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### Anthropodermic Bibliopegy: an Extensive Survey and Reappraisal of the Phenomenon

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#### **ABSTRACT**

During the 19th and 20th centuries, the practice of binding books with human skin widespreaded. Although anthropodermic bibliopegy has often been mentioned, no comprehensive overview has previously been undertaken. This study provides the most extensive survey of books bound in human skin conducted to date.

Curation and study of human remains is a major concern for museums. In the search of the most appropriate physicochemical identification method to carry for the authentification of the leather, I discusse the advantages and disadvantages of each archaeometric test. Protein signature, immunochemistry and DNA tests were assessed. In order to highlight the importance of a reflexion around the exhibition of these artefacts, sociological processes involved in their making and selling were discussed. Human bindings were associated with the judiciary system in Great Britain, France and U.S.A. as material witnesses to justice in action and part of *post-mortem* rites performed around criminal bodies. The skin were often retrieved from the bodies of the poor. This fact has not been without consequences for the study and exhibition of these remains. Finally, ethical considerations will be considered in order to advance towards a better preservation and presentation of these objects to the public.

KEYWORDS: bibliopegy, human leather, physicochemical analysis, curation

Books have long been objects of knowledge and pleasure, but they have also at times become ostentatious luxury items, allowing their possessors to express both their status and personality. This latter function became common in the late 19th and early 20th centuries when bibliomania became widespread among the bourgeois and aristocratic social strata of Western Europe (Silverman 2008). It was in this setting that the use of eccentric binding materials blossomed as a practice. In the hopes of attracting an eclectic array of zealous book collectors, an extensive selection of

materials, already known previously, were used, including precious silks from Japan, China and Persia, ivory, and cork, as well as exotic animal skins (such as ostrich, shark, python, seal, walrus, kangoroo, crocodile, and java lizard) (Blumenthal [1955] (1969)).

There seemed to be no limit for these collectors in their quest for novelty, afflicted as they were by what has been termed: 'bibliopegic dandyism' (Jackson 1950). It is therefore perhaps no surprise that human skin, already known to have been used in the creation of a variety of other objects<sup>1</sup>, was subsequently included in the long list of materials constituting bookbindings.

The academic world has, from time to time, cast a curious eye upon this phenomenon. However, although anthropodermic bibliopegy has often been mentioned, no comprehensive overview has ever been undertaken. Recent publications focusing on this phenomenon have consisted of specific case studies (Harrisson 2017) or have referenced information previously provided in earlier and dated (though abundant) sources (Blumenthal [1955] (1969); Thompson 1946, 1969). This relative timidity of researchers faced with these materials as their subject matter may be driven by the sensitive and ethically charged nature of these objects.

I have undertaken the creation of a thorough catalog (Kerner 2017), detailing all of the books which have been purported to be bound in human skin, and based upon a review of the existing literature and the consultation of archival sources from the major French, British and American auction houses (Table 1). Once the compilation of the data into the extensive catalog was complete, I then verified the

existence of each book with the institution responsible for its conservation, and gathered unpublished data relative to the artifacts in question, conducting inquiry with the help of the curators and booksellers among archives and shelvings of the libraries. Presented here is a survey of this catalog which constitutes the very first analytic inventory dealing with the phenomenon of anthropodermic bibliopegy. Then, the analysis of the corpus will lead us to reflections on the social functions that these singular books may have performed.

Methodological obstacles including a lack of protocols for distinguishing human skin from other leathers have resulted these objects being under-studied. I personaly didn't conducted any analysis on the book I saw², arguing that the question of testing these peculiar objects is too complex to be conducted before a serious methodological and ethic reflection. Curation and study of transformed human remains is a major concern for museums (Jenkins 2011), moreover when not so old societal issues come into play. Thus, in this article, I evaluate several methods for the identification of these materials and recommend a suggested protocol. I will also raised some ethical considerations hoping that this reflection will allow to begin a study of these books in the better conditions.

#### I - Inventory

I was able to identify 136 volumes (existing, allegedly existing or ordered by collectors without us being able to verify whether or not the order was fulfilled). The datation of the bindings spread from the XIIIth to the XXth century. In the corpus, I was able to find the current location of 70 volumes (Table 1). These works are mostly of literary or scientific nature, typically preserved in university libraries. A few books made with the skins of criminals (4, 7, 12, 19, 29, 30, 34, 46, 50, 71, 76, 88, 90, 109,

111) also survived and are exhibited in local museums. On the contrary, subversive and profane works (including erotica, as well as common literature) were not able to be localized, as they were housed and preserved by private collectors. While the descendants of the original owners may very well have kept them, no trace of their continued existence was found today despite our research.

#### *I (1) - A variety of technical procedures*

The methods used in the preparation of human skins for book binding vary according to the origin of the skin. The skins of consenting donors (8, 11, 19, 58, 90), those of hospital patients (2, 6, 21, 25, 36, 42, 60, 68, 85) or executed criminals (see list above) (which make up 80 per cent of the cases included in our corpus) were prepared intensively according to traditional tanning practices. These processes were often very similar to the one used in the creation of leather from animal hides. Most often, the preparation of these skins included stages of tanning, dyeing, gilding and varnishing<sup>3</sup>. This rigorous preparation ensured a perfect preservation.

Skins taken from tattooed persons who lived on the fringe of society were also applied to book bindings (70, 79, 84, 92, 105, 106, 20 per cent of cases in our corpus). Their preparation was not afforded the same attention. These were prepared differently than non-tattooed skins, and were merely rinsed or macerated in ether and then dried on frames<sup>4</sup>. They were rarely actually tanned, and were usually undyed and unvarnished (Sue 1765).

The preparation of skins was sometimes achieved in an artisanal manner and was carried out by the doctors responsible for the removal of the fragment of skin.

The medical doctors Dr. J. Stockton Hough (1845-1906) and Dr. L. Bouland (1839-1932) (Rogers & Horrocks 1989), were both personally responsible for the preparation of hides as the handwritten notes found on their books prove it. However, in these cases, the practice of binding was nonetheless, most often subsequently performed by a professional. Fragments of human leather were sometimes worked by master binders such as René Kieffer, and thus attained the status of objects of art (De Crauzat 1926).

#### *I (2) - Varying and not always identifiable providers*

Human skin providers are typically involuntary suppliers, most often retrieved from the bodies of the poor whose remains were not claimed after a death in hospital as most of handwritten notes found on the books mentions it (15, 16, 17, 18, 19, 20, 21, 24, 25, 27, 34, 36, 37, 42, 44, 46, 48, 50, 58, 60, 62, 63, 64, 68, 76, 80, 85, 90, 91, 94, 95, 97, ). They remain anonymous and are designated only by their sex (2, 6, 17, 21, 23, 25, 27, 36, 37, 42, 43, 60, 67, 68, 85, 91), and possibly by their cause (7, 21, 25, 36, 42, 60, 91) and place of death (2, 6, 21, 25, 36, 42, 85, 91)<sup>5</sup>.

