



The Nonsense and Non-science of Sasquatch

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Sasquatch: Legend Meets Science. By Jeff Meldrum.
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Editor's note: This review is composed of analyses by four noted researchers of Bigfoot claims, each of whom was asked to briefly critique the book on their areas of expertise.

That which appears to be scientific, or has the veneer of science but is not, is called *pseudoscience*. Pseudoscience can take many forms, and is often found in areas of study in which there is little hard evidence for a given phenomenon. Real science uses scientific methods, standards of evidence, critical analysis, and so on. The pursuit of free energy, aliens, ghosts, and psychic powers, just to name a few, are rife with pseudoscience, nonsense, and nonsense.

Enter the pinnacle of the scientific argument for Bigfoot: Jeff Meldrum's new book titled (without a trace of irony) *Sasquatch: Legend Meets Science*. Meldrum,

Benjamin Radford has investigated Bigfoot and other mysteries for over a decade; his latest book is Lake Monster Mysteries. Michael Dennett, a longtime observer of the Bigfoot phenomena, has investigated and written about the Bermuda Triangle, UFOs, lake monsters, and so-called psychic sleuths. Matt Crowley previously worked as a pharmacist, sideshow performer, lamp builder, and is now a certified welder. He has spoken at several Sasquatch conferences on the topic of "Dermal Ridges and Casting Artifacts." David J. Daegling is an associate professor of anthropology at the University of Florida. His is the author of Bigfoot Exposed (2004, AltaMira Press).

who holds a PhD in anatomical sciences, is an associate professor of anatomy and anthropology at Idaho State University. With the 2002 death of anthropologist Grover Krantz, Meldrum assumed the mantle as the highest-profile scientist publicly investigating Bigfoot.

Meldrum's expertise, according to the book's foreword, is "human locomotor adaptations;" he is certainly qualified to speak about anatomy, but how that applies to Bigfoot—an animal never proven to exist—is unclear. Since we have no Bigfoot body for Meldrum to apply his real-world expertise to, he is reduced to being an armchair analyst for the Zapruder film of Bigfootery, the famous film shot in 1967 by Roger Patterson. The problem for Bigfoot proponents is that the film is an evidentiary dead end. Like any number of other ambiguous photos, films, videos, and images, it is simply a pattern of colors on a two-dimensional medium and cannot yield a shred of hard evidence or conclusive information about Bigfoot.

Meldrum often fails to seriously consider alternative explanations, a serious scientific misstep. Throughout the book, he focuses on theories that support his position while ignoring (or giving short shrift to) competing skeptical theories. Whether intentional or the result of the book's production deadlines, some parts of *Sasquatch* are simply incomplete and outdated. For example, Meldrum does not include a thorough and devastating analysis by Anton Wroblewski showing that the much-touted Skookum cast imprint was most probably created by a

kneeling elk—complete with a photograph showing an elk in just such a position. And *Sasquatch* fails to include a serious discussion of the evidence that at least some Bigfoot dermal ridges may be casting artifacts. (Though from the tone of the book it seems unlikely that these careful skeptical analyses would have been objectively evaluated and discussed.)

Meldrum was apparently not happy with Benjamin Radford's SI overview article "Bigfoot at 50." Among other issues, Meldrum chides Radford for quoting "unqualified individuals" and "amateur investigators" as if they were authorities—researchers such as Rene Dahinden, Loren Coleman, Grover Krantz, Rick Noll, Richard Greenwell, Dave Daegling, John Napier, and others who have written widely on the topic. Curiously, Meldrum himself repeatedly quotes the very same unqualified amateurs throughout *Sasquatch: Legend Meets Science*.

Another of Meldrum's criticisms actually highlights the fundamental flaw in his book: a lack of scientific expertise. Meldrum writes, "The majority of those [Bigfoot] critics . . . have limited expertise to evaluate the diverse evidence—e.g., footprints, hair, scat—with a degree of competence or authority. Indeed, precious few qualified scientific researchers have made any serious attempt to . . . evaluate the data." Since that scientific expertise is the book's subtitle and calling card, it merits a closer look.

While Meldrum congratulates himself and his fellow "qualified scientific researchers" for their academic bravery and expertise in tackling the Bigfoot issue, he fails to recognize that real science (as opposed to pseudoscience) operates on good evidence. There simply isn't good, hard evidence for Bigfoot. Meldrum is like a chef with bare cupboards, promising to show his expertise when the food arrives but in the meantime forced to talk idly about how sharp his knives are.

