

Conatus - Journal of Philosophy

Vol 4, No 2 (2019)

Conatus - Journal of Philosophy SI: Bioethics and the Holocaust



A Human Paradox: The Nazi Legacy of Pernkopf's Atlas

Jane A. Hartsock, Emily S. Beckman

doi: [10.12681/cjp.21076](https://doi.org/10.12681/cjp.21076)

Copyright © 2019, Jane A. Hartsock, Emily S. Beckman



This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0](https://creativecommons.org/licenses/by-nc/4.0/).

To cite this article:

Hartsock, J. A., & Beckman, E. S. (2019). A Human Paradox: The Nazi Legacy of Pernkopf's Atlas. *Conatus - Journal of Philosophy*, 4(2), 317-339. <https://doi.org/10.12681/cjp.21076>

A Human Paradox: The Nazi Legacy of Pernkopf's Atlas

Jane A. Hartsock¹ and Emily S. Beckman²

¹*Indiana University Health, USA*

E-mail address: jaaharts@iu.edu

ORCID ID: <https://orcid.org/0000-0002-2359-7706>

²*Indiana University - Purdue University, USA*

E-mail address: embeckma@iupui.edu

ORCID ID: <https://orcid.org/0000-0003-4966-0950>

Abstract

Eduard Pernkopf's Atlas of Topographical and Applied Human Anatomy is a four-volume anatomical atlas published between 1937 and 1963, and it is generally believed to be the most comprehensive, detailed, and accurate anatomy textbook ever created. However, a 1997 investigation into "Pernkopf's Atlas," raised troubling questions regarding the author's connection to the Nazi regime and the still unresolved issue of whether its illustrations relied on Jewish or other political prisoners, including those executed in Nazi concentration camps. Following this investigation, the book was removed from both anatomy classrooms and library bookshelves. A debate has ensued over the book's continued use, and justification for its use has focused on two issues: (1) there is no definitive proof the book includes illustrations of concentration camp prisoners or Jewish individuals in particular, and (2) there is no contemporary equivalent to this text. However, both points fail to address the central importance of the book, not simply as part of anatomy instruction, but also as a comprehensive historical narrative with important ethical implications. Having encountered a first edition copy, these authors were given a unique opportunity to engage with the text through the respective humanities lenses of history, ethics, and narrative. In doing so, an instructive and profound irony has surfaced: Nazis, including Pernkopf, viewed specific groups of people as less than human, giving rise to unthinkable atrocities perpetuated against them. However, these same individuals became the sources for the creation of the Atlas, which served as the model for primary instruction on the human form for more than half of the twentieth century. In this article, we recount the difficult and somewhat opaque provenance of this book, engage the ethical questions surrounding both its creation and its use, and ultimately propose a pedagogical methodology for its continued use in medical education.

Key-words: *human anatomy; medical humanities; narrative analysis; ethics; holocaust; history of medicine*

“Yet you, my creator, detest and spurn me, thy creature, to whom thou art bound by ties only dissoluble by the annihilation of one of us. You purpose to kill me. How dare you sport thus with life? Do your duty toward me, and I will do mine towards you and the rest of mankind. If you will comply with my conditions, I will leave them and you at peace; but if you refuse, I will glut the maw of death, until it be satiated with the blood of your remaining friends.”

Mary Shelley, *Frankenstein*

I. Introduction

Eduard Pernkopf's *Atlas of Topographical and Applied Human Anatomy* (hereinafter “the Atlas”) is a four-volume anatomical atlas published between 1937 and 1963 and is generally believed to be the most comprehensive, detailed, and accurate anatomy textbook ever created.¹ Over the fifty years following its creation, the book was widely translated and frequently used in anatomy education in medical schools throughout the world.² However, inspection of the forty-one illustrations of the particularly problematic second volume of the Atlas, which was created at the University of Vienna in 1941 during the National Socialist period, appears to have revealed signatures by the artists using Nazi symbols.³ In 1988, research conducted by David J. Williams, Professor of Medical Illustration at the School of Veterinary Medicine at Purdue University in Indiana, revealed that not only was Pernkopf a member of the Nazi party, but the primary illustrators, Erich Lepier, Ludwig Schrott, Karl Endtresser, and Franz Batke, were all active members of the Nazi party as well.⁴ This raised further questions about whether individual cadavers depicted within the book were victims of the Nazi regime of which Pernkopf and many of his colleagues were a part.

A formal investigation into the creation of the book and the identity of the subjects depicted in it was subsequently undertaken by the University of Vienna in 1997 at the behest of individual medical professors in the U.S. and Canada, as well as Yad Vashem (The Holocaust Martyrs' and Heroes' Remem-

¹ Sabine Hildebrandt, “How the Pernkopf Controversy Facilitated a Historical and Ethical Analysis of the Anatomical Sciences in Austria and German: A Recommendation for the Continued Use of the Pernkopf Atlas,” *Clinical Anatomy* 19, no. 2 (2006): 91-100; Garrett Riggs, “What Should We Do about Eduard Pernkopf's Atlas?,” *Academic Medicine* 73, no. 4 (1998): 380-386; Chris Hubbard, “Eduard Pernkopf's *Atlas of Topographical and Applied Human Anatomy*: The Continuing Ethical Controversy,” *The Anatomical Record* 265, no. 5 (2001): 207-211; Demetrius M. Coombs, and Steven J. Peitzman, “Medical Students' Assessments of Eduard Pernkopf's Atlas: Topographical Anatomy of Man,” *Annals of Anatomy* 212 (2017): 11-16.

² Michel Atlas, “Ethics and Access to Teaching Materials in the Medical Library: The Case of the Pernkopf Atlas,” *Bulletin of the Medical Library Association* 89, no. 1 (2001): 51-58.

³ Daniela Angetter, on behalf of the Senate Project of the University of Vienna, “Anatomical Science at University of Vienna 1938-45,” *The Lancet* 355, no. 9213 (2000): 1454-1457.