Of the 136 volumes in our catalog, the names of only 28 of the people whose skins were used are known by name (7, 12, 19, 20, 21, 25, 27, 29, 30, 34, 36, 46, 48, 49, 50, 58, 71, 76, 88, 90, 109). Of these people, 17 of them were criminal (4, 7, 12, 19, 29, 30, 34, 46, 48, 49, 50, 71, 76, 88, 90, 109, 111). All of the others were celebrities in the world of folk art (Perky the giant, 27, the 'negro' Bamboula, 87) or intellectuals (Jacques Delille, 108). Only one indigent woman, Maria Lynch, figures among the named (21, 25, 36) (Kerner 2017).

Statistically, consenting donors are rare. However, I have identified at least eight cases of voluntary donors (8, 11, 13, 19, 44, 58, 63, 90). Members of the intellectual elite dominate this group. I count two poets (8, 63) who wished to bind their own works with their own skin, as well as three bibliophiles (11, 13, 58) who wished to become the binding for a work of their favorite author (Thompson 1968). It's interesting to highlight that these persons were always men and that the way their whim has been seen by their contemporaries differs radically depending on their reputation. Their gesture could have been seen as sublime – in the case of lovers and distinguished professors – or ridicule – in the case of a failure of an artist and self-published author as E. Kaffmann – (Cim 1909). Finally, two criminals (19, 90) are also counted among these seven, though their full consent must remain cast in the shadow of doubt (Kerner 2018).

#### I (3) - Thematic works

A review of the data reveals that the thematic content of books bound in human skin is varied in nature.

Of the 136 volumes in our inventory, the thematic content of 127 volumes is known (Figure 1). Another 46 are works of common literature (22, 24, 32, 35, 37, 41, 43, 45, 66, 67, 69, 70, 74, 79, 82, 83, 84, 87, 92, 94, 99, 101, 102, 103, 108, etc), with an over-representation of essays on death and melancholic poems (16, 47, 55, 56, 57, 60). There also exist at least two political texts (15, 104), nine works of erotica (6, 66, 67, 72, 73, 96, 97, 105, 106), and nine religious texts (six of Judeo-Christian tradition

5 39, 53, 54, 65, 91 and one of Muslim tradition, 89). A total of 40 volumes deal with medical science (1, 2, 4, 17, 18, 21, 23, 25, 27, 28, 36, 40, 42, 51, 62, 68, 81, 85, 86, 107). Finally, the subject of judicature occupies an interesting place since seven books describe the life or the trial of condemned individuals sentenced to death (12, 19, 30, 34, 46, 50, 90), three books are texts of law (33, 48), and one is an almanac of delinquents (10).

#### I (4) - A collection of comprehensive works

#### I (4, a) - Iconography and interrelated content

With the phenomenon of anthropodermic bibliopegy, I distinguish a desire to create a global or all encompassing work. Thus, the bookbinding material often echoes the subject of the book, proposing what Dr. Bouland referred to as 'binding congruent to the subject' (Figure 2). It is probably not insignificant that the work entitled '*Chair*' ('flesh' in french) by Verlaine (104) was created using tanned human flesh. This relatedness between the nature of the container and its contents has given rise to many puns, in both French and English. For example, a press article describing a volume of E. A. Poe's work (86), bound in human skin, was titled '*Peau et Poe'* ('Skin and Poe' in french) (*Intermédiaire des chercheurs et curieux* 1910: 602).

The identity of the skin provider may be chosen with care in order to further the quest for humor. Thus, the Samuel Johnson's Dictionary (70), more commonly known as Johnson's Dictionary, was bound in the skin of J. Johnson. This relationship between provider and object is not exceptional: gynecology books and works of erotica are often and specifically bound with the skin of women (20, 24, 34, 40, 84).

And it is common for the book bound in a criminal's skin to carry within its pages the story of his life (J. Allen, 19), his confessions (L.-M. Rambert, 89) or the summary of his trial (W. Corder, 33) (Kerner 2018). Lastly, a book dealing with the pituitary gland, often responsible for growth disorders, was bound with the skin of a giant (26)<sup>6</sup>.

By observing these books, I realized that the imagery applied to the leather is also carefully chosen, reflecting as much as possible the subject of the work within. A gallows motif is thus cut out on the cover of J. Horwood's book as a graphic reminder of his death sentence (48). A red band recalls the scene of the crime on the cover of W. Corder's 'The Red Barn' (33). In the case of the book bound with the skin of L.-M. Rambert (89), the fragment of epidermis retains the hair and nipple of the condemned man, in an effort to preserve some part of the living and to provide the beholder with the sensation of looking at a veritable portrait (Figure 4). As for tattoos incorporated into bindings, they are also chosen according to the contents of the work (portraits of women for books whose protagonists are female (70, 92), a flag for the cover of 'Le Drapeau' ('The Flag' in french, 31) of J. Claretie, and so on).

The book is thereby a global work in which the content, selected iconography and leather come together to form a coherent and comprehensive whole. The lengths to which are gone in order to exhibit such works also speak to this desire to create an all-encompassing experience.

#### I (4, b) - The exhibition of books

After an overview of the literature related to the topic (see references from the census, Table 1) I realized that rare are the cases of books bound in human skin being placed on the shelves of a library without first being showcased in an original manner.

A few have been displayed in bookstore fronts as elements of advertising in Berlin and Milan (Thompson 1968). Others have been integrated as features of provocative scenography alongside other objects of 'murderabilia' as a means to inspire intense feelings within the onlooker. In line with this trend, the skeleton of J. Horwood was thus exposed at the University of Bristol from 1821 to 2011, with a rope around his neck, in proximity to the book bound in his skin (Fissell 1991: 168). W. Corder's death mask and scalp still rub shoulders with 'his' book at the Moyse's Hall Museum in Bury-St-Edmunds, despite countless ethical debates surrounding their exposition.

#### II – Interpretation

These books functioned in a variety of ways: from the *memento mori* to the mere object of curiosity, to the role of deterring agent utilized by the judiciary forces that be. Whatever the case, a book bound in human skin has always been linked to a strong social discourse.

In order to draw the most relevant anthropological conclusions, it is important to take into account the chronological evolution of the connotations attached to these books, as well as the context of the production and sale of such objects.

#### II(1) – Relationship to the realm of the judiciary

The first known cases of books bound with human skin are associated with the judiciary system and were bound with the skin of convicts condemned to death. The very first volume of this type was created in Great Britain in 1606 (46)<sup>7</sup>. There is then a rupture in testimonies about this kind of production, followed by a significant wave of manufacturing between 1800 and 1830. The trend was slightly later to catch on in the USA, with a first occurrence dated to 1837 (19). Finally, France also produced several volumes in the 1880s (14, 17, 29) (Figure 1).