Meldrum appoints himself the sole judge of who is qualified to critique Bigfoot evidence, yet fails to look closely at

his own scientists. Experts discussing matters outside of their expertise is one hallmark of pseudoscience, and *Sasquatch* offers several instructive examples. For example, Meldrum quotes a Dr. Lynn Rogers on the subject of eyewitness testimony. Rogers, Meldrum states, considers the likelihood of mistaking a bear for a Sasquatch “possible but unlikely.” This seems compelling until you note that Dr. Rogers is a bear biologist, not a cognitive psychologist and therefore has no particular expertise about the real issue, which is not ursine morphology but the reliability of perception and eyewitness identification. One wonders if Jeff Meldrum consults his auto mechanic when he gets a toothache.

Meldrum later quotes Dr. Henner Fahrenbach, “who has published a statistical analysis of reported Sasquatch dimensions” based on a collection of stories and anecdotes that Meldrum himself admits “may or may not be credible”(!). Meldrum passes off Dr. Fahrenbach’s pseudoscience as valid research, hoping readers won’t notice that Dr. Fahrenbach is not a statistician but instead a retired microscopist, a field of expertise with little or no relevance to the type of analysis he performed. (More to the point, despite Meldrum’s puzzling claim that “anecdotal data forms the basis for many valid statistical analyses,” the jumble of stories Fahrenbach analyzed is *prima facie* poor data, rendering his conclusions virtually worthless; as the saying goes, garbage in—garbage out. It is troubling and puzzling that Meldrum, a scientist as he keeps reminding us, doesn’t realize this.)

—Benjamin Radford

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Sasquatch Hoaxing

Jeff Meldrum accepts “evidence” produced by Paul Freeman, an admitted hoaxter of Bigfoot footprints, as a basis for proof of Bigfoot. Recounting the fact that some of Freeman’s Sasquatch “hair” samples turned out to be man-made fibers, he says

On the surface, this appears to be a clear-cut case of hoaxing. However, others, including a retired game warden, have also discovered suspicious hair that likewise turned out to be similar synthetic fibers. It has been suggested that these resilient fibers have become something of a pervasive environmental contaminant, although the extent of this has not been determined. It should be noted that Freeman has collected several samples of true hair that number among Fahrenbach’s collection of possible Sasquatch hair, including samples from which degraded DNA was extracted by researchers at Ohio State University. It seems unjustified to throw out all the evidence as a result of a case of misidentification.” (p. 267)

This is not the only mention of Freeman evidence in the book. On Meldrum’s first unannounced meeting with Freeman, he says he tried to “size up the person, his reliability and motivations.” Then (even to Meldrum’s surprise) Freeman said, “Would you like to see some fresh tracks? I just found the first tracks of the spring earlier this morning.” Meldrum went for the bait and was shown a series of many tracks that he determined could not be faked (p. 23–24). By the date of this incident (ca. 1996), Freeman had been associated with many items of hoaxed or suspect Bigfoot evidence extending over a decade, and in fact many Bigfoot researchers independently regarded Freeman as a hoaxter based on nearly identical encounters.

As a “credentialed scientist” Meldrum implies he cannot be fooled. So when Paul Freeman produced an eight-inch-wide Sasquatch handprint showing a creature with a “non-opposable thumb” (p. 110) he did not see this as evidence of a hoax. Instead, Meldrum states that the human opposable thumbs permit a “precision grip” that appears to have been refined “relatively late in human evolution,” a fact that is correlated with the progressive sophistication of tool manufacture,” and therefore Sasquatch branched from the primate line before this adaptation.

Michael Dennett was struck by the similarity between Sir Arthur Conan Doyle and his commitment to spiritualism and Meldrum’s handling of Bigfoot “evidence.” Even when mediums were caught faking spirit manifestations, Doyle would not acknowledge this and persisted in his belief despite clear and contrary evidence.

Just as Doyle found evidence for ghosts, Meldrum finds evidence of Sasquatch almost everywhere. On a Bigfoot expedition in 1997, he recounts, “As I slung my pack off, a softball-sized rock sailed onto the trail a mere few feet away. There was no high point nearby from which a rock might have been dislodged by the rainstorm. Nor did it simply roll onto the trail from uphill. It had been airborne; it had been lobbed. For the first time on this excursion the hair on my neck stood on end; there was that subjective, but inescapable sense of being watched” (p. 31). For Doyle, this tale would have been proof of spirit manifestations. A more contemporary view would have identified the rock toss as a classic poltergeist event, not evidence for Sasquatch.

Meldrum’s book raises the art of omission and cherry-picking data selection to great heights. One example is his reference to dermal ridges and valleys (fingerprints) found on a footprint cast. Fingerprint examiner Edward Palma is quoted as saying the dermals couldn’t be faked, and furthermore, “Palma was able to trace the ridge pattern over the entire breadth of the forefoot” (p. 252). Meldrum does not tell the reader the cast is yet another Paul Freeman “find,” nor does he mention that this track is almost certainly a hoax and that even some Bigfoot proponents believe it fake. Significantly, he fails to tell his readers that, according to the late Grover Krantz in his 1992 book *Big Footprints*, Ed Palma examined a Bigfoot cast from Bloomington, Indiana, and he “pronounced the several patches of ridge detail as consistent with a real primate foot,” (Krantz p. 84). Furthermore, the Bloomington print was “examined by

the tracker Bob Titmus, and fingerprinter Ed Palma, the two best experts available, and they both thought it looked genuine" (Krantz p. 200). The Bloomington track was later revealed as a fake intended to demonstrate how Krantz and his "experts" could be fooled.