⁴ Hildebrandt, 93.

brance Authority).⁵ These individuals made three requests to the University of Vienna:

- (1) There should be an official investigation by outside experts to determine who the subjects portrayed in the Pernkopf atlas were and how they died;
- (2) If the subjects are in fact, or could possibly have been, victims of the Nazis, there should be a public commemoration to the victims by the institutions and organizations concerned;
- (3) The book should continue to be published with an acknowledgment in every future edition documenting the history of Pernkopf and commemorating the victims.⁶

The Senate Project of the University of Vienna ultimately concluded that Lepier had repeatedly signed his name with a swastika, but the ‘double S’ attributed to Endresser and the ‘double S lightning bolt’ rune attributed to Batke, could have been simply idiosyncrasies of handwriting and not intentional signs of Nazi allegiance.⁷

Questions remained, however, surrounding the identity of the thousands of individuals whose bodies were assigned to the University of Vienna’s Institute of Anatomy during the Nazi regime. A bombing of the Institute at the end of World War II destroyed a number of documents that could have been used to determine the identity of these individuals.⁸ Consequently, of the many cadavers received by the Institute, only 1,377 could definitively be said to have been executed citizens, including eight Jewish individuals. While not conclusive, the Senate Project further offered that it is reasonable to assume models for the Atlas’s illustrations probably came from those 1,377 prisoners, though none were conclusively found to have been victims of Nazi concentration camps.⁹ Moreover, the Atlas contains approximately 350 illustrations that are not dated and thus, it is not known whether they, too, depict victims of the Nazi regime.¹⁰ The University of Vienna further agreed that, going forward, the following statement should be included as an insert in the front of each copy of the Atlas:

⁵ Angetter, 1454.

⁶ Howard Israel, and William Seidelman, “Nazi Origins of an Anatomy Text: The Pernkopf Atlas,” *JAMA* 276, no. 20 (1996): 1633.

⁷ Angetter, 1456.

⁸ *Ibid.*, 1454.

⁹ *Ibid.*, 1455, 1456.

¹⁰ *Ibid.*, 1456.

[...] Currently, it cannot be excluded that certain preparations used for the illustrations in this atlas were obtained from (political) victims of the National Socialist regime. Furthermore, it is unclear whether cadavers were at that time supplied to the institute of Anatomy at the University of Vienna not only from the Vienna district court but also from concentration camps. Pending the results of the investigation, it is therefore within the individual user's ethical responsibility to decide whether and in which way he wishes to use this book.¹¹

Despite the fact that Yad Vashem has indicated a desire for the book's continued use, printing of the text ceased in 1994,¹² and its official use is now all but banned in classrooms, giving rise to difficult questions of how to reconcile the text's unequivocal utility with its horrifying origin. This debate has typically centered on whether the book should be banned or continued to be published and used with little inquiry into *how* it should be used, and under what pedagogical circumstances. Below, we recount the difficult and somewhat opaque provenance of this book, engage the ethical questions surrounding both its creation and its use, and ultimately propose a pedagogical methodology for its continued use in anatomical instruction, specifically advancing that the book is a valuable part of a medical humanities approach to anatomy instruction.

II. The Anatomy of an Anatomical Atlas

In recounting the ethical debate surrounding Pernkopf's Atlas, authors generally begin with a biography of Pernkopf himself, detailing his rise in the faculty at the University of Vienna and his affiliation with the Nazi party. While valuable, this approach conflates the biography of the author with the story of the book itself. It further, and all-too-easily, provides readers with an identifiable villain in this narrative at whose feet we can lay blame for the atrocities that gave rise to the creation of the Atlas. This approach, however, discourages the kind of reflection that is the book's true and current value. The story of Pernkopf's Atlas is, in many ways, the history of contemporary medicine and, so, this is where we will begin.

For the first half of the 19th century, medical and scientific theory was shaped by Parisian "hospital medicine."¹³ Its reliance on "correlating external

¹¹ Atlas, 53.

¹² Andrew Yee, et al., "Ethics Considerations in the Use of Pernkopf's Atlas of Anatomy: A Surgical Case Study," *Surgery* 165, no. 5 (2019): 862.

¹³ Nicholas Jewson, "The Disappearance of the Sick-Man from Medical Cosmology," *Interna-*

symptoms with internal lesions” through autopsy gave rise to “pathological anatomy” as the “all-pervading research technique of Hospital Medicine”¹⁴ and thus, medicine, generally. This method of research was also a method of learning as the study of medicine developed into a process of “observation and investigation.”¹⁵ The ideal places for such observation and investigation were “large hospitals in which a great number of sick people could be tended and treated” and so emerged the concept of the “teaching hospital.”¹⁶

Beginning in the middle of the 19th century, a cultural shift led by the University of Vienna ushered in a new age of medicine and shifted the center of medicine’s intellectual and academic activity away from France to Austria-Hungary and Germany, and particularly towards German laboratories.¹⁷ Much as the French model had made hospitals an indispensable part of medical instruction, the German model suggested that a clinical laboratory was a necessary component to the ideal medical college.¹⁸ This gave rise to a third medical epoch, aptly named “laboratory medicine.”¹⁹ In retrospect, a number of ethnically German scientists could be credited for this shift, such as Theodor Schwann, Ignaz Semmelweis, Rudolf Virchow, Robert Koch, and Friedrich Loeffler, to name just a few. By the turn of the 20th century, and with the decline of the French influence in medicine, the dominance of Germany in the field of medicine was solidified.

Although the rise of the practice of routine post-mortem autopsy is often attributed to French medicine, it was the Viennese pathologist Karl von Rokitansky, who brought the practice from France to the Vienna General Hospital in the mid-19th century and is credited for performing as many as 30,000 autopsies during the course of his life.²⁰ In contrast to medical centers in Europe and North America, the practice of dissection was utterly unrestricted at Vienna General Hospital and led to the founding of the Second Vienna Medical School.²¹ The availability of bodies for autopsy is credited with the international prestige accorded to the institution.²²

tional Journal of Epidemiology 38, no. 3 (2009): 622-633.

¹⁴ *Ibid.*, 625.

¹⁵ J. Büttner, “The Origin of Clinical Laboratories,” *European Journal of Clinical Chemistry and Clinical Biochemistry* 30 (1992): 586.

¹⁶ *Ibid.*

¹⁷ Jewson, 625; Sherwin Nuland, “Chapter 9: The Germ Theory Before Germs,” in *Doctors: The Biography of Medicine*. (New York: Random House, Inc., 1988), 241.

¹⁸ Büttner, 587.

¹⁹ Jewson, 625.

²⁰ Fernando De Campos, “The Dawn of Modern Pathology,” *Autopsy Case Reports*, 6, no. 1 (2016): 3.

²¹ *Ibid.*

²² *Ibid.*, 4.