These volumes played a complex role in the unfolding of 'post-execution rites' (Hurren 2016), among other practices such as dissection (Richardson 1987), experiments on the body (Flammarion 1894), exposure of the cadaver (Tarlow 2016; Matteoni 2016; Penfold-Mounce 2010) or secondary use of bones in anatomical collections (Geller 2015). This complex topic has been widely covered by many researchers and I invite readers to consider the following paper, focused on the close connection between abuse of the criminal body and manufacture of artefacts in the stigmatization process of outlaws, for a synthesis (Kerner 2018).

#### III (1, a) Material witnesses to justice in action

The crimes committed by skin providers were always serious (homicides, *lèse-majesté* crimes and treason) and the creation of this kind of book became an exemplary sanction. It becomes apparent that this practice was one of humiliation (Harrison 2017: 383; McGrowen 1987: 653), used as an educational tool – and a persuasive one at that – with in mind the population that would be the spectator of this treatment (Nystrom 2014). In transforming a number of death row inmates into

national anti-heroes, whose treatment became archetypal in its rigor, the British, American and French Justice systems succeeded in creating strong symbols. The bodily fragments of these individuals thus incarnated the image of the crime mercilessly punished. Furthermore, they thereby served as visual support to moralizing fables that were then easily disseminated among the most popular classes. In this context, the authorities exhibited the books in public places.

However, these books were also relics that were exchanged in private settings. In this case, the possession of such memorabilia became essential to proving one's presence at the execution or the 'spectacular *post-mortem* encore' that constituted the public dissection (Hurren 2016: 276). These souvenirs could take the form of a segment of the rope used for hanging, or a fragment of bone (Nunn 2005), or a piece of tanned skin that might be used to cover various everyday objects.

These bound works were thus a materialization of different social frontiers: those between the condemned and the justice department responsible for the condemnation, followed by the possession of the criminal's body, but also those limits between the spectator of judicial ruling and the criminal who becomes a 'victim'.

#### II (1, b) Witnesses to individual suffering

Far from their role in provoking humiliation, these artifacts have seen their function evolve and have become important elements in a positive re-appropriation by the descendants of those condemned criminals whose skin they are bound in. They became a medium for the perpetuation of the criminal's legacy within a family setting<sup>8</sup>.

We can also consider that the justice system was not merely a machine designed for crushing the hopes of the most hardened criminals. By giving the condemned criminal the opportunity to suffer and to leave behind symbolic proof of their punishment, the justice system also offered them an opportunity to publicly seek forgiveness through their suffering and humiliation. A paid debt as civil martyrs: therein would be the ultimate freedom for the condemned, thus allowed a role in the staging of their own demise.

II (2) - Anthropodermic Bibliopegy in the context of the search for curiosities and a fascination for tattooed skins

In the late 19th and early 20th centuries, many tattooed human skins were treated in order to better preserve them for conservation. This effort was made with either preservation in a museum setting in mind, frequently related to ethnographic research, or, as was more often the case, for medico-judiciary archival purposes (Quétel 2013; Angel 2013; Locard 1932). A. Lacassagne proposed to decipher criminal personalities *via* the joint observation of anthropometry and the psychology of the subject. The presence of tattoos was considered one of the 'signs' of latent criminality in patients (Putigny 2007). The study of bodily modifications would come to be at the heart of his research.

Along with the circulation of the writings of A. Lacassagne, a trend was born and the collection of tattooed fragments of skin transcended the framework of the academic milieu and spread to the upper classes. Thus, at the beginning of the 20th century, there existed an important market for tattooed human skin, existing outside of the circuit of anthropodermic bibliopegy (Risser 1937). Secondary use as a binding was only one aspect of the exploitation of these precious fragments, which could even

be reserved *in vivo* with the tattooed subject (Bazal 1934). The cost of such a purchase was prohibitive for the middle classes and this phenomenon mainly concerned a cultivated subset of the social elite.

The book made of the skin of L.-M. Rambert (90) thus presents itself as a fascinating object at the crossroads of two phenomena. By binding a book filled with the confessions of L.-M. Rambert with the skin of the criminal himself, I assume that J. Lacassagne, son of A. Lacassagne, reclaimed the old tradition of binding with the skin of the condemned, while all at once illustrating the preoccupation with tattooed skins that was so in vogue for his time.

II (3) - The muse, the poetess, the martyr and the prostitute: the place of femininity within the phenomenon of anthropodermic bibliopegy

#### II (3, a) Authors

Women occupy a special place within the phenomenon of anthropodermic bibliopegy. It is interesting to note that only two female authors have received the honor of having their works bound in human skin. The first is L. Bourgeois, a renowned midwife, known to have stood up to Court surgeons and to have advocated for the contributions of women to medicine thanks to her book 'Recueil des Secrets auquel sont contenues ses plus rares experiences pour diverses maladies, principalement des femmes, avec leurs embellissement' (25) (Vons 2008). The second is P. Wheatley, author of the book 'Poems on Various Subjects, Religious and Moral' (110), a poetess with an extraordinary destiny since she was a slave before becoming the first black American woman author of world renown. Both are women who were out of step with their time and who managed to free themselves from the social

constraints imposed by their sex and ethnicity, in order to gain a reputation worthy of their male counterparts. It is undoubtedly this peculiarity that earned them a special place within a practice that normally considers women only as an object of desire and fascination.

#### II (3, b) Female skin suppliers and eroticism

The sponsors of books bound in human skin have been exclusively men, and except for the cases of Bourgeois and Wheatley, women are relegated to participation in the creation of objects by bequeathing their skin. The providers are almost always anonymous but their sex is carefully stipulated as a criterion of distinction (it is the case for all the productions of Dr. John Stockton Hough cited in the census (2, 17, 21, 36, 42) as well as for most of the erotic novels counted (6, 73, 96, 97,)). These women are thus reduced to their mere biological sex, and the manuscript annotations obliterate all evidence of the social being that they were.

A notable exception is the Flammarion donor (44), provided with a charming name though certainly not her own: the Countess of Saint-Angel. Her identity has been the subject of much hypothesizing and tale telling. Indeed, she was made noble by the writings of journalists (whereas her actual class was not known), in order to further romanticize the story of her tragic destiny (Blumenthal [1955] (1969)). The choice of the fragment of tanned skin, described as having come from 'delicate shoulders', participates in the manufacturing of a distinguished, almost virginal image and is in stark contrast with the typical zones of selection, which concentrate on areas with high erotic potential.

