

# The History of "Beethoven's" Skull Fragments: Part Two

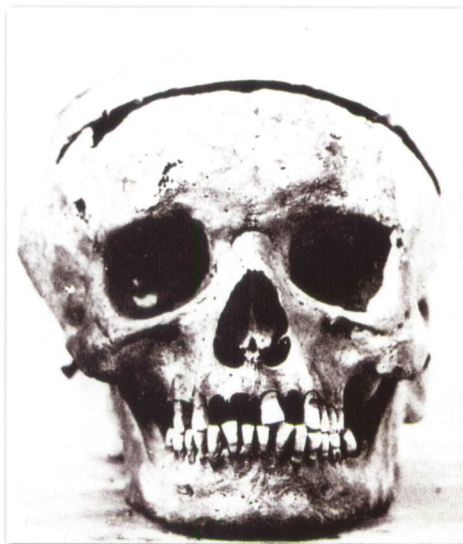
Part One of this essay appeared in Volume 20, nos. 1-2 (2005) of *The Beethoven Journal*.

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THE MOST IMPORTANT RESEARCH ON THE SKULL FRAGMENTS SINCE 2005 TOOK PLACE IN 2012. In January I suggested to Paul Kaufmann, the owner of the skull fragments, that we try to find an osteologist to examine the approximately ten small pieces of bone that had never been inspected by a osteological specialist. These fragments had been stored in the small metal box that held the two larger pieces that had been analyzed and identified as Beethoven's by Hans Bankl and Hans Jesserer in 1985, as reported on in their 1987 book *Die Krankheiten Ludwig van Beethovens: Pathographie seines Lebens und Pathologie seiner Leiden (Ludwig van Beethoven's Illnesses: the Pathography of his Life and the Pathology of His Suffering)*, Verlag Wilhelm Maudrich.<sup>1</sup> (A pathography is a retrospective study, often by a physician, of the life of an individual or the history of a community focusing on the influences and effects of disease on the person or community.)

Mr. Kaufmann had told me that his mother, Alma Kaufmann, had often called the collection of bones "Beethoven's ear bones." His recollections are confirmed by a letter of February 12, 1987, in which she wrote that in 1863 Beethoven's "remains were exhumed for reburial in a more distinguished cemetery. At that time Professor Seligmann was given the Beethoven Skull for his collection. However our uncle was only interested in the Ear Bones of the skull because of Beethoven's deafness." (This statement contains three significant errors.<sup>2</sup>) Since the ear bones were lost not long after Beethoven's autopsy on March 27, 1827, it seemed important to ask for an expert opinion on the small fragments from an osteologist. Mr. Kaufmann generously agreed, as he has with all scientific research on the bones, to show them to an osteologist we identified.

On January 25, 2012, I wrote to Dr. Dena Werb, professor and currently vice-chair of the Department of Anthropology at the University of California, San Francisco, who directed me to three researchers at UCSF who might be able to help. One of them, Dr. Kimberly Topp, Sexton Sutherland Endowed Chair in Human Anatomy, recommended that I contact Dr. David Burr, Professor of Anatomy and Cell Biology at Indiana University. In an email of January 31, he replied, "The first person who comes to mind on the West Coast is Tim White, who is at UC-Berkeley. Tim worked with Don Johansson on the Lucy remains and has continued to be active and highly regarded in the field of human paleontology. Although your request is not paleontological, Tim is certainly one of the most knowledgeable physical anthropologists in the field of osteology, and works with bone fragments all the time." I wrote to Dr. White that day: "Dear Dr. White: a strange but important question for you. Some of the fragments of Beethoven's skull—three large pieces and around 10 small ones—are in Danville. The locations of the larger ones have been identified, but the little ones have never been identified. In fact, they may not be skull bones. Is there any chance you might look at them for us?" Dr. White replied that day, "Dear Mr. Meredith, This