In addition to the prominence of German Laboratory Medicine and the University of Vienna in particular, the success of anatomical dissection, for centuries, has rested on the overlooked exploitation of disvalued populations as the source of the individual cadavers necessary for study.²³ Indeed, the bodies depicted in Andreas Vesalius's *De Humani Corporis Fabrica* (1543) were those of executed criminals.²⁴ As multiple authors have noted previously, in Vienna the practice of using the bodies of executed prisoners in the instruction of anatomy was centuries old dating back to 1404.²⁵

It was against this backdrop that anatomist Eduard Pernkopf rose to prestige. Prior to the 1938 *Anschluss* (the annexation of Austria by Nazi Germany), The University of Vienna School of Medicine's Anatomy Institute was comprised of two separate departments: First and Second Anatomy. Eduard Pernkopf had been appointed Director of Second Anatomy in 1929 and first began work on the Atlas as a manual to assist in his own teaching of human dissection.²⁶ In 1933, with the rise of Hitler, Pernkopf formally joined the Nazi party and the S.A. (Sturmabteilung, German "Assault Division"). A few weeks after the 1938 annexation, he was appointed Dean of the Faculty of the Medical School and combined the two anatomy departments. Within a month, he had requested that all University staff provide documentary proof of their Aryan ancestry and give an oath of loyalty to Hitler.²⁷ Two weeks later, all Jewish faculty – fully 78% of the Medical School faculty – were fired.²⁸

As detailed by Sabine Hildebrandt, Pernkopf's first lecture as Dean of the Medical Faculty openly praised Hitler, embraced eugenics and race hygiene,

²³ Coombs, 11-12.

²⁴ Ibid., 11; Nuland, "Chapter 3: The Reawakening: Andreas Vesalius and the Renaissance of Medicine," in *Doctors: The Biography of Medicine*; Dillon Arango, Patrick Griefenstein, and James P. O'Leary, "Selected Anatomists: At the Boundary of Contemporary Ethics," *JAMA Surgery* 148, no. 1 (2013): 94-98.

²⁵ Angetter, 1454.

²⁶ Arango, et al., 96.

²⁷ Edzard Ernst, "A Leading Medical School Seriously Damaged: Vienna 1938," *Annals of Internal Medicine* 122, no. 10 (1995): 790.

²⁸ Ibid.; Gerald Weissmann, "Springtime for Pernkopf," *Hospital Practice* 20, no. 10 (1985): 142-168, noting a 1938 issue of *The Lancet* in which a letter, signed by 18 prominent physicians begged that "our colleagues in all countries [...] do all in their power, whether by public protest, by public or private assistance, to stand by any member of our profession who may suffer hardship under the new regime.", 163-164. Subsequent correspondence raised concern about the "undue competition" that could arise from the U.K. accepting too many "medical refugees from Central Europe." As one letter of April 23, 1938, notes, "[T]he prosperity so speedily attained by some refugees has done more than anything else to weaken the desire to help refugees as a class.", 164. Alternatives were proposed, including, "it would be better to send foreign refugees to the countries with large populations and few doctors, such as India, rather than admit them to overcrowded England.", 167.

and ended with a triple, *Seig Heil*, eliminating any ambiguity as to Pernkopf's allegiance.²⁹ He subsequently implemented a new curriculum in race hygiene within which instruction in anatomy was essential to understanding concepts of racial difference.³⁰ He further advanced theories of both positive and negative eugenics, some of which were directly adopted by the Nazis as justification for the Holocaust itself.³¹

As noted above, the history of anatomy's reliance on the bodies of executed prisoners is well established. However, with the rise of the Third Reich the demographics of those bodies increasingly comprised political dissidents and persons with mental illness who had previously been residents in psychiatric hospitals, such as Am Spiegelgrund, which was the site of the euthanasia of mentally and physically handicapped children under the Nazi regime.³² Most of the victims, it is agreed, would have been those "executed at the Vienna district court and of others put to death at Gestapo execution chambers in Linz, Munich, and Prague."³³ Thus, while Pernkopf-the-individual was a man whose views we find repugnant and whose conduct we rightly disavow, Pernkopf-the-anatomist would not have existed but for the convergence of the disturbing history of anatomical study and the prominence of German laboratory medicine during the rise of the Nazi regime. This historical context is critical to any examination of the Atlas, especially as we consider its value and potential from a medical humanities, and specifically, narrative perspective.

III. Responding to Arguments

A number of arguments have been advanced exploring whether or not it is ethically permissible to continue to use Pernkopf's Atlas. Chief among them are: (1) that the Atlas lacks any contemporary substitute and is incomparably valuable in its instructional utility; (2) that the results of the Senate Project of the University of Vienna were inconclusive as to the source of the cadavers and thus, there is no definitive proof the bodies depicted in the text were obtained from executed prisoners, much less Jewish victims of the Holocaust; and (3) that the continued use of the Atlas honors the dead and provides comfort in so far as the victims depicted in its pages did not die in

²⁹ Hildebrandt, 93.

³⁰ *Ibid.*

³¹ *Ibid.*, 93: "It should be mentioned at this point that Pernkopf, in his rhetoric of 'negative selection,' spelled out the steps that led directly from biological theory and Rudolf Hess's (Hitler's deputy) 1934 mandate of National Socialism being 'applied biology' to the 'other means' of the Holocaust."

³² Angetter, 1454.

³³ Israel, 1633.

vain. Below, we address each of these arguments individually, but ultimately find them unpersuasive.

i. The Atlas as Indispensable

As several authors have noted previously, part of the complexity of addressing Pernkopf's Atlas is its superiority among anatomical atlases. When *The New England Journal of Medicine* reviewed the 3rd edition of the book in 1990, they described it as an "outstanding book of great value to anatomists and surgeons" and "in a class of its own."³⁴ *JAMA* has also described it as in "a class among atlases."³⁵ Moreover, as scholars have noted, unlike much Nazi "research," the Atlas is "a rare example of Nazi medical scientists producing scientifically significant work."³⁶ While much of the data derived from Nazi research cannot be validated and was flawed in its foundational hypotheses and design, Pernkopf's Atlas has never been challenged for its validity, only lauded.³⁷ Garrett Riggs has described the Atlas as the "archetype of highly reliable data tainted by its association with Nazism."³⁸ Hildebrandt has remarked, "The Atlas is still one of the very best in terms of accuracy, showing levels of detail concerning fascia and neurovascular structures that are of direct relevance for the actual dissection process."³⁹

Recently, Sharon Begley recounted the Atlas's indispensable utility in the performance of a complicated surgery performed by Dr. Susan Mackinnon.⁴⁰ Having been confronted intraoperatively with an inability to locate the saphenous nerve, Mackinnon consulted the Atlas, projecting the relevant text illustration on a screen in the operating room. She credits the illustration with her successful completion of the surgery.⁴¹ However, Mackinnon was so disturbed by the Atlas's history, she questioned whether her reliance on it should have been made a part of the patient's

³⁴ Richard Snell, "Pernkopf Anatomy: Atlas of Topographic and Applied Human Anatomy," *The New England Journal of Medicine* 323, no 3 (1990): 205.