Indeed, based on my census, the most frequently selected skin samples from women providers come from the breasts (five volumes, 6, 22, 73, 96,), but also from the thighs (four volumes, 21, 25, 36) and the waist (two volumes, 2, ). These selected zones reflect an associated sensuality, and underscore that the use of female skin for the purposes of anthropodermic bibliopegy is directly related to its being inherently imbued with erotic symbolism. Furthermore, with the exception of Flammarion's 'Terres du Ciel' which is a book dealing with astronomy (44), "Life of Jesus" (91), "Les mystères de Paris" (103) and "Des destinées de l'âme dealing with life after death (60) all of the works bound in women's skin deal with sexuality (whether it be from a poetic, erotic or medical point of view: 6, 11, 22, 25, 36, 37, 38, 42, 67, 73, 85, 96, 97, 101, 102, 106).

Doctors have a very intimate relationship with the skin fragment since they sometimes are responsible for it in all stages of its manipulation, from its removal from the corpse to its preparation and subsequent use in binding. Their relationship to the object is not devoid of sensuality: indeed, the tone of Dr. Bouland's note is, in this respect, rather suggestive (Figure 2).

If in modern medicine hyper-sexualized and deviant behaviors seem to be confined to the rite of passage of the physician in the making (Godeau 2007), the professional standards for physicians in the 19th and early 20th centuries and their ethical position in relation to the patient's body were not as moderated as they are today. Thus, eroticism and dark humor were still part of the daily life of practicing physicians for this era (the human skin bound book 'A Book about Doctors' by J. C. Jeaffreson (62) – to cite only one – delivers some revealing anecdotes in this domain). In this context, books made with skin of women seem to have replaced the Anatomical Venus (Ebenstein 2016) and formaldehyde treated entire women's bodies

(McDonald 2005) in offering the members of the medical community a taste of voluptuousness.

The powerful erotic symbolism of the works bound in female skin has prompted some researchers to correlate the use of these skins to sexual deviances related to necrophilia (Aggrawal 2016). This is a psychoanalytic interpretation that is likely a bit too advanced, and above all too generalized, specifically as pertains to those instances in which we may perceive a variety of intentions related to these works, depending oftentimes on the creator, manipulator or consumer. In our view, the use of a woman's skin is in most instances related to an effort toward public provocation in the context of a trend that was already deemed 'decadent' in nature.

Mistreated and objectified or elevated to the rank of a delicate muse, the woman providing her skin is a polymorphous persona. Whatever her status, the female leather provider (unlike the anonymous and forgotten male provider), participates in the creation of the book's associated charm. In this sense, women - most often in spite of themselves - contributed to the spread of this phenomenon.

#### II (4) – The medical realm

A vast majority of the works (24 volumes) bound with human skin, and dating to the end of the 19th century, is of a medical persuasion (1, 2, 4, 17, 18, 21, 23, 25, 27, 28, 36, 40, 42, 51, 62, 68, 81, 85, 86, 107) (Figure 1). This practice embodies a whole series of inter-personal and inter-class relationships: between the different doctors among themselves, but also between different members of the medical profession and those outside of it, as well as between men and women in general.

#### II (4, a) The initiated versus the layman

Works of human skin constitute a specialized production that presents a marked boundary between the patient and the possessor of medical authority. It is thus the concretization of the doctor's ultimate seizure of power over the patient by the use of his body for purely 'playful' purposes.

Indeed, this artifact is the only object produced with human material, by doctors, whose creation is not justified by a need to deepen knowledge or for the transfer of knowledge to students of the discipline (skeletons, various anatomic collections, etc.). The objects produced remain linked to the medical practice (consultation document holders, medical books, *etc.*), just as it is for the doctor to prove, by the possession of such an object, his full integration into the medical profession. It is a matter of exposing one's socio-professional belonging by the possession of a singular object, moreover considered repulsive by the majority of a dilettante populace.

A hierarchy within the medical profession also seems to be underscored by the possession of this type of item. If even the busboy has access to the raw material needed for the production of a book bound in human skin, it is typically the distinguished doctor who possesses sufficient income to transform the material into a finished, luxury object.

#### II (4, b) An amoral production

Doctors have developed a particular state of mind by establishing a distance between themselves and their subject matter, *i.e.*, the suffering patient or the deceased. The latter momentarily loses its status of person in order to assume that of

an object. This forced detachment from the patients and their bodies is a protective mechanism against sentimentality, and it ensures the smooth advancement of treatment and research. This is what W. Hunter described when he spoke of the 'necessary inhumanity' involved in the dissection of dead bodies (Hunter 1784). This non-empathic behavior intended to be adopted only sparingly and during very precise operations within the physician's range of responsibilities, unfortunately sometimes went beyond the scope of medical investigation. In this case, such behavior may have led to superfluous *post-mortem* treatment on the part of physicians, resulting in, for example, the creation of human skin bindings. Because such activity no longer has anything to do with a search for new knowledge or a passing of a previously existing empirical understanding, it becomes injurious to the patient and their descendants. It is for this reason that the sampling of a corpse for the creation of an object whose purpose is amusement appears immoral in the eyes of our contemporaries. And yet, such a production was also considered an amoral act in the era of its manufacture.

In what was perhaps an effort to rehabilitate the opinions of their colleagues, some authors attempted to liken this practice, exercised by certain doctors, to a commemorative act (Guelle 2002: 89). This assertion is based on the fact that books created and annotated by doctors such as J. Stockton-Hough (2, 17, 21, 36, 42), or J. Leidy (68) helped to preserve the memory of some of their patients to this day. I dare argue that this is an unintended side effect. The initial and primary intention of the bookbinder should not be confused with the result obtained several decades later. Indeed, concerning J. Stockton-Hough, a wish to pay tribute to the patients is improbable, as his disrespect for them is palpable (*inter alia*, through the handwritten note I found on the leaf of 'Speculations on the Mode and Appearances of Impregnation in the Human Female' which mentions that the human skin has been

tanned in a 'pot de chambre' (chamber pot in french)). Concerning Leidy, he used the skin of a soldier when he was working as a doctor in the Union Army's Satterlee Army General Hospital in order to bind the book he wrote 'Elementary Treatise on Human Anatomy' (Marvin 1994). This move seem to fall under an egotic pulse from the author more than an homage to the deceased. Although the context of the period must be taken into account to avoid unjust condemnation of our predecessors, it is clear that their aim was by no means a commemorative one. At most, it can be argued that the intention was not deleterious, though it may resemble the aggressive appropriation of one social category by another.

#### III - 'Proving' the human provenance of leather: methods and limitations

As with all original practices that include human body parts, anthropodermic bibliopegy has aroused fantasies and tall-tale telling alike. These fictions have been widely conveyed – be it, due to ignorance, or a taste for sensationalism – by newspapers and bibliophile publications alike. A reasoned re-evaluation of actual books bound of human skin requires an appraisal of the diagnostic methods used thus far, as well as those that will have to be implemented in the future, in order to determine the taxonomic affiliation of the skin provider.

