



# Avoiding Compromised Forensic Experts Running Head: Expertise Compromised

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## Abstract

A recent review addressed important aspects pertinent to the evaluation of forensic anthropologic expertise, emphasizing the importance of experience, as well as knowledge base. A “third leg” seems at least equally important. Forensic work is predicated upon integrity and those who present themselves as expert witnesses need to be above reproach. If review of their academic record reveals support and/or promotion of flawed/falsified concepts, it is unlikely that they would survive cross-examination. It is easy to fall into the trap of collective consciousness, accepting ideas/perspectives that have not actually been subjected to critical thinking. It is critical to transcend stalwart status quo ideation and to assure embracement of scientifically-documented premises and methodologies, if credibility is to remain unassailable.

**Keywords:** Expert witness; Credibility; Iron deficiency; Scurvy; Authoritative

## Introduction

Passalacqua et al. [1], conveyed important aspects pertinent to the evaluation of forensic anthropologic expertise, emphasizing the importance of experience, as well as knowledge base. A “third leg” seems at least equally important: Credibility. The latter issue would appear to compromise the ability (to function as expert witnesses) of those physical/biological anthropologists who have been actively utilizing debunked speculations in their teachings and publications. Without unassailable scientific credibility, it is unclear that they would survive cross-examination, when confronted with such evidence. Avoiding such individuals is facilitated by identification of their refusal to acknowledge scientifically validated concepts. Presence of the following promotions/claims (authoritative or “collective consciousness,” as opposed to scientific) in the publication/teaching records suggests exploitable weaknesses in their ability to function effectively as potential expert witnesses:

1. Porosity and eburnation identify osteoarthritis
2. Iron deficiency can cause porotic hyperostosis
3. Sphenoid porosity identifies scurvy
4. Human species of tuberculosis derived from the bovine species

5. Diseases that affect humans cannot be compared with other animals
6. Subchondral articular erosions and fusion or presence of rheumatoid factor can identify rheumatoid arthritis
7. Cranial suture fusion is a reliable measure of age.
8. The so-called osteological paradox precludes comparison of cemetery with contemporary populations

The scientific evidence that refutes/falsifies the above delineated myths are delineated below:

1. Porosity and eburnation do not identify osteoarthritis [2,3]. Replacing fully utilizable vetted medical diagnostic criteria with “anthropologic criteria” illustrates an apparent “cultural” arrogance. Presence of osteophytes has been clearly [4-6], and repeatedly vetted and are the standard for medical recognition of osteoarthritis [7]. Suggested alternative criteria include porosity, eburnation and subchondral cysts [8-13], all of which have been proven erroneous [14,15], or non-specific (not limited to osteoarthritis). This seems to document a fundamental “disrespect” for science and for cross-disciplinary derived information.
2. Iron deficiency cannot cause porotic hyperostosis [3,16]. This is not merely speculation, in contrast to Waldron’s unevidenced [17], suggestion! Suggesting that deficiency of a specific substance (e.g., iron), essential for red blood cell production, can produce marrow hyperplasia [18-23] conflates cause and results [24,25]. Increased red blood cell production can deplete iron, but cannot occur in its [27]. This has led to great misunderstanding as to the introduction and effect of maize on ancient cultures [23,28].
3. Sphenoid porosity does not identify scurvy [2,29]. Use of tertiary sources and reviews, rather than tracking down the original publication to assure that it has been accurately reported and interpreted, indicates either

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selective (for citations confirming and against refuting preconceived notions/conceits or simply sloppy, superficial scholarship. Similar to the game of “telephone,” much can be and often is lost in translation/interpretation of primary references. Dittmer et al. [30], noted that the diagnosis is not well supported by the description and illustrations in from the original articles, emphasizing the importance of reviewing primary sources.

4. Bovine tuberculosis was a “product” of the human organism, not visa versa [31].
5. Disease recognition is independent of phylogeny of affected individuals [2,32-38].
6. Joint fusion and subchondral erosions are not signs of rheumatoid arthritis [2,39-42]. Suggesting that rheumatoid arthritis can be identified on the basis of presence of rheumatoid factor in skeletons reveals fundamental misunderstanding both of laboratory testing and medical principles. While proteins may be structurally preserved in some form, there is no evidence that function is retained and, other than collagen there is little evidence for retention of three-dimensional shape [43,44]. Rheumatoid factor is measured not as a structure, but as a function, its reaction to other proteins [45,46]. Further, rheumatoid factor, despite its name, is not pathognomonic for rheumatoid arthritis [45]. It is present in many diseases.
7. Cranial suture fusion is not a reliable measure of age [47].
8. The so-called osteological paradox lacks credibility, as it is conflicts with the evidence [48], and is predicated on false comparisons [49].

There is nothing wrong with having been mistaken, as long as the individuals involved do not persevere and if they proactively admit mistakes/misperceptions and extirpate them from the “collective consciousness” that has seemingly “driven” the field of physical/biological anthropology. The problem is that their devotion to scientifically-falsified ideas, in contradistinction to the evidence, taints any medico-legal testimony that they might provide. There are unfortunately many examples, several of which are delineated herein.

Perhaps the most egregious is continued utilization (e.g., [50]) of criteria delineated in the Rogers and Waldron [10], text on paleopathology, its many gross flaws/errors exposed by Rothschild [[51]. Another example is continued utilization of the long eburnation as an identifier for osteoarthritis [11,13,52-55], despite that it simply is the result cartilage loss related to a variety of articular diseases, the list not limited to infection and spondyloarthropathy (Rothschild et al., 2023). The most illogical has been attribution of the enhanced bone marrow blood production referred to as porotic hyperostosis (PO) as the result of iron deficiency anemia. Still many (e.g., [56,57]) still attribute PO to absence of an essential element (iron) required for blood production [3]. Credibility is compromised by espousal/promotion of such erroneous concepts, thus precluding their reliability/believability as potential forensic expert witnesses.

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