believes the pterosaurs really were that big and that they simply flew despite our not comprehending how, i.e. that the problem is ours. He does not give a solution as to what we're looking at the wrong way.

In the cases of birds larger than 25 or 30 pounds that survived the change in gravity, that is, in the cases of ostriches and New Zealand moas and the like, the wings became vestigial and the creatures developed lifestyles that did not depend upon flight. Teratorns and the Big Bend pterosaurs, on the other hand, had wings that were clearly not vestigial and could not have lived other than by flying.

One of the problems here is that Einstein's description of gravity as a four dimensional differential geometry kind of thing would not allow anybody to believe that gravity could have undergone any sort of a large change near the surface of the earth in geologically recent times. Nonetheless, as we have just seen, it is an easy demonstration that it must have. What this means is that gravity is not an absolute basic force in nature and must actually be some kind of electrostatic dipole phenomenon as Ralph Sansbury and researchers connected with Thunderbolts.info claim.[13]

Ancient Humans and their Sizes

So much then for dinosaurs and their sizes. Those sizes were only possible because of an attenuation of gravity that prevailed in prehistoric times. What about other kinds of creatures, particularly humans? Is there any reason to believe that at least some humans and/or hominids would have been substantially larger in past ages than might be possible today?

The limit of size for any particular creature depends upon the kinds of stresses that the creature has to be able to deal with and this is because of the square/cube problem that we have mentioned. It is also the case that these limits have been uniformly higher in an age not more than a few tens of thousands of years ago. These included mammoths, which were substantially larger than present elephants, 1500 pound lions and 2500 pound bears in California, an eight-foot long beaver in New York, and a number of other such mega fauna. But what about humans?

From the time humans first appeared on this planet, there does not appear to have ever been a shortage of humans who were in the ballpark for the kinds of sizes that humans attain to now. Nonetheless, from what we've just seen, it would be surprising to learn that there had never been humans substantially larger than present humans. Most are familiar with the statement from Genesis:

> GEN 6:4 There were giants in the earth in those days; and also after that. . .

But there does not appear to be any physical evidence of giant humans from past ages... Does that mean that there is no such evidence, or simply that all or nearly all such evidence has been buried or covered up? Conspiracy theories should normally be viewed as a last resort, for situations in which all other remedies have failed; however we view this issue as a legitimate case involving conspiracy to cover up.

It was common knowledge in the United States in the 1700s and 1800s that there were burial mounds at numerous sites containing the bones of giant humans, and even Abraham Lincoln mentioned this once in a speech given at Niagara Falls:

> *"But still there is more. It calls up the indefinite past. When Columbus first sought this continent---when Christ suffered on the cross---when Moses led Israel through the Red-Sea---nay, even, when Adam first came from the hand of his Maker---then as now, Niagara was roaring here. The eyes of* **that species of extinct giants, whose bones fill the mounds of**

[13] http://www.holoscience.com/wp/electric-gravity-in-an-electric-universe/

America, (emphasis ours) *have gazed on Niagara, as ours do now. Co[n]temporary with the whole race of men, and older than the first man, Niagara is strong, and fresh to-day as ten thousand years ago. The Mammoth and Mastadon---now so long dead, that fragments of their monstrous bones, alone testify, that they ever lived, have gazed on Niagara. In that long---long time, never still for a single moment. Never dried, never froze, never slept, never rested."*[14]

Prior to the Internet age, the educated layman had little opportunity to read or examine any of this type of material. Nonetheless, the age when committed ideologues could keep lids down on this sort of thing is over. We recommend the following two starting points for interested readers:

- The Chapman Research Report[15]
- Robert Vannrox post on FreeRepublic Forum from email from Vine Deloria[16]

Articles that attempt to describe the role of the Smithsonian Institute in these areas include:

- http://jmilor.startlogic.com/articles/The%20Giant%20Conspiracy.html
- http://www.burlingtonnews.net/smithsonian.html

The Chapman Research Project and other similar resources that we have examined document numerous giant human finds, and have several recurring themes or elements in common:

- The giant human remains being described involved humans from 6 1/2 to around 13 feet tall; there no believable reports of 50 or 100 foot tall humans.
- A number of the reports note that the remains of giant humans appeared to be the remains of healthy people and not people suffering from glandular diseases as is the case with any human over 8 feet tall in the modern age.
- The most common sizes are in the 7 to 8 foot tall range.
- By far the greatest number of such reports originate from North America.
- The greatest number of such reports appear to originate from the 1880s. That coincides with the great age of building in the United States, the perfection of the modern steel industry, the availability of dynamite and other advances in engineering, all of which tended to make the occasional archaeological find more likely.
- A number of the reports in the Chapman Project include claims of double rows of teeth. This would be an adaptation to a substantially longer lifespan than currently enjoyed by modern humans.
- Many of the reports indicate that bones of a very great age, within a few days of being exposed to air, crumbled into dust.
- Most reports describe finding the bones of giant humans; a few mention archaic characteristics, possibly indicating hominids rather than humans.

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[14] "**Collected Works of Abraham Lincoln. Volume 2," pages 10 – 11. See http://quod.lib.umich.edu/l/lincoln/lincoln2/1:6?rgn=div1;view=fulltext**

[15] http://www.chapmanresearch.org/PDF/There%20Were%20Giants%20on%20the%20Earth.pdf

[16] http://www.freerepublic.com/focus/f-news/720497/posts

We are aware of only one mention in literature of descendants of Adam and Eve ever having to deal with anything which may have amounted to hominids and those do not appear to have been Neanderthals, and this occurs in the writings of the Jewish historian Flavius Josephus[17]

> *"There were till then left the race of giants; who had bodies so large, and contenances so entirely different from other men, that they were surprising to the sight and terrible to the hearing."*

Neanderthals of course were not giants. One thing to keep in mind when you read about giants in ancient times is that once men had learned to use projectile weapons such as the atlatl and bow, being a giant just made somebody a bigger target and was not really anything which anybody would call a military asset.

Later in this work, we discuss the idea that there were at least two separate saltations of modern humans on this planet. There is enough evidence for diverse groups of humans having concurrently been present on Earth in past ages that we cannot rule out the possibility that there may have been more than two saltations.

Antediluvian Lifespans

There is one other thing to note about attenuated gravity and the effect that it would have had on humans. Within recorded history, the ratio of maturity to lifespan for humans has been something like 1 to 4, that is, men would marry and begin families typically at an age of physical maturity, roughly 20, and live to a maximum of something like 80 years. Granted it is not possible to know exactly what the word "year" would have meant prior to the Biblical account of the flood; nonetheless the ratio was different. Genesis describes people living to 60 or 70 of whatever they called years, marrying and having first children, and then living to 800 and 900 years more or less. That amounts to a ratio closer to 1 to 13.

Gravity is the major cause of physical stress in the world and the reason that human bone structures begin to collapse and people begin to die of arthritis-related problems if they have not already died from anything else prior to that. For that matter, most neurosurgeons and orthopedists would agree that there is no such thing as a totally healthy human back past forty years of age. This would have to make anybody wonder whether humans could be said to be adapted to life on this particular planet as it exists at present, or whether in fact modern humans would have arisen at all in our present world.

In a world in which gravity was no more than a third of its present value (the largest sauropod dinosaurs would need at least that much attenuation simply to stand), you would expect humans to lead longer and healthier lives. And, under such circumstances, one has to assume that an advanced civilization could arise much more rapidly than has been the case within our own recorded history. The best minds in such a society would have a great deal more time in which to work.

That doesn't mean that ALL humans living in prehistoric societies would have been spacefaring or otherwise highly advanced; there would have been groups of humans at various levels of technological

[17] Flavius Josephus, Antiquities of the Jews, Book V Chapter II page 135

development then, even as there are now. Nonetheless it goes a certain ways towards understanding how spacefaring civilizations could have arisen in prehistoric times without taking hundreds of thousands or millions of years to do so.