#### III (1) - Identification by oral or written testimony

The vast majority of human skin texts have been identified by oral testimony subsequently translated into writing. The sources are varied and include newspaper articles (14), letters of correspondence (44), wills of consenting donors (11, 62, 63,

64, 90), as well as autographs (15, 16, 17, 18, 19, 20, 21, 24, 25, 34, 36, 42, 46, 48, 50, 60, 68, 76, 80, 85, 91, 94, 97) directly affixed to the cover or one of the pages of the book in question for 32 cases. For example, '*Tabulae scelecti et muscularum corporis humani'* by B. S. Albinus contains the following autograph 'This book was bound by me in human skin. Berlin. 1 June 1910. Paul Kersten'.

The use of these sources must be preceded by a critical investigation of the provider of the information. As they provide a discourse that is inevitably shaped according to the audience for which they were intended, it is necessary to confront the incompleteness of some of these official sources, as well as, the wandering tendencies of some journalistic texts.

Though these sources may be valuable, they cannot be considered to constitute formal 'proof' of the existence or authenticity of the books in question.

#### III (2) - Identification by macroscopic and microscopic observation

Researchers using observation as means to identification may perform this task at two levels of evaluation: macroscopic and microscopic.

On a macroscopic scale, leather has often been identified as human because of the presence of nipples retained on the tanned skin fragment (6, 73, 90, 96). On a microscopic scale, the arrangement of follicles on the surface of the skin is specific to each species and can, therefore, theoretically allow for identification (4, 78).

Whatever the scale, identification by simple visual inspection poses obvious problems because of the resemblance between human leather and porcine leather. Indeed, the similarity between the skin of a human and that of a pig has been stressed many times by doctors (Ranamukhaarachchi 2016). This is mainly expressed in the morphology of the follicles, the cellular composition of the epidermis and upper layers of the dermis but also in the skin immune system's functioning (Summerfield 2015). This similarity has led researchers to use pigskin for experimental purposes in order to better understand the development of melanomas in dermatological cancer (Herron 2009), as well as to improve care in the case of second degree burns (Davis et al. 1990).

Further examination is therefore necessary in order to identify the skin provider species.

#### III (3) - Physicochemical identification

The taxonomic determination of skin providers is positively feasible only through physicochemical analyses such as protein analysis, radio-immunological doses testing or genomic signature identification.

Several processes can be used on leather, with varying degrees of success. Our research has led to the discovery of contradictory results provided by successive analysis performed on a single object. This was the case, notably for example, in the attribution of the species whose leather was used in the binding of 'Huguenot Idolatry' (93) (Harrisson 2017) (Figure 3). Lowenstein concluded that the book has been undoubtedly bound in human skin (Lowenstein 1985) whereas the analysis led by

Kirby yielded a negative result<sup>9</sup>. As both researchers used the same method (PMF analysis), it sounds like this difference in the result is linked to divergent protocols of sampling and/or decontamination procedures of the sample. However, because of the sensitive nature of these objects, it is important to minimize loss or damage of the book. Therefore, I argue that avoiding excessive numbers of sampling for identification by a consensus building is an urgent matter.

In this perspective, following is a non-exhaustive overview and evaluation of the various methods that can be used to distinguish different sources of leather.

#### III (3, a) - The identification of the protein signature (PMF; LC-MS / MS)

Among the mass spectrometry (MS) protein identification methods, differing degrees of precision can be achieved. Peptide mass fingerprinting (PMF) analyses represent the simplest and most commonly used analysis of archaeological objects. They consist of a simple measurement of the mass of tryptic peptides derived from a protein (Thiede et al. 2005). The comparison of the trypsin peptides profiles within a reference database then makes it possible to identify the protein. The disadvantage of this process is that its successful completion can only be guaranteed by a relatively pure preparation: in other words, the protein must be significantly isolated in order to be recognized. This high sensitivity requires a very careful samples preparation and can lead to biased results.

The efficiency of identification can be increased with LC-MS / MS and Nano LC-MS / MS technology. These techniques use liquid chromatography (LC) coupled with mass spectrometry (MS) in order to extract the 'signature' of the proteomes

analyzed, and propose identification, even when these are not isolated. The nanometric version has an even greater sensitivity that allows for the identification of peptides even once they have been modified (for example by an enzymatic digestion process) or when they have been inserted into a complex protein mixture (Gaspari and Cuda 2011). This means that leathers that have been highly modified by an extensive tanning process still can be identified.

The identification of proteins by MS has been successfully used on a number of medieval and modern documents made of skin (Fiddyment et al. 2015). A positive aspect of the MS identification processes is that they are nearly non-visible on a macroscopic scale and therefore compatible with a heritage preservation policy (Kirby et al. 2013). Theoretically, a simple friction of the surface of the object to be analyzed with a non-latex eraser is sufficient for a sample. The convenience of the sampling procedures often motivates the choice of this method of analysis but, as we will see later, this choice is not without consequences in term of contamination issues.

#### III (3, b) – Immunochemistry (pRIA)

On non-prepared skin, the provider species can be also determined by radioimmunological doses testing (pRIA). This method consists of an exploration of the cells and antibodies of a tissue in order to determine the specific immune mechanism that the organism follows. Since each species own specificities in term of immunity, the taxonomic affiliation of the individual can be determined according to the composition of the sample. It has yielded convincing results in the analysis of prehistoric residues (Lowenstein et al. 2006; Reuther et al. 2006). Unfortunately, it has never been tested on prepared skin. One more time, theoretically, the small fraction of material necessary for the analysis makes the process non-visible at a macroscopic scale (Ferenčík 1993).

#### III (3, c) - Identification of a genomic signature (DNA)

The analysis of DNA fragments following their multiplication by PCR<sup>10</sup> is commonly used on bio-archaeological remains (Geigl 2015) and for identifying book leathers (like it was the case for 'El Viaje Largo' by T. Medina, 72). Furthermore, it may be advantageously used toward the differentiation between species supplying skin (Hummel 2003). Because of the handling of books by human, it sounds obvious to everyone that the identification of genomic signature on book is not possible by making a sample upon surface: a sampling inside of the thickness is required, and, as a result, triggers a destruction of a small part of the artefact. This constraint often discourages the use of DNA analysis on books so-told bound in human skin.

#### III (3, d) - Pros and Cons of the Different Methods

#### COST

Protein identification methods are reasonably priced with an amount of 80 US\$ for a LC-MS / MS or Nano LC-MS / MS test, and about 60\$ for a PMF test. DNA and immunochemistry remains the most expensive methods, with widely varying prices across laboratories. Most of the time, partnership with laboratories solves the problem and allows researchers to choose their identification method following other considerations.

## EFFICIENCY FACE UP TO ALTERATIONS CAUSED BY TANNING PROCESSES AND GENERAL STATE OF PRESERVATION

First of all, it is important to be aware that different methods of tanning exist: with animal fats, with mineral like alun (Halasz-Csiba 2002) or plant-derived materials. The way they variously affect the skin in terms of chemical testing remains unknown for now

Without taking account of the nature of the tanning process, the efficiency of DNA analysis has been tested on books and manuscripts. It seems to be slightly more effective in the identification of the raw material used in the production of parchments, rather than those of tanned skins (Burger et al. 2001). However, experiments on cowhide have highlighted the survival of elements allowing for identification by DNA analysis (Vuissoz et al. 2007).