³⁵ Malcolm Hast, "Pernkopf Anatomy: Atlas of Topographic and Applied Human Anatomy, Vol. 1: Head and Neck" [Book review] *JAMA* 263, no. 15 (1990): 2115.

³⁶ Hildebrandt, 92.

³⁷ Atlas, 54.

³⁸ Riggs, 382-383.

³⁹ Hildebrandt, 97.

⁴⁰ Sharon Begley, "The Surgeon Had a Dilemma only a Nazi Medical Text Could Resolve. Was It Ethical to Use It?" in *STAT* (2019), accessed August 20, 2019, <https://www.statnews.com/2019/05/30/surgical-dilemma-only-nazi-medical-text-could-resolve/>.

⁴¹ *Ibid.*

informed consent process. How would a patient feel if she knew “her surgeons consulted a work of Nazi medicine to help” her?⁴²

Over the years, some have suggested that the exceptionality of the book has been somewhat reduced by other methods of anatomy instruction. While Richard Snell lauds the work as being of great value, he also notes a number of aspects of the Atlas that are now outdated.⁴³ However, attempts to find a substitute have been largely unsuccessful. For example, Michel Atlas has responded previously to suggestions that The Visible Human Project could serve as an adequate substitute to the Atlas commenting that the male model in that project is, himself, an executed prisoner, a practice that has been condemned as deeply unethical by nearly the entire developed world.⁴⁴

Moreover, and to the ultimate point of this article, the reliance on ostensibly less ethically problematic means of instruction results in a “missed opportunity to have a conversation about humans and humanity.”⁴⁵ As Edzard Ernst has commented, medical schools have an ethical obligation to lead such discussions, particularly as they relate to the eugenics movement, because the medical profession played such an enormous role institutionally in “generating, popularizing, and implementing”⁴⁶ social Darwinist theories during the first half of the twentieth century.

ii. The Absence of Evidence as to the Origin of Subjects in the Atlas

The least persuasive of the arguments advanced for the continued use of the Atlas relies on, rather than rebukes, the lack of certainty regarding the origin of the bodies depicted in its pages and further notes that although Pernkopf was an ardent Nazi, there is no evidence that he participated in Nazi executions.⁴⁷ However, this argument, which attempts to find purchase in doubt, is unpersuasive. But for the air raid of February 7, 1945, which destroyed the death certificates – including causes of death (e.g. executed) and the location where the body was transferred after death – we would almost certainly find that the bodies depicted in the Atlas were predominantly victims of the Nazi Regime. Indeed, scholars have already speculated that the number of executed individuals transferred to the Anatomy Institute “must be higher than

⁴² Ibid.

⁴³ Snell, 403.

⁴⁴ Atlas, 57.

⁴⁵ Ibid.

⁴⁶ Ernst, 789.

⁴⁷ Riggs, 381.

1377.”⁴⁸ While we cannot know with certainty that these bodies were from victims of the Nazi regime, it seems we should proceed from the assumption that they *are* such victims given what we *do* know.

Between 1907 and 1932, there were fewer than 20 civilians executed per year in Germany. Between 1933 and 1945, there were at least 16,000 executions in German prisons (this figure obviously excludes executions in Nazi concentration camps). Most people were sentenced to death for political reasons.⁴⁹ Of those executed, the bodies of at least 1377 civilian prisoners, including eight Jewish prisoners, were assigned to Pernkopf's anatomy department. Further, as previously noted by Michel Atlas, there is concern that the Atlas contains material from children killed in Viennese hospitals. Between 1938 and 1945, some 7,000 bodies of fetuses, miscarriages, still births, and premature babies were delivered to the Institute.⁵⁰ The influx of bodies executed by the Nazis increased so much during Pernkopf's tenure that there were times when the executions had to be postponed because there was not sufficient room for the bodies at the Institute.⁵¹ Importantly, the literature consistently demonstrates that anatomists were “an integral part of the system of capital punishment” during the Nazi regime.⁵²

More recently, researchers have obtained the comments of individuals who survived World War II and worked in the Institute with Pernkopf. In 2007, Seyed Hossein Aharinejad and Stephen Carmichael interviewed three professors of the Institutes of Anatomy of the University of Vienna: Walter Krause, Alfred Gisel and Werner Platzer. Their remarks were chilling and include explicit admissions that “there were executed Jews among the bodies delivered to the Institute.”⁵³ In addition to the bodies of Jewish people, Alfred Gisel, Emeritus Full Professor of Anatomy acknowledged that “bodies of executed Jewish people were used, these were people who had protested against

⁴⁸ Angetter, 1455: “The total number of people executed under the National Socialist regime could not be established because all the sources used for research – including the death certificates at the Vienna municipal cemetery offices, the lists from the Vienna assize court archives, the documentary archives of the Austrian resistance and the German army information office in Berlin – was incomplete. Hence, the true number of executed citizens must be higher than 1377.”

⁴⁹ Angetter, 1455.

⁵⁰ Atlas, 53.

⁵¹ Hildebrandt, 94.

⁵² Heather Pringle, “Confronting Anatomy's Nazi Past,” *Science* 329, no. 5989 (2010): 275.

⁵³ Seyed Hossein Aharinejad, and Stephen W. Carmichael, “First Hand Accounts of Events in the Laboratory of Prof. Eduard Pernkopf,” *Clinical Anatomy* 26, no. 3 (2013): 299. Walter Krause, Emeritus Full Professor of Anatomy responded to questions as follows: “The bodies of executed people, also Jewish people, were delivered to the Institute of Anatomy in Vienna and they were used. So what? I am sure Jewish people were among these bodies, but who should know exactly and how can we estimate numbers?” at 299.

the NS regime and were then killed by National Socialists. Also, some were put on trial and then killed. [...] [B]eside Jews, there were also homosexuals and gypsies among the executed [and] people with different political ways of thinking from the National Socialists.”⁵⁴

Given what is known about the circumstances at the University of Vienna during the time the book was being created, it seems most judicious to proceed under the assumption that at least some of the drawings depict “victims of the Holocaust” including the cognitively disabled, homosexual persons, Romani, Jews, and those who were political dissidents during the Nazi regime. The fact that one cannot say this with certainty should provide little in the way of comfort.

iii. The “Salvage-Some-Good-From-The-Ashes” Defense

Garrett Riggs and Sabine Hildebrandt both have argued that the book may be a “fitting tribute to those who died for it.”⁵⁵ This is what Riggs has called the “Salvage-Some-Good-From-The-Ashes” defense. Riggs specifically finds the “Good-From-The-Ashes” defense somewhat persuasive noting that “teaching, enlightenment, and enhancing patient care are noble ends” and that to acknowledge this does not “[diminish] the magnitude of past wrongs or [forget] those who were wronged.”⁵⁶

This argument, however risks that the past wrongs may simply fall out of the conversation as one necessarily prioritizes the “noble ends” of learning over the past wrongs. This rationalization, then, is question-begging in a conversation about whether the use of the Atlas can be ethically justified. Further, this argument seems to take as “given” points of debate which are, as yet, very much unresolved, such as whether prioritizing the “noble ends” of learning in the context of Pernkopf’s Atlas treats the individuals contained in its pages as a means, rather than as ends in themselves. To do so would seem to disregard Kantian maxims about personhood, which comprises a core tenet of modern bioethics.