Photograph of a reconstruction of Beethoven's skull with the larger pieces discovered in the 1863 exhumation put together over a clay model (photograph by J.B. Rottmayer; from the collection of The Ira F. Brilliant Center for Beethoven Studies)

would be easy. I wrote the most widely used textbook in human osteology, and have had decades of experience in this kind of thing. In fact, we are currently on the skull in my upper division course in human osteology here at Cal. Let me know when you'd like to visit Berkeley. ... The students would be delighted and would learn from the experience." I let Mr. Kaufmann know that Dr. White had agreed to look at them, and he replied in an email that same day, "Yes indeed. Very exciting. I will get the fragments out of the safe" (where they had been carefully stored). The meeting was set for Friday, February 17; I wrote to Dr. White and Mr. Kaufmann on February 2: "What will become a historic day in Beethoven studies is now set." My statement only referred to the fact that the ten small fragments would finally be identified by an expert osteologist.

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On February 17, Dr. White met us on the Berkeley campus and walked us to his classroom where he invited, as a teaching moment, each of the students to identify the one large fragment that Mr. Kaufmann had brought with him. Though they were supposed to have made their examination without any foreknowledge, most of them had looked at Bankl and Jesserer's identification of the large piece as a parietal bone, which skewed their judgment.

After they all wrote their identifications on the board, Dr. White informed them that most of them had misidentified the large fragment as parietal, but that it was a section of right frontal bone. Dr. White based his analysis on the following five characteristics of the bones:

- Frontal sinus
- Frontal crest
- Undulation of the endocranial surface
- Coronal suture
- Temporal line

Dr. White's analysis led to a surprising conclusion: because the top of Beethoven's skull had been roughly sawn through during the autopsy (see the illustration), this frontal bone cannot be Beethoven's because it does not show signs of a skull saw cut (craniotomy). In a later email of March 6, Dr. White told me, "For the large piece, there is absolutely no competent osteologist who could overcome the unique set of clear anatomical features that place it as right frontal, so it is not of matter of 'if' [the bone is right frontal]." Dr. White agreed with Dr. Bankl and Dr. Jesserer that the other large fragment is a piece of occipital bone. On another visit, Dr. White placed the frontal skull fragment on an anonymous skull to show that it would have extended above the saw cut (see the illustration).

Mr. Kaufmann and I asked Dr. White how anthropologists proceed in cases in which there is disagreement about the identity of a fragment. He told us that normally a cast is made of the fragment, which is sent to twenty other specialists for blind analyses. Mr. Kaufmann agreed to follow a similar procedure and have the two large fragments identified by three other osteologists or teams of osteologists. I agreed to courier the fragments and request a written report from each scientist.

Accordingly, on June 26, 2012, I met Dr. Mark Griffin at the Bioanthropology Laboratory at San Francisco State University for "identification and examination," with a focus on "specific identification, demographic analysis, and unique morphological attributes." Dr. Griffin agreed with the identification of the occipital bone. However, he wrote in his report that Bankl and Jesserer's "characterization of the bone as 'thicker than normal' is not accurate." He agreed with Dr. White on the other fragment:

Fragments 2 and 3 [glued together] represent the central portion of the right frontal squamosum. The diagnostic features which confirm this identification are small segments of the coronal suture and the temporal line on the external surface. Diagnostic features on the internal aspect are the superior portion of the frontal crest, the inferior portion of the sagittal sulcus, and the most superior portion of the frontal sinus.

He concluded that Bankl and Jesserer's:

Identification of these fragments as belonging to the left parietal is incorrect and misses all of the above mentioned key diagnostic criteria. Their identification also omits the fact that the key diagnostic criteria that one would have to observe on a parietal fragment in the position they describe are entirely missing.



Dr. Tim White holding the frontal bone fragment on an anonymous human skull in an osteology laboratory at the University of California, Berkeley, spring 2012 (photograph by William Meredith).