Contrariwise, to the best of our knowledge, there is no equivalent experiment to verify the validity of PMF, LC-MS / MS or NanoLC-MS / MS analyses on residual material on tanned skins. In the case of pRIA analyses, highly satisfactory results obtained on burned archaeological bones (Potter et al. 2010: 916) lead us to be optimistic for the results we can expect from analysis of tanned remains because even alterated tissues remain traceable. No experimentation to date, however, can as of yet support this sentiment.

My preference gravitates increasingly towards DNA analysis because of the best known implications of its use on ancient leathers. Anyway, both methods can be used and, as we will see below, the efficiency of physicochemical identification tests is primarily down to the way they are conducted.

Ancient leathers are frequently exposed to issues of preservation (Mesquita et al. 2009). As far as I know, no study has been led to measure precisely the impact of

rotting on the efficiency of the analysis listed above. Anyway, It has been proven by experiments that fungi attack preferentially the outermost layers, whereas actinomycetes (bacteria) alter significantly the leather fibres (Strzelczyk et al. 1987). Depending on the nature of the agents of deterioration, analysis can therefore be conducted despite of a visual appearance of deterioration but a diagnosis of the different agents must be done upstream of testing.

#### CONTAMINATION AND SAMPLING PRECAUTIONS

Studies frequently point to problems with sample contamination during protein (Bell et al. 2009) and genetic (Geigl 2015) analysis. Contamination may be caused by various phenomena.

DNA contamination by anyone manipulating or who has manipulated the object of analysis becomes especially problematic when potential human leathers that have been manipulated by other people for decades are analyzed. Indeed, this 'human' pollution, which is normally easily identifiable and taken into account in the majority of leather or archaeological skin analysis, risks, in this case, to be fodder for confusion. Protein signatures appear to be less prone to contamination as a result of successive manipulations of objects by humans over long periods of time. Thus, protein and immunochemical analyses have been assumed to be preferable for the study of ancient bindings (Rosenbloom 2017). Anyway, none of these methods are exempted from contaminations from treatment methods of the skin/leather used in the past.

Tanning methods using animal fats can logically lead more easily to misreading of the leather's provider species due to proteinic mixing. Fortunately, the vegetable tanning methods were the most frequently used for binding (Viñas & Viñas 1992). Anyway, the use of animal fats was common to treat the leather after its

tanning before the 19th century (Quétel 2013), and animal residues can be found on the surface of some ancient books. Moreover, the addition of dyes and varnishes of all kinds may affect a sample when it has been withdrawn in surface of the binding.

#### III (3, e) – A Wise and Reproducible Sampling Process

Hence, samples taken from within the leather, and not from surface areas, are much more reliable. This kind of sampling process should be used, disregarding the chosen method of identification. However, the visible hole made by this type of sampling discourages its usage and has made it an uncommon practice. Unfortunately, the wish of using non-visible sampling methods is a counter-productive decision which leads to unreliable and contradictory results. Long-term preservation of these books could be ensured more surely through a reasonable slighty destructive sampling than with myriad of supposedly 'non-destructive'<sup>11</sup> but inefficient samplings.

In any cases and regardless of the method which is chosen, the book area chosen for sampling is crucial to avoid issues caused by contamination. Hence, I advise against any sample taken on the inside of the binding, especially on the edge of the book and on the contact areas with the paper cover (Figure 5). These areas bear adhesives, which in bookbinding, are often made using animal proteins. The presence of these animal proteins may distort the identification of the species providing the leather. Unfortunately, these areas are prefered by some researchers for sampling, because they do not alters 'visible' zone of the binding (Kirby 2015).

III (4) - The benefits of a transparent protocol and cross over study

I cannot emphasize enough the importance of systematic verification of the identification of the provenance of leather by physicochemical analyses whenever there is suspicion of the use of human skin in the creation of a binding. This approach has allowed for the debunking of an identification of human origin applied to certain bookbindings, which had once been 'authenticated' by original autographs<sup>12</sup>.

In addition to the detection of fraudulous goods for sale, a cross over study between physicochemical data and autographic testimonials allows for the identification of 'historical lies'. These forgeries are unfortunately less frequently the subject of commentary or analysis by institutions than are their real counterparts. And yet historical counterfeits are just as important as genuine human skin bound artifacts, as they allow us to gauge the infatuation that the public harbored for these books, willing to go as far as the production of forgeries in order to satiate demand and turn a profit.

#### III(5) – A cautious study for sensitive remains

It must be remembered that the conservation, display and studing of these artifacts poses ethical problems for contemporary curators and researchers.

The showcasing of these works in private, as well as public settings, while part of the cultural landscape at the turn of the 19th and 20th centuries, had already shocked some. For example, a journalist from the *Essex Standard* reported that a cleric donated £5 to the hospital, displaying W. Corder's book and skeleton so that their exhibition might cease (Essex Standard 1841). Setting aside the question of the permanence of the historical testimony that these works represent, researchers

underscore the need to repair the *post-mortem* humiliation perpetrated against the skin providers (Needham 2014), going so far as to propose the interment of human leather bindings in decent burials (Samuelson 2014).

The argument I can make against these suggestions is that a burial would amount to the destruction of these works. Furthermore we have a duty to preserve and transmit to future generations the existence and importance of such vestiges, as they are the testimony of an important sociological phenomenon that goes far beyond the anecdotal.

On the other hand, and in the name of human dignity, it seems essential to improve communication surrounding these works. It is crucial that sensationalist communication surrounding them cease. It is also imperative that we provide a more comprehensive study of the subject, as well as take further precautions when exhibiting them within a museum framework. Thus it may be possible to reconcile the preservation of these material witnesses with a renewed respect for the person who supplied their skin for their creation. Explanatory supplements, as well as displays designed to allow room for contemplation and recollection of the memory of the person behind the object might soften the brutality of their exhibition, while all at once ensuring the rational preservation of these peculiar artefacts and the transmission of the historical knowledge that they carry. It is worth reminding that respect and consideration of the hidden man or woman behind the artefact will have to be taken into consideration during the study and sampling of each volume, depending on various parameters (among others: the wishes of the descendants of the deceased, the value of the artefact into its original context, etc).

#### Conclusion

This study highlighted how the phenomenon of anthropodermic bibliopegy can be seen as a 'global art', seeking for a symbiosis between container and content. The human skin books broad a complex social discourse that must be approached in an historical perspective, in which geographical variations are discernible. These peculiar artefacts, reflecting the moral values of their society and their original owners, deserve a further study. Systematic identification of the human origin of the skin will be a necessary step for a deeper comprehension of the phenomenon. This paper provides an extensive review of the advantages and disadvantages of each method of identification as well as a proposition of an adapted protocol of sampling. I hope that this survey will allow the key players in this field of research to work all together towards increased understanding of these fascinating artefacts.