At the very least, the “Salvage-The-Good” defense requires close attention to the use of language. The people depicted in the pages of Pernkopf’s Atlas did not die *for* this book, as Riggs describes. That sort of language suggests a deliberate undertaking, an intentional sacrifice for a greater good. People die for their country; they die for their children; they die for causes they believe in. They do not die *for* textbooks. The individuals depicted in

⁵⁴ Ibid., 301.

⁵⁵ Riggs, 385; Hildebrandt, 97.

⁵⁶ Riggs, 384.

the pages of Pernkopf's Atlas were murdered as part of a project of ethnic cleansing and eugenics. Their death was exploited by a man who sought to profit off the convenient increased body count and who not only ascribed to, but developed, perpetuated, and implemented policies in accordance with this genocide. We are concerned that such arguments invite sentimentality, romanticization, and oversimplification. If we choose to engage with this part of the human story, we surrender the privilege of doing so with euphemisms.

IV. The Limits of Principlism

Part of the flaw of the above frequently-proffered arguments is the framework on which they rest. Whether explicitly or implicitly, any "ethical analysis" of the use of Pernkopf's work relies on modern bioethical principles of research for justification or impermissibility of use. However, we argue this analysis is too limiting.

The end of World War II, the Nuremberg Trials, and the subsequent promulgation of the Nuremberg Code are often portrayed as having signaled a paradigm shift in the way scientists approach research participants. The ten paragraphs that comprise the Code begin by defining informed consent as the cornerstone of good research, stating that "voluntary consent of the human subject is absolutely essential." The Code continues on to condemn "force, fraud, deceit, duress, over-reaching, or other ulterior form of constraint or coercion"⁵⁷ This ideal has been reiterated in the World Medical Association's Declaration of Helsinki (1964) which states that research that does not comply with the requirements of the declaration should not be accepted for publication.⁵⁸ The 1979 promulgation of The Belmont Report ushered in the formal age of principlism with its three principles of Respect for persons, Beneficence, and Justice.⁵⁹ Most recently, The Revised Common Rule sets forth the requirements for conducting research at institutions that receive federal funding. The Common Rule makes requirements of informed consent arguably the most important ethical consideration for a researcher.⁶⁰

⁵⁷ "Trials of War Criminals before the Nuremberg Military Tribunals under Control Council Law No. 10," Vol. 2, 181-182, para. 1. Washington, D.C.: U.S. Government Printing Office, 1949.

⁵⁸ World Medical Association, "World Medical Association Declaration of Helsinki: Ethical Principles for Medical Research involving Human Subjects," *JAMA* 310, no. 20 (2013): 2191-2194.

⁵⁹ The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, "The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research," (1979), in U.S. Department of Health & Human Services, accessed August 20, 2019, <https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/read-the-belmont-report/index.html>.

⁶⁰ U.S. Department of Health and Human Services. "The Revised Common Rule," 45 CFR 46

None of these codes, however, tell us what to do with research that has already been conducted. Beyond that question, it is worth pondering whether principlism is really what stands between us and our capacity for something as horrifying as the circumstances under which the Atlas was created. Research by Jachen Vollmann and Rolf Winau indicates that Germany, and Prussia before it, had one of the world's first research ethics codes.⁶¹ In 1891, the Prussian minister of the interior established a policy forbidding the administration of tuberculin to prisoners with tuberculosis unless the patient consented.⁶² Subsequently, in 1898, Dr. Albert Neisser of the University of Breslau tested a syphilis-prevention on a group of prostitutes. The vaccine was unsuccessful and several of the prostitutes contracted syphilis. After public outcry and the publication of a collection of 600 cases of unethical human subjects research, the minister of religious, educational, and medical affairs issued a directive to hospitals requiring consent for non-therapeutic research and barring research on individuals who were minors or who were incompetent to give consent.⁶³ Perhaps most notably, in 1931, three years before Pernkopf joined the SA, the Reich Minister of the Interior issued guidelines for research in Germany that expressly included requirements of informed consent in non-therapeutic research.⁶⁴

This sequence of events is surprisingly similar to the fallout from the infamous 1966 publication by Henry Beecher in the *NEJM* in which he highlighted the multitude of ethics violations depicted in medical journal publications in the United States.⁶⁵ Beecher's article would eventually lead to Senate hearings on the Tuskegee syphilis experiments and the promulgation of The Belmont Report in 1979. The problem then, was not that the Nazis did not have codified principles for research ethics. The problem was that they simply did not follow them, or perhaps found them inapplicable to the particular kind of research they were doing or the research subjects they were using.

None of these ethical principles or codes could tell us what to do with a book like Pernkopf's Atlas. Having looked at this book, these codes seem wholly inadequate to the task. There is a heaviness to these texts that cannot be measured in ounces. It is deeply disturbing to leaf through its pages with the knowledge of its likely contents. To look at the emaciated faces depicted

et seq. (2018).

⁶¹ Jachen Vollmann, and Rolf Winau, "Informed Consent in Human Experimentation before the Nuremberg Code," *British Medical Journal* 313, no. 7070 (1996): 1445-1449.

⁶² *Ibid.*, 1445.

⁶³ *Ibid.*, 1445-1446.

⁶⁴ *Ibid.*, 1446.

⁶⁵ Henry Beecher, "Ethics and Clinical Research," *NEJM* 274, no. 24 (1966): 1354-1360.

in its illustrations is to quite literally look into the face of a history many of us would rather not think about. “Informed consent,” the centerpiece of modern bioethics codes, is not really the fundamental ethical issue raised by the Nazi project. As if informing of risks and benefits and asking permission would somehow have mitigated the ethical problem both then – with the genocidal aims of Pernkopf and the Third Reich – and today – with our remaining question of “What now?”