Dr. Griffin's nine-page report concludes:

Comparison of the location of the fragments in anatomic position on the skull and their level of decomposition with the records of Beethoven's exhumation in 1863 indicates that (1) fragments 2, and 3 are definitely not from Beethoven's skull and (2) fragment 1 is inconsistent with the conditions of Beethoven's original interment, making it very unlikely that it is from Beethoven's skull. Given the perfect match of bone condition, general morphology, and cortical staining observed on all three fragments, it is likely that they all derive from the same individual.

On July 17, 2012, I took the fragments to the Human Identification Laboratory at the California State University, Chico, to be examined by Dr. P. Wiley and Dr. Eric Bartelink. Faculty, staff members, and graduate and undergraduate students examined the fragments, and Dr. Wiley and Dr. Bartelink wrote a one-page note to document their findings. They reported:

The first fragment is a segment of a human occipital bone (approximately 75 mm medial-lateral, 53 mm anterior-posterior/inferior-superior)... The second fragment is a portion of a human frontal from the middle and right side of the skull (approximately 83 mm. medial-lateral, 64 mm superior-inferior). It consists of two portions that are glued together. The fragment shows diagnostic features, including portions [of] the frontal sinus, frontal crest, coronal suture, and temporal line.

Affirming the findings of Dr. White and Dr. Griffin, they concluded, "Bone fragments are consistent with being from the same person, an adult, perhaps of middle- or old-age, and possible a male (based on the large external occipi-

tal protuberance and developed nuchal region). Because the bones are small and fragmentary, these assessments are tentative and include a considerable degree of uncertainty." Their report ends:

Comparison with the frontal (anterior) view of the skull shown in the black-and-white photograph attributed to Beethoven suggests that the autopsy cut would have passed through both bone fragments ... The fragments do not show evidence of autopsy cuts in the corresponding areas, suggesting that the two fragments are not from the same skull shown in the photograph.

The last of the four examinations took place on August 6, 2012, at the Forensic Osteological Investigations Laboratory at the University of California, Santa Cruz. Dr. Alison Galloway, forensic anthropologist studied the fragments and wrote a two-page report. Her conclusions agreed with those of Dr. White, Dr. Griffin, Dr. Willey, and Dr. Bartelink:

Fragment A, formed by two reattached pieces, is a portion of the frontal bone on the right side of the cranium. The fragment is identifiable by the sharp internal ridge forming the frontal crest and a small portion of the frontal sinus exposed in the interior fracture margin. Fragment B consists of a portion of the occipital bone in the midline of the cranium. This fragment is identifiable by the external occipital eminence, internal crests and nuchal crests. The two fragments form the right front forehead and inferior rear of the cranial vault.

Concerning whether or not the fragments are from the same individual, Dr. Galloway wrote: "both fragments are consistent in overall thickness, coloration and size. Sex determination cannot be determined. The nuchal (area of attachment for the neck muscles) crests are relatively light, more consistent with female. No brow ridges are visible on the portion of frontal but these may have been more inferior (below) the portion." Dr. Galloway concluded her report with these findings:



Dr. Tim White inspecting the small skull fragments on February 17, 2012, as part of his human osteology class at the University of California, Berkeley (photograph by William Meredith).

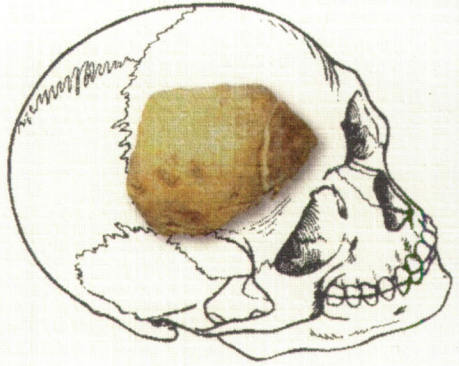
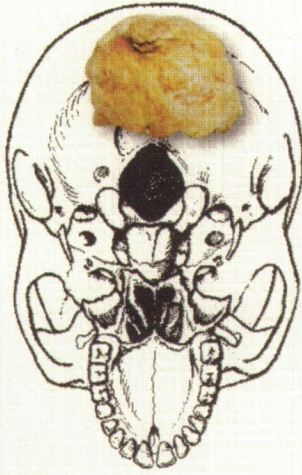
The frontal fragment is not consistent with the reported image of Beethoven[’s skull]. The frontal portion would cross the area that shows the autopsy cut marks that allowed removal of the skull cap. Since no such cut is seen on the fragment, this fragment cannot have been obtained from the skull in the photograph. In the 2005 report [the English translation of the 1985 Bankl and Jesserer analysis], the frontal fragment was incorrectly identified as a fragment of the posterior left parietal. If this was indeed the case, this bone, too, should have been bisected by the autopsy cut. The posterior fragment cannot be excluded based on the location as it would be positioned below the autopsy cut.