But perhaps the most deliberate example of omission is the findings of another Bigfoot proponent, fingerprint expert Jimmy Chilcutt. Chilcutt had also examined this Freeman cast and dismissed it as evidence for Sasquatch commenting the "casting had been enhanced manually with a human fingerprint." Some might excuse this omission if Meldrum disagreed with Chilcutt, but less than two pages later he presents Chilcutt as an expert on Sasquatch dermal ridges!

—Michael R. Dennett

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Dermal Ridges

One of the main pieces of evidence for the claim that Bigfoot tracks exhibit dermal ridges is the "Onion Mountain" footprint, a thirteen-inch cast made by researcher John Green in Northern California in August 1967. An additional set of tracks, the "Wrinkle Foot" casts, allegedly also display similar ridge patterns. The Wrinkle Foot set of prints were discovered by Paul Freeman. Photographs of the Onion Mountain and Wrinkle Foot casts appear on opposite pages of Meldrum's book, and so allow for an easy comparison. Though all three casts are the same length, it's obvious they are markedly different in shape, yet both foot shapes are included as some of the best evidence for Bigfoot's existence.

On May 29, 2005, Matt Crowley spoke at a Sasquatch conference in Bellingham, Washington, claiming that the unique surface textures of the Onion Mountain cast had a prosaic explanation; they were "casting artifacts." Basically, textures that closely resemble dermal ridges can sometimes spontaneously form on cement casts when the casts are made in very fine, dry soils, like

those in which John Green found his tracks. The ridges that spontaneously form somewhat resemble the sand patterns that form on shallow beaches after the tide has gone out. In a surprising turn of events, Meldrum himself publicly proclaimed this hypothesis a "slam dunk." Unknown to Crowley at the time, Meldrum had previously made test casts in fine Idaho loess soil that also exhibited casting artifacts.

Perhaps not surprisingly, Meldrum's current treatment of the Onion Mountain cast in his book is something of a retrenchment from his "slam dunk" proclamation. If the casting artifact hypothesis is correct, then Chilcutt's claim that the textures must represent Bigfoot's dermal ridges is wrong, and rather spectacularly so. Indeed, Chilcutt previously set the stakes for himself very high, when he claimed (on the 2003 "Sasquatch: Legend Meets Science" documentary) that he would "stake his reputation" on his dermal ridge interpretation.

The provenance and chain of custody of the Onion Mountain cast is even more fundamentally damning for Meldrum's current position. What he claims is the original cast has clearly written "Onion Mountain" in ink on the cast itself. Yet until presented with evidence in the form of an e-mail from John Green, Chilcutt maintained that the cast had come instead from Northern California's Blue Creek Mountain (see www.normalpeoplelikeyou.com/article_assets/sasquatch.htm). It is not clear that Chilcutt even examined the cast that Meldrum claims is the original. If he did, why didn't he use the unique, unambiguous nomenclature of "CA-19," especially when multiple casts were made of that trackway? This would seemly be an obvious procedure for a veteran crime scene investigator such as Chilcutt.

Unfortunately for Bigfoot advocates, the situation is even more chaotic. John Green claims the original cast is lost. Thus the very provenance and chain of custody of a cast which Chilcutt has previously referred to as "the best one with the clearest dermal ridges" (see [www.](http://www.normalpeoplelikeyou.com/article_assets/sasquatch.htm)

[normalpeoplelikeyou.com/article_assets/sasquatch.htm](http://www.normalpeoplelikeyou.com/article_assets/sasquatch.htm)) is in dispute. If this sort of "scientific evidence" was used in a legal trial, police detectives would be laughed out of court with such sloppy science and careless protocols. Yet this is typical of the evidence Meldrum and others proffer for Bigfoot.

Incredibly, a recent claim by Bigfoot advocate Rick Noll casts further doubt on the situation. Noll claims that John Green and Bob Titmus regularly scrubbed "surface imperfections" off of their casts with *wire brushes* (see www.bigfootforums.com/index.php?s=&showtopic=16414&view=findpost&p=346703). If so, this calls into question the wisdom of Meldrum's advocacy of yet *another* dermal ridge cast, one made by Bob Titmus in 1963.