We suggest that if we are to ethically engage with Pernkopf’s Atlas, it will require us to fundamentally alter our understanding of what the book *is* and what the book *means*. The discussion is larger than whether the book belongs in an anatomy classroom or can ethically be used in instruction in anatomy. As the truth of the Atlas’s story unfolds, the referent that is “Pernkopf’s Atlas,” the thing that is this book, has changed. To say that Pernkopf’s Atlas is only an anatomy textbook, is no longer to say something that is true. It is so wholly incomplete as to be false. The framework of principlism fails; it is simply not large enough for Pernkopf.

V. Towards a Humanities Approach to Anatomy Instruction

Because we must consider whether Pernkopf’s Atlas is ethically relevant, it is important to re-emphasize the sensitive nature of the discussion. If the debate is approached without hesitation, unease, or even with bold repugnance and opposition, we miss the point and the potential. It is largely because of the sensitive nature of the debate that we *should* proceed. To stop all use of the Atlas would be too irresponsible and would ignore the complexity of the issue. Therefore, there exists an obligation to think deeply about how to move forward appropriately.

The Atlas should not be removed from the anatomy classroom or the library shelves altogether. Instead, its treatment requires a much broader, more interdisciplinary approach, one which is not reliant solely on principlism, or even ethics, as construed narrowly. Rather the text and what to do with it invites conversations of narrative and history and a kind of completeness of understanding that is not accessible if the text is seen solely as an anatomical atlas. As the Atlas transitions back into the classroom for the purpose of instruction, medical humanities provides the only appropriate and responsible method for addressing it.

VI. Medical Humanities

Medical humanities is an interdisciplinary endeavor bringing together various disciplines within the humanities and social sciences to better understand, enrich, and inform health, disease and healing. In a clinical sense, it reminds us that

human beings are at the heart of medicine – they are people *with* injuries, *with* disease – *people* experiencing illness and suffering and death. In an academic sense, medical humanities teaches us about where we have been and how it all began. Hippocrates, Galen, Vesalius, Virchow, Harvey, Semmelweis, and others help us understand what happened – how we got here and how to proceed. Medical humanities also encourages us to consider the complex nature of ethical issues in medicine so that through careful deliberation we might arrive at reasonable resolutions about how to act. Because we need to always remember that mere clinical facts are often not enough – the individual patient story is almost always begging to be realized – the various disciplines within medical humanities come together to ensure a more responsible and comprehensive, yet compassionate approach to medicine and healthcare in training and in practice.

In an attempt to define medical humanities, Howard Brody proposes a robust definition including three conceptions, which include 1) a list of disciplines, 2) a program of moral development and 3) medical humanities as a supportive friend. Each, according to Brody, is examined through the lens of a particular narrative so that we are reminded that “the conceptions of the humanities are linked to ways of living our lives and of addressing problems in the real world.”⁶⁶ In other words, the narrative is not just a way to illustrate the conception, but presents as the essential core of the discipline. Ultimately, by proceeding under the assumption that the medical humanities involves three complementary narrative-based conceptions, we are bound to more fully “educate future health professionals who will adopt a more critical and reflective stance toward their work and toward the knowledge that informs it.”⁶⁷

This is precisely why we view the Atlas through the lens of medical humanities. Brody’s first conception relies on the disciplines which comprise the medical humanities. Medical humanities operates within three core disciplines including literature, history, and ethics, and together these form the interdisciplinary lens through which we should view the Pernkopf debate. The complicated history of the text and its inherent, yet glaring ethical issues must be considered, but perhaps most importantly, the examination of the text from a literary point of view, as a form of narrative, or story, is essential. For this purpose, we subscribe to Kathryn Montgomery’s conception of narrative and its relationship to story: “in using the word narrative somewhat interchangeably with story we mean to designate a more or less coherent written, spoken, or (by extension) enacted account of occurrences, whether historical or fictional.”⁶⁸

⁶⁶ Howard Brody, “Defining the Medical Humanities: Three Conceptions and Three Narratives,” *Journal of Medical Humanities* 32, no. 1 (2011): 5-6.

⁶⁷ *Ibid.*, 7.

⁶⁸ Kathryn Montgomery-Hunter, *Narrative, Literature, and the Clinical Exercise of Practical*

One may argue that Pernkopf's Atlas alone does not constitute a narrative or story, yet the broader inter-textuality of the Atlas among the laws, discourses, and science literature of the time reveals such a story. The genre of textbook becomes obsolete as it is seen through this new interdisciplinary lens, and this becomes a mandatory viewing. Thomas Murray continues that "while the differences among the genres are at least as interesting as the similarities, the one important thing that they share is their implicit or explicit contrast to the view that the substance of morality consists of the set of true propositions."⁶⁹ It is useful to proceed under this assumption.

VII. A Narrative Approach

Regarding Pernkopf's Atlas, it is our responsibility to critically and carefully examine what lies in front of us with what we know to be true, while also and perhaps most importantly realizing the *inevitable gaps* in our understanding. How we approach the gaps – how we identify the true moral particulars of *the story* – has the potential to help us construct a meaningful narrative and glean a new understanding. Subsequently, through the development of a more intense moral imagination, we begin to work toward a sense of empathy, or at least a comprehensive way of knowing as we engage in a thorough and more responsible form of pedagogy.

Martha Nussbaum suggests that "style itself makes its claims, expresses its own sense of what matters. Literary form is not separable from philosophical content, but is, itself, a part of content – an integral part, then of the search for and the statement of truth."⁷⁰ The form is in part shaped by the content and the content is of course essential to the form – each relies on and illuminates the other. It may not seem, at least initially, as if Pernkopf's Atlas has any real literary form. However, by either assigning it literary form, or at least by viewing it through a literary lens, we can begin to uncover and develop the story, making sense of what is otherwise unclear. While Nussbaum refers to novels for the majority of her work, applying her framework to the Pernkopf text, allows for the construction of the narrative, producing similar benefits. To begin, students and other users of the text should consider the following questions:

Reason," *The Journal of Medicine and Philosophy* 21, no. 3 (1996): 306.

⁶⁹ Thomas Murray, "What Do We Mean by 'Narrative Ethics?,'" in *Stories and Their Limits: Narrative Approaches to Bioethics*; ed. Hilde Lindemann, 3-17 (New York: Routledge, 1997), 6.

⁷⁰ Martha C. Nussbaum, *Love's Knowledge: Essays on Philosophy and Literature* (New York: Oxford University Press, 1990), 3.