In summary, the reports from the five osteologists all agree that Bankl and Jesserer misidentified the right frontal bone as a posterior left parietal, that the frontal bone fragment shows no sign of having been cut during the removal of the skull cap, and that consequently the frontal bone cannot be from Beethoven. According to these experts, the two large fragments are consistent with being from the same person, but there is disagreement about whether or not the saw cut would have to be visible on the occipital bone from the back of the head.

Dr. White’s original finding, confirmed by four osteologists, raises many questions. One of the first is how these bone fragments ended up in the small oval shaped metal box that has “Beethoven” scratched on the top. The second is, since at least one of the bones is not from Beethoven and the second large bone matches it in many ways and thus most likely came from the same person, who put these fragments in the metal box? A third important question regards the exhumation reports on the frontal bone and the missing pieces.

In October 2012 a number of these issues were discussed by the osteologists, Mr. Kaufmann, and myself once their four sets of findings were compiled and compared. Regarding the first question of how at least one non-Beethoven bone ended up in the box, I pointed out was that we know that Dr. Romeo Seligmann worked on Beethoven’s skull bones during the exhumation of 1863 (see pp. 8-9 of Part One of this article). Seligmann took measurements and made drawings of the skull. Gerhard von Breuning reported that Seligmann also “used the opportunity to make plaster models of the part of Beethoven’s skull that included the base of the brain and sections above the eye socket.” One of the plaster casts Seligmann made, of an eye socket piece, is in the Beethoven-Haus (P 24); on the bottom of the cast is written: “Beethoven / Decke der / linken Orbita / von Seligmann / Wien.” According to Dr. Julia Ronge of the Beethoven-Haus (email of October 9), their catalog states that P 24 is ca. 7 cm. by 4 cm., which would neatly fit in the small oval box (see the dimensions below). The small box may have been used to store and move the original fragments during the exhumation, or it may have held one or more of the casts. To date, no letter or other documentation from Romeo Seligmann has been found that mention the skull fragments in the metal box.

In fact, the first mention of the skull fragments in the Kaufmann Archives is a supplement to the will of Romeo’s son Adalbert Seligmann (1862-1945). On February 24, 1944, he added a description of the sheet metal box, its dimensions (6 cm. wide, 6.5 cm. high, 10 cm. long), and stated that the name “Beethoven” scratched on the cover was undoubtedly in his father’s handwriting. According to the will, the box contained two larger and six smaller fragments. Adalbert added that he had recently found a letter attesting to Romeo’s involvement in the exhumation and that he had put it in the metal box. (This letter was lost when the box was in the possession of Thomas Desmines; Adalbert’s will also makes clear that one of the two larger pieces [the frontal bone] was broken while the fragment was in Desmines’ possession.) Since the previous appendix to the will was written on July 31, 1943, and the fragments are not mentioned in any section of the will to that date, it appears that Adalbert either found and/or decided to



Dr. Mark Griffin's illustration of the location of the occipital fragment ("a") and the frontal fragment ("b") (from his "Forensic Anthropology Report, 'Beethoven's Skull Fragments,'" July 2, 2012, unpublished report)

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include the fragments in his will between July 1943 and February 1944. In the supplement, the eighty-one-year-old Adalbert requested the executor of his estate to put the objects up for sale.