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#### Notes

1: G. Warden's skin shoes, W. Burke's skin snuff box, H. Pranzini's skin pocket-book (Kerner 2018)

- 2: On some of the books I will mention, physicochemical analysis have been conducted by the Anthropodermic Book Project, founded by Daniel Kirby, Richard Hark, Anna Dhody and Megan Rosenbloom (https://anthropodermicbooks.org/) in order to test a maximum of human skin bound books in North America. Megan R. foresees to publish a popular science book (Rosembloom 2017, elec. comm.) but highlighted in a recent conference that a publication of a census of all the books they tested will be problematic because of confidentiality issues (Rosenbloom 2016).
  - 3: Some specific recipes have been reported by Graham (1965).
- 4: 'Le procédé de tannage était une simple mais prolongée macération dans l'éther, puis grattage pour enlever l'épaisseur de la peau et ne laisser que l'épiderme' (*Mercure de France*, volume and date unknown, cited by Dussert & Walbecq 2014)
- 5: As an example, this is the note that can be found in the book of C. Drelincourt 'De conceptione adversaria. Disce, homo, de tenui constructus pulvere, quae te edidit in luncem conditione Deus. Ed. altera.': 'Bound in Trenton N.J. March 1887, with tattooed skin from around the wrist of a man who died in the Philada. Hospital 1869'.
- 6: KUMC Libraries Catalog (online voyagercatalog.kumc.edu/Record/175536/Description#tabnav)
- 7: This book, 'A True and Perfect Relation of The Whole Proceedings against the Late most barbarous Traitors, Garnet a Jesuit and his Confederats' has been sold in 2007 by Wilkinsons Auctioneers (M. Gibson pers. comm.).
- 8: W. Roughead wrote that a piece of Burke's skin was kept by his grand-father in order to tell the story of Burke to his descendants (Roughead 1921:66).
- 9: Ed. Frank, curator of the precious and rare books department at the University of Memphis, pers. comm. to Harrisson (reported in Harrisson 2017).
- 10: The Polymerase Chain Reaction (PCR) is a method of amplification of the residual DNA which allow to obtain, from a restricted sample, a greater amount of DNA fragments. As we do so, the ancient and incomplete DNA may be more easily recognized.
- 11: Whereas these methods of sampling are destructive but less visually altering.
- 12 : It's the case for the volume *Practicarum quaestionum circa leges regias Hispaniae* by J. Gutiérrez (Harvard University Art Museums' Straus Center).

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TD	Title – Author	Dublichin	Logotion	Evidono	Dogult	References
ID	(and topic of		of	e of		
	the book) 4 volumes	b	conservati on	1	physic o-	
				bibliopeg	chimi	
				У	c analys is	
1		XVIIIth century	Unknown	Т	/	Thompson 1946, p. 93; Cim 1905
2	/ - Anonymous (Medecine)	End of the XIXth century	Unknown	Т	/	Thompson 1946, p. 97
3	/ - Anonymous	XIXth century	Unknown (Displayed on the Luigi Arrigoni's shop in Brera on 1879)		/	Bogeng 1909, p. 90
4	/ - Anonymous (Medecine) 3 volumes	XIXth century	Anatomica I Museum of the College of Surgeons (Lincoln's Inn Field, UK)	John Quekett	Positi ve result	Thompson 1946, p. 98
5	/ - Anonymous (Prayer book)	XVIIth century	Berkeley's Bancroft Library (University of California, USA)	d in	ve result *	* Personnal communication of David Faulds (Curator of Rare Books and Literary Manuscripts of The Bancroft Library)
6	/ - Anonymous (Erotism)	XIXth century	Unknown (For sell in a library of the Faubourg Saint- Germain Paris in the 19 <sup>th</sup> century)		/	Goncourt 1898, p. 133
7	/ - Anonymous (Trial of Arthur Thistlewood ?)		Jesus College of Oxford (?)	Т	/	Thompson 1968, p. 137
8	/ - Anonymous russian poet (Poetry)	XIXth century	Unknown	Т	/	Fitzgerald 1886, p. 123
9	/ - Anonymous	XIXth	Unknown	Т	/	Blumenthal 1932, p. 119.
	1					

		century	('an obscure antiquarian shop near Saint Augustine' s Church in Paris' in the 19th century)			
10	Almanach des Prisons - Anonymous	XIXth century	Unknown	Т	/	Blumenthal 1969, p. 90
11	/ - Anonymous (Private correspondance	1920	Unknown	Т	/	Hunter 1958, p. 41-42
12	/ - Anonymous (Charles Smith's life and trial)	XIXth century	Unknown	Т	/	Blumenthal 1969, p. 82
13	Little Poems for Little Folks - Anonymous	1847	Unknown	Т	/	Thompson 1968, p. 148
14	/ - Anonymous	XIXth century	Unknown (Library of M. L. Veydt according to the inventory published in 1879)	Т	/	Thompson 1968, p. 150
15	Relation des mouvemens de la ville de Messine despuis l'année M. DG. LXXI. jusques à présent - Anonymous	-	Library of the University of California (Los Angeles)	HN	/	Thompson 1968, p. 135; Blumenthal 1969, p. 80
16	Molleri manuale praperationis ad mortem - Anonymous	XXth century	The book used to be on the Library of the Syndic of Maastricht at Bremen (Germany) at the beginning of the 20th century		/	Thompson 1968, p. 135

17	Catalogue des Sciences médicales – Anonymous 2 volumes	1857- 1873	Previously at the Bibliothèq ue Impériale, Paris, France and at the College of Physicians Library of Philadelphi a who sold it in 1901 *		/	* Guelle 2002, p. 87; Marvin 1994
18		XIXth century	According to Marvin, the book stands in the University of Standford, USA * Anyway, according to the head of the Departmen t of Special Collections , Tim Noakes, the library do not own this volume ***	T		* Marvin 1994; *** Personnal communication to the author (April 14, 2017)
19	Narrative of the life of James Allen, alias George Walton, alias Jonas Pierce, alias James H. York, alias Burley Grove, the highwayman: being his death-bed confession, to the warden of The Massachusetts State Prison		Boston Athenaeu m, USA	HN	/	Boston Athenaeum Catalog
20	_	XIXth century	Wellcome Collection,	HN	/	Wellcome collection ctalog