- Who is speaking? Who are the characters and who is the author?
- What are the relevant (and perhaps irrelevant) points of view?
- Do the characters have personalities? Which parts of the personalities are appealing, and which are not. Why?
- What overall shape and organization does the text seem to have? Form?
- What type of degree of control does the author have over the material?
- What status is claimed for the voices?
- Does the text give pleasure? If so, at what cost (if any)?
- To what extent do particular people, places and contexts figure?
- How precise is the text concerning its subjects?
- How does the text treat the contradiction? What is the contradiction?
- Does the text offer explanations?
- What does the text in question seem to say, or show, about human life, about knowledge, about personality, about how to live?⁷¹

Different from the novel, when applying these questions to a text like Pernkopf's Atlas, students are not provided explicitly with the details. Rather, they have to put in the time and do the work, examining the text for purposes beyond identification of tendons or nerves. As they identify, evaluate, analyze, and apply the context to the existing gaps, students begin to construct a morally relevant, and useful, story. While all of Nussbaum's questions require consideration, there are two which seem to be the most significant to the transition from anatomy text to narrative. The first requires consideration of the contradiction, which exists in the very purpose of the text. The second addresses our treatment of the text, and its representation of human life and ultimately, how we should live.

The first question considers how the text treats the profound contradiction of its creation and prompts us to define that contradiction. The contradiction, of course, is that Pernkopf created an anatomical atlas, with an intent to represent the ideal human form, for the purpose of anatomy instruction in medical education. However, it is true that the Nazis, including Pernkopf, had only one narrow view of "human" with all others – Jewish, Homosexual, Disabled, Roma – viewed as less than human. And yet, it was *these bodies* that filled the pages of Pernkopf's Atlas and, thus, from which students have taken their instruction on the ideal form of the human for more than half of the 20th century. Herein lies the central paradox of Pernkopf. To truly engage with the

⁷¹ Ibid., 32-35.

text in any ethically permissible manner requires the reader to consider how the text treats that contradiction, while identifying the relevant contextual details that can be added to the story to more clearly illustrate and define the contradiction.

The second question – what does the text in question seem to say, or show, about human life, knowledge, personality, and how to live – is ultimately what students must consider as they examine the full narrative. More specifically, what does the text say about human life, considering the author's position, the artists' allegiance, and the lives of those whose bodies are depicted? Who were they? What were their lives like? What were they resisting? How did they end up as anatomical subjects in a text created by Nazis? Further, what does the text tell us about knowledge in general and how that knowledge is obtained? To be sure, there are methods of obtaining knowledge that are ethically inappropriate. But what is our assignment when we find ourselves face to face with that knowledge? Students engage with it in an ethically appropriate and responsible manner, while also asking the difficult questions before determining how to move forward. Finally, we consider our own personalities and how they are formed by what we know and how we know it.

Once all of these things have been explored in-depth, we can begin to articulate what has been learned about how to live, even while remaining at odds regarding the ethical truths.⁷² The goal of this kind of critical engagement is not to land on a single correct answer. Rather, the appeal of narrative exploration and construction is that it provides context so that we might learn from its various interpretations and consider carefully what it might be like to be someone very different from ourselves; someone with a very different story.

Re-framing the text into a fuller, more complete narrative, equips us to consider our responsibilities from an ethical point of view. Through expansion of our own moral imagination, and with the tools necessary to consider complex ethical questions, we begin to approach ethical decision making *in practice* more responsibly. Principlism remains a useful guide, but a shift toward a narrative approach to help us navigate the murky waters of the most complex ethical issues, as demonstrated by the utility of Pernkopf and the troubling paradox it presents, is required.

Reframing the analysis into one which values narrative allows us then to reframe the ethical debate into one whereby narrative supplies the essential elements absent from an archaic principled ethical analysis. Narrative

⁷² *Ibid.*, 203.

[...] aims not at an explanation but at understanding. It moves us to ask: What happened then, and then what...? And whatever happens next in a narrative will follow intelligibly, though not by entailment, from what occurred before as the story unfolds. Narratives are normative in that they shape our perceptions and mold our moral sensibilities and practices. We relate to each other along the lines of stories we adopt and are adopted by. Stories that speak to us transform us and our ways with the world.⁷³

Therefore, in terms of pedagogy, the artifact itself has value, but *only* within a much larger narrative context. The Atlas should not be used simply as an anatomy text – we see this as not only incredibly limiting from an educational perspective, but more importantly, morally irresponsible. Further, the text with an accompanying letter explaining Pernkopf’s affiliation with the Nazi party is not sufficient. Rather, we envision an extensive, critical examination of and engagement with the text from historical, ethical, and literary perspectives: Specifically, a critical and reflective medical humanities approach.

VIII. Conclusion

The Holocaust is often portrayed as the consequence of a State gone mad, the brainchild of a ruthless dictator with a distorted vision of the ideal man and a genocidal project by which to achieve those ends. As Robert Proctor has noted however, this narrative incorrectly suggests that “Nazi racial policy [...] was imposed *on* [the scientific] community” when in fact, it “emerged from *within* the scientific community.”⁷⁴ The risk of this inaccurate portrayal of the role of medicine in the Holocaust is a de-emphasis on the enormous power and responsibility of clinicians or to suggest that the various codes currently in place somehow insulate us from such atrocities ever occurring again. This is a difficult argument to make, though, when infamous research ethics violations such as the Tuskegee syphilis experiments continued not only after Nuremberg, but after Helsinki and other international guidelines on research.

According to philosopher Carl Elliott, bioethicists and doctors often use language in a way that simply describes the world, rather than considers its

⁷³ Ron Carson, “The Moral of the Story,” in *Stories and Their Limits: Narrative Approaches to Bioethics*, ed. Hilde Lindemann, 232-237 (New York: Routledge, 1997), 233.

⁷⁴ Robert N. Proctor, “Nazi Doctors, Racial Medicine, and Human Experimentation,” in *The Nazi Doctors and the Nuremberg Code*, ed. George Annas, 17-31 (New York: Oxford University Press, 1992), 28.

content.⁷⁵ While it is important to collect the data and present the facts, this focus on *what* we say often results in detrimental misrepresentation, as has happened with the Pernkopf debate. Instead, the way the information is presented – the language used, and the style with which it is used – allows us to not just represent the narrative, but also to interpret it and create new meaning.⁷⁶ Pernkopf's Atlas is a work of art, both in the traditional sense and also as a form of literature. It is neither good nor bad. It is, rather, a very important narrative that requires critical and reflective examination so that it may serve to educate future healthcare professionals in a way that is consistent with our understanding of the value of the human condition, lest we not lose our understanding of who we are and where we come from.

Acknowledgements

The authors would like to acknowledge the assistance of Angela Potter, MA, whose contribution to the initial historical literature search provided helpful context for this article.

References

Aharinejad, Sayed Hossein, and Stephen W. Carmichael. "First Hand Accounts of Events in the Laboratory of Prof. Eduard Pernkopf." *Clinical Anatomy* 26, no 3 (2013): 297-303.