There is no evidence that I know of that could help solve the question of how the box with Beethoven's name scratched on it—according to his son by Romeo himself—ended up containing the frontal bone that cannot have come from Beethoven's skull. The committee handling the 1863 exhumation pledged to return all of the bones to the casket, and it is possible that Romeo used the little metal box to store either his casts or other bones from his collection of skull bones from around the world. The fragments are not mentioned in the hundreds of letters that survive from Alma Kaufmann's mother Ada to Alma that we examined for Part One of this essay.

Two issues remain to be mentioned here. The first concerns the enumeration of which skull bones were reported as missing in the 1863 exhumation. The 1863 report makes clear that there was a craniotomy, since "One first came upon a big sawed off piece of the uncommonly strong cranium, of which a second and than a third piece of smaller size were found."<sup>23</sup> The report continues with a clear statement that the frontal bone was intact: "The powerful forehead with the eye sockets and the upper jaw were all together; in the latter five teeth were stuck."<sup>24</sup> The missing pieces were carefully described: "At the crown of the head a piece was missing; both petrosal bones had been removed from both temporal bones by having been sawed off vertically; the other extant parts of the skull could be assembled to the degree that Professor Patruban could take preliminary measurements ..."<sup>25</sup> The detailed report on the second exhumation from 1888 confirms that the frontal bone was present.

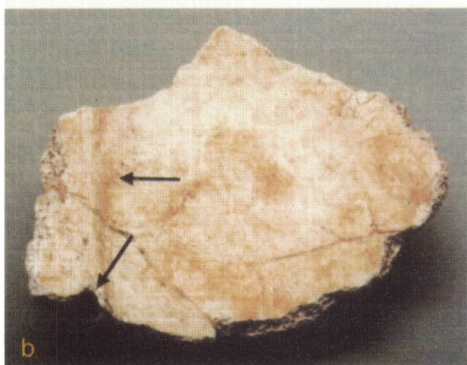
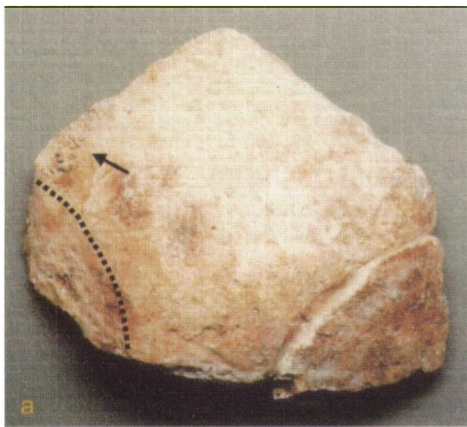
The final issue concerns the question of whether or not DNA can help answer some of these questions. DNA tests were completed on strands of hair from the Guevara Lock of Beethoven's Hair in North Carolina at the LabCorp laboratory of Marcia Eisenberg in 1999 and on material from the inside of one of the Kaufmann fragments by Bernd Brinkmann in Münster, Germany, in 2005. Dr. Eisenberg's lab was only able to obtain a very limited amount of mitochondrial DNA from the hair. As for the results of the German bone test, in Dr. Brinkman's words, "No human nuclear DNA could be detected" (from the material from the Kaufmann bone fragment). His laboratory was only able to discover a limited amount of information about mitochondrial DNA. When the mitochondrial information from the two laboratories was combined the results did not rule out the possibility that the two samples came from the same person but they do not confirm it.

The Beethoven Center and Dr. Guevara have embarked, as of spring 2015, on a new attempt to obtain DNA from strands of Beethoven's hair from two different sources (the Guevara Lock and the Cramolini Lock). The tests should be completed in the first half of 2016.

In the meantime, Dr. White's discovery that Bankl and Jesserer misidentified the frontal bone as a parietal bone—a discovery confirmed by four specialists in osteology—proves that this fragment cannot have come from the composer's skull, a conclusion confirmed by the clear statement in the 1863 exhumation report that, below the "very rough" saw cut, the "powerful forehead with the eye sockets and the upper jaw were all together."