As forensic or scientific evidence for Bigfoot's dermal ridges, the Onion Mountain cast is tainted at the very root and so falls short of even minimum standards of what is considered scientific evidence. Because Meldrum selectively presents his experts and evidence, there is no hint in *Sasquatch* of the many problems associated with the dermal "evidence." In view of Meldrum's familiarity with—and acceptance of—Crowley's experiments demonstrating serious problems with a cornerstone of dermal ridge evidence, his chapter on this topic is inexplicable.

—Matt Crowley

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The Fossil Record

In *Sasquatch: Legend Meets Science*, Jeff Meldrum suggests that Bigfoot arrived in the New World via the Bering land bridge. His hypothesis that Bigfoot represents the descendants of the Asian *Gigantopithecus* has the veneer of plausibility, until one remembers that there is material evidence of a parallel migration by humans all over the North American continent, where we have not a single *Gigantopithecus* fossil.

Meldrum is committed to the idea that the absence of Bigfoot fossils is not

only unproblematic, but actually unsurprising, given the geographic circumstances of the giant's supposed migration route and habitat. The reason we have no bones, he explains, is that many if not most Bigfoot fossils are now buried at sea due to recent rises in sea level, and those bones remaining on dry land have been destroyed by the acidic soils of the Pacific Northwest (p. 103). These speculations might be persuasive except for the small detail that we have plenty of fossils preserved in sediments of the Pacific Northwest that postdate Bigfoot's arrival.

The 1967 film of Bigfoot is defended by several assertions that are impossible to evaluate based on material in the book itself. Most incredible is the application of "reverse kinematics" to the film in which the three-dimensional movements of the film subject's skeleton are reconstructed from the film's two-dimensional images. How this is even theoretically—let alone methodologically—possible is never explained, but the reconstruction Meldrum champions is more clearly the result of imagination than credible forensic analysis. Meldrum recycles the argument that the film subject is too large to be a human in a costume, alternatively asserting and denying that it is possible to extract accurate absolute dimensions from the film. This might explain why he insists there is a reliable way to estimate subject height from the film, yet never manages to settle on a specific figure for stature. Some of the arguments become fantastically convoluted: to demonstrate that the filmed Bigfoot has a bulkier thorax than any living human (p. 163–164), Meldrum argues—based on concern over the instruments used to take measurements—that one must compare width of the back of the film subject with standardized measures of human chest width taken from the front *at a different location*. Doing this, Bigfoot indeed appears superhuman, an unsurprising result since thorax dimensions at these two locations differ within individuals! (See *Anthropometry and Mass*

Distribution for Human Analogues, 1988, currently archived at www.smf.org/articles/hic/USAARL_88-5.pdf.)

Other claims, such as the exposure of muscular herniations or the dynamics of the Achilles tendon, are made without serious consideration of alternative interpretations involving film artifacts or expected costume effects. Meldrum claims that one sequence in the film shows midfoot flexibility in the film subject—considered a hallmark Bigfoot trait. The image recruited to support this claim is blurred and critical parts of the foot are actually obscured, but what would it mean if one could see this trait? A foot placed in an oversized, flexible furry shoe might show exactly the same thing. Pareidolia—the viewing of a vague stimulus yet seeing something distinct within it—is as likely an explanation for these intricate anatomical observations.

Meldrum's most original contribution to Bigfoot research is his claim that footprints (and the 1967 film) provide evidence that Bigfoot possesses a flexible transverse tarsal joint, a condition strikingly distinct from the fixed arch pattern of modern human feet. The evidence for this is that some Bigfoot tracks display pressure ridges along the middle of footprints that betray this joint's position. If this trait is to be considered diagnostic, it follows that (1) other nonhuman primates having this feature can produce similar tracks; and (2) neither human feet nor phony Bigfoot feet have this ability. Meldrum explores neither premise. In fact, some human prints mimic this condition (a trip to a crowded beach confirms this), and bogus Sasquatch feet can produce this effect as well.

In sum, *Sasquatch: Legend Meets Science* desperately needed a logician and a psychologist. Among Meldrum's parade of PhD experts we find few with any real expertise in the issues at hand, nor even a scientific approach. Meldrum is an anatomy expert, but his analysis of a forty-year-old Bigfoot film, as detailed

and superficially impressive as it is, has little to do with real anatomy.

As the examples above show, there is precious little science in the search for Bigfoot, and even less in *Sasquatch: Legend Meets Science*. The top scientist searching for Bigfoot is unable or unwilling to distinguish good research from bad, science from pseudoscience. If *Sasquatch: Legend Meets Science* is in fact the best, most credible, and most scientific book to date on Bigfoot, the evidence is weaker than we imagined. The book's copious photos, diagrams, and charts will likely impress lay readers with little understanding of the issues or the scientific methods, but those looking for a thorough, scientific analysis will be disappointed.

—David J. Daegling □

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