Angetter, Daniela C. "Anatomical Science at University of Vienna 1938-45." *The Lancet* 355, no. 9213 (2000): 1454-1457.

Arango, Dillon, Patrick Grieffenstein, and James P. O'Leary. "Selected Anatomists: At the Boundary of Contemporary Ethics." *The Journal of the American Medical Association – Surgery* 148, no. 1 (2013): 94-98.

Atlas, Michel C. "Ethics and Access to Teaching Materials in the Medical Library: The Case of the Pernkopf Atlas." *Bulletin of the Medical Library Association* 89, no. 1 (2001): 51-58.

Beecher, Henry. "Ethics and Clinical Research." *The New England Journal of Medicine* 278, no. 26 (1966): 1425-1430.

⁷⁵ Carl Elliott, *A Philosophical Disease: Bioethics, Culture and Identity* (New York: Routledge, 1999), 123.

⁷⁶ *Ibid.*

- Begley, Sharon. "The Surgeon Had a Dilemma only a Nazi Medical Text Could Resolve. Was it Ethical to Use It?" In *STAT* (2019). Accessed August 20, 2019. <https://www.statnews.com/2019/05/30/surgical-dilemma-only-nazi-medical-text-could-resolve/>.
- Brody, Howard. "Defining the Medical Humanities: Three Conceptions and Three Narratives." *Journal of Medical Humanities* 32, no. 1 (2011): 1-7.
- Büttner, Johannes. "The Origin of Clinical Laboratories." *European Journal of Clinical Chemistry and Clinical Biochemistry* 30, no. 10 (1992): 585-593.
- Carson, Ronald A. "The Moral of the Story." In *Stories and Their Limits: Narrative Approaches to Bioethics*, edited by Hilde Lindemann, 232-237. New York: Routledge, 1997.
- Coombs, Demetrius, and Steven J. Peitzman. "Medical Students' Assessment of Eduard Pernkopf's Atlas: Topographical Anatomy of Man." *Annals of Anatomy* 212 (2017): 11-16.
- de Campos, Fernando Peixoto Ferraz. "The Dawn of Modern Pathology." *Autopsy Case Reports*, 6, no. 1 (2016): 1-5.
- Elliott, Carl. *A Philosophical Disease: Bioethics, Culture and Identity*. New York: Routledge, 1999.
- Ernst, Edzard. "A Leading Medical School Seriously Damaged: Vienna 1938." *Annals of Internal Medicine* 112, no. 10 (1995): 789-792.
- Hast, Malcolm. "Pernkopf Anatomy: Atlas of Topographic and Applied Human Anatomy. Vol. 1: Head and Neck." *The Journal of the American Medical Association* 263, no. 15 (1990): 2115-2116.
- Hildebrandt, Sabine. "How the Pernkopf Controversy Facilitated a Historical and Ethical Analysis of the Anatomical Sciences in Austria and Germany: A Recommendation for the Continued Use of the Pernkopf Atlas." *Clinical Anatomy* 19, no. 2 (2006): 91-100.
- Hubbard, Chris. "Eduard Pernkopf's *Atlas of Topographical and Applied Human Anatomy*: The Continuing Ethical Controversy." *The Anatomical Record* 265, no. 5 (2001): 207-211.
- Israel, Howard A., and William E. Seidelman. "Nazi Origins of an Anatomy Text: The Pernkopf Atlas." *The Journal of the American Medical Association* 276, no. 20 (1996): 1633.
- Jewson, Nicholas. "The Disappearance of the Sick-Man from Medical Cosmology, 1770-1870." *International Journal of Epidemiology* 38, no. 3 (2009): 622-633.

Montgomery-Hunter, Katherine. "Narrative, Literature, and the Clinical Exercise of Practical Reason." *The Journal of Medicine and Philosophy* 21, no. 3 (1996): 303-320.

Murray, Thomas. "What Do We Mean by 'Narrative Ethics?'" In *Stories and Their Limits: Narrative Approaches to Bioethics*, edited by Hilde Lindemann, 3-17. New York: Routledge, 1997.

Nuland, Sherwin B. *Doctors: The Biography of Medicine*. New York: Random House, Inc., 1988.

Nussbaum, Martha C. *Love's Knowledge: Essays on Philosophy and Literature*. New York: Oxford University Press, 1990.

Pringle, Heather. "Confronting Anatomy's Nazi Past." *Science* 329, no. 5989 (2010): 275.

Proctor, Robert N. "Nazi Doctors, Racial Medicine, and Human Experimentation." In *The Nazi Doctors and the Nuremberg Code*, edited by George Annas, 17-31. New York: Oxford University Press, 1992.

Riggs, Garrett. "What Should We Do about Eduard Pernkopf's Atlas?" *Academic Medicine* 73, no. 4 (1998): 380-386.

Snell, Richard. "Pernkopf Anatomy: Atlas of Topographic and Applied Human Anatomy." *The New England Journal of Medicine* 323, no. 3 (1990): 205.

The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, "The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research," (1979). In U.S. Department of Health & Human Services. Accessed August 20, 2019. <https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/read-the-belmont-report/index.html>.

"Trials of War Criminals before the Nuremberg Military Tribunals under Control Council Law No. 10." Vol. 2, 181-182. Washington, D.C.: U.S. Government Printing Office, 1949. <https://history.nih.gov/research/downloads/nuremberg.pdf>.

U.S. Department of Health and Human Services, Office of the Assistant Secretary for Health, Office for Human Research Protections. "45 C.F.R. 46, et seq.: Basic HHS Policy for Protection of Human Subjects." 2018. <https://www.hhs.gov/ohrp/sites/default/files/revised-common-rule-reg-text-unofficial-2018-requirements.pdf>.

Vollmann, Jache, and Rolf Winau. "Informed Consent in Human Experimentation before the Nuremberg Code." *British Medical Journal* 313 (1996): 1445-1449.

Weissman, Gerald. "Springtime for Pernkopf." *Hospital Practice* 20, no. 10 (1985): 142-168.

World Medical Association, "World Medical Association Declaration of Helsinki: Ethical Principles for Medical Research involving Human Subjects," *Journal of the American Medical Association* 310, no. 20 (2013): 2191-2194.

Yee, Andrew, Ema Zubovic, Jennifer Yu, Shuddhadeb Ray, Sabine Hildebrandt, William E. Seidelman, Rabbi Joseph A. Polak, Michael A. Grodin, J. Henk Coert, Douglas Brown, Ira J. Kodner, and Susan Mackinnon. "Ethical Considerations in the Use of Pernkopf's Atlas of Anatomy." *Surgery* 165, no. 5 (2019): 860-867.