## Notes

- 1 For some details of the purpose of the examination, see pp. 33-34 of Part One. Dr. Jesserer's examination was set up by Professor Helmut Wyklicky, professor at the Institut für Geschichte der Medizin der Universität Wien (Institute for the History of Medicine at the University of Vienna) in December 1984. Wyklicky had met Paul Kaufmann's uncle, Thomas Desmines, in 1970 when Desmines visited the institute in Vienna. Wyklicky was interested in exploring the possibility that Beethoven had Pagen's disease, but he reported to Desmines in March 1985 that the bones did not help resolve the question. (These documents are part of the carefully preserved Kaufmann Archives.)
- 2 The bones were reburied in the same cemetery in the 1863 exhumation; Romeo Seligmann was not given the skull for his collection; and the ear bones that had been sawed out were lost by 1863.
- 3 "The Official Report on the First Exhumation of the Graves of Beethoven and Schubert by the Gesellschaft der Musikfreunde in 1863: An English Translation," trans. Hannah Liebmann [corrected spelling of her last name], ed. William Meredith, *The Beethoven Journal* 20, nos. 1-2 (2005): 49.
- 4 According to the official 1863 exhumation report (p. 49), when the grave was opened, five teeth remained in the upper jaw. "Four completely healthy teeth that only later had lost their connection with the loosened jaw were found separately, and four teeth were completely missing. On the other hand, the lower jaw, which was soon afterwards loosened from the soil, showed an almost complete row of healthy and strong teeth ..." Thus thirteen of the teeth of the upper jaw were discovered when the coffin was opened. Rottmayer's photograph of the skull shows approximately eight teeth, which means that three of the teeth that had fallen out must have been inserted into the jaw when the skull fragments were placed over the clay base. As can be seen in Rottmayer's photograph, the teeth of the lower jaw are indeed "almost complete." More information on the teeth is in Peter Davies, *Beethoven in Person: His Deafness, Illnesses, and Death* (Westport, Connecticut: Greenwood Press, 2001), 112-14.
- 5 Ibid., 49. Gerhard von Breuning did not mention the missing piece from the crown of the skull: "Schubert's skull is completely preserved. Beethoven's skull, on the other hand, lacks the temporal bones and the connecting joints with the mandible because at the autopsy Dr. Johann Wagner sawed out Beethoven's aural organs for the intended examination." See Gerhard von Breuning, "The Skulls of Beethoven and Schubert," trans. Hannah Liebmann, ed. William Meredith, *The Beethoven Journal* 20, nos. 1-2 (2005): 59.



Dr. Mark Griffin's illustration of the diagnostic features of the cranial fragments: "a" shows the coronal suture with an arrow and the temporal line with a dotted line; "b" shows the frontal crest with a superior arrow and the frontal sinus with an inferior arrow (from his "Forensic Anthropology Report, 'Beethoven's Skull Fragments,'" July 2, 2012, unpublished report)

*Postscript:* Professor White's discovery was announced in the online version of an article by Bruce Newman in *The San José Mercury News* on July 23, 2015, misleadingly titled "San José State: Dem Bones Most Likely Not Beethovens." An accurate headline would have been "University of California at Berkeley: Dr. Tim White Corrects the 1987 Misidentification of One of the 'Beethoven' Skull Fragments." The headline in the printed version of the paper that was published on July 24 was more accurate about the skull analysis, but the announcement did not cast a shadow on the celebration and is hardly a "blow" to the Center: "Blow to SJSU Center: Finding Casts Shadow Over Celebration of 30th Anniversary/Analysis Refutes Skull Fragments as Beethovens." Because Newman's article contained several important errors, we posted a correction on Friday morning, July 24, on the website of the Center at [www.sjsu.edu/beethoven](http://www.sjsu.edu/beethoven). Bert Robinson, managing editor of the *Mercury News*, had the online headline changed on July 27 "to make sure that no one was misled to think that the discovery came from SJSU." The new headline of the online version is "Skull Fragments Most Likely Not Beethovens," which is still inaccurate.