			Londres			
21	découvertes sur toutes les	g in 1685-86, binding in the XIXth	Philadelphi a College Of Physicians, USA	HN		Thompson 1946, p. 97; Guelle 2002, p. 86
22	Diaboliques - J. Barbey d'Aurevilly	XXth century	Unknown	Т	/	Dupin 1932
23	Cutaneous Diseases - Dr. T. Bateman	XIXth century	Unknown	Т	/	Thompson 1968, p. 148
24		XXth century	John Hay Library, Université de Brown, USA	PA (PMF led by D. P.	le positi	Blumenthal 1969, p. 77 * Catalogue de la John Hay Library (https://search.library.brown.edu/cata log/b3339531)
25	Secrets auquel sont contenues ses plus rares experiences pour diverses	g in 1601, binding in the	Philadelphi a College Of Physicians, USA		/	De Crauzat 1926; Marvin 1994; Catalog of the Historical Medical Library of the College of Physicians of Philadelphia; * Guelle 2002, p. 86
26	Les Opuscules Philosophiques - compiled by S. J. Bourlet de Vauxcelles and J. B. A. Suard (authors :	1796	Unknown	Т	/	Blumenthal 1969, p. 84

27		1688 XVIIth century	Clendenin g History of Medicine Library (Université du Kansas, USA)	Т	/	KUMC Libraries Catalog (en ligne voyagercatalog.kumc.edu/Record/17 5536/Description#tabnav)
28	La Princesse de Lamballe intime (d'après les confidences de son médecin), Sa liaison avec Marie-Antoinette. Son rôle secret pendant la Révolution - A. Cabanès		Unknown	Т	/	Bouckaert 1929, p. 180
29	/ - Anonymous (William Cadwallader's trial ?)	XIXth century	Unknown	Т	/	J. P. 1873, p. 292
30	/ - Anonymous (Michel Campi's trial, execution and dissection)	XIXth century	Unknown	Т	/	Goncourt 1898, p. 137; * « Campi et sa peau », Le Figaro, numéro 329 (24 novembre 1884); ** Museum Archives, personnal communication by M. Vercambre
31	Lincoln the Unknown - D. Carnegie	XXth century	Grand Avenue Library (University of Southern Carolina, USA)	Т	/	On-line library catalog, University of Southern Carolina
32	<i>Le Drapeau</i> - J. Claretie	XIXth century	Unknown	Т	/	De Crauzat 1926
33		XVIII th century	Musée Carnavalet	Т	/	Thompson 1946, p. 94; De Crauzat 1926
34	Trial of Corder	XIXth century	Moyse's Hall Museum, Bury St	HN	/	Gatrell 1996, p. 258; Thompson 1968, p. 128; Blumenthal 1969, p. 83; Egar 1873, p. 292

			Edmunds (Suffolk, UK)			
35		XIXth century	Unknown	Т	/	De Crauzat 1926
36	Speculations on the Mode and Appearances of Impregnation in the Human Female - R. Couper	-	Philadelphi a College Of Physicians, Mütter Museum, USA	HN	/	De Crauzat 1926 ; Marvin 1994 ; Thompson 1968, p. 142-143 ; Guelle 2002, p. 86
37	Le bien que l'on dit des femmes - E. Deschanel	XIXth century	Unknown	Т	/	De Crauzat 1926
38	Poésies d'Anacréon - E. Deschanel	XIXth century	Unknown	Т	/	De Crauzat 1926 ; Anonyme 1913
39	Les Décrétales	XIIIth century	BNF, Paris, France	Т	/	De Crauzat 1926 ; Thompson 1968, p. 122
40	Die knöcherne Hand (and 11 other volumes unnamed)	1	On display on the shop Reuss & Pollack in Berlin in 1913		/	Thompson 1968, p. 131
41	Le neveu de Rameau - D. Diderot	XIXth century	Unknown	Т	/	De Crauzat 1926
42	De conceptione adversaria. Disce, homo, de tenui constructus pulvere, quae te edidit in luncem conditione Deus. Ed. altera C. Drelincourt	XIXth century	Philadelphi a College Of Physicians, USA		/	Thompson 1968, p. 142-143; Gordon 2016; * Guelle 2002, p. 87
43		XXth century	Unknown	Т	/	Dr. Legrain interview in Mercure de France CXLI 1920, numéro 831
44	Terres du Ciel - C. Flammarion	XIXth century	In 1924, the book used to be at the Bibliothèq	Т	/	Thompson 1968, p. 144; Blumenthal [1955] (1969), p. 122

			ue De Juvisy, France			
45	Sahara et Sahel : Un été dans le Sahara, une année dans le Sahel - E. Fromentin	XIXth century	Unknown	Т	/	De Crauzat 1926
46	A True and Perfect Relation of The Whole Proceedings against the Late most barbarous Traitors, Garnet a Jesuit and his Confederats - Anonymous	XVIIth century	Private Collection	HN	/	Personnal communication of M. Gibson (Wilkinsons Auctioneers) to the author.
47	Comédie de la Mort - T. Gautier	XXth century	Unknown	Т	/	Legrain 1920
48		XVIIth century	Harvard University Art Museums' Straus Center	HN PA (PMF led by Dr. Kirby)	ve	Thompson 1946
49	/ - Anonymous 2 volumes	XIXth century	Marlborou gh House (Methley, Yorkshire, UK)	/	/	Marvin 1994; Hurren 2013, p. 303
50	/ - Anonymous	XIXth century	Bristol Record Office Archive (Bristol, UK)	HN	/	Connor 2004; Thompson 1968; Blumenthal 1969, p. 83
51	/ - Hippocrates	XIXth century	Göttingen Library (Germany)	/	/	Blumenthal 1969, p. 91
52	Histoire générale des larrons contenant les vols, maffacres, affaffinats, fineffes & fubtiliez qui le	XIXth century	/	/	/	Blumenthal 1969, p. 83

	T	1	1			
53	sot par eux faictes en France, & principalement en la Ville de Paris / - Anonymous		Private collection	/	/	AbeBooks Auctions
	del dichoso dia de la Gracia Maria Santissima Digna Madre de Dios - J. B. de Hogal	century	conection			
54	Holy Bible 2 volumes	XIIIth century	BNF, Paris, France	/	/	Thompson 1968, p. 122
55	The Dance of Death - H. Holbern	XIXth century	/	T (George Gissing)	/	Gissing 1978, p. 323
56	The Dance of Death - H. Holbern (callnumber : N7720.H6 D5x 1898)	XIXth century	University, USA	(PMF, analysis	Positi ve result	Catalog of the library
57	The Dance of Death - H. Holbern (callnumber N7720.H6 A43 1816)	XIXth century	Brown University,	(PMF, analysis	Positi ve result	Catalog of the library
58	<i>Iliade</i> - Homère	XIXth century	/	HN	/	Anonymous 1910 p. 941. (cited by Thompson 1968, p. 138)
59	Odes - Horace	XIXth century	/	/	/	Anonyme 1906, p. 269-270
60	Des destinées de l'âme - A. Houssaye	I .	Library, Harvard	HN PA (PMF, analysis conducte d by Bill Lane)	/	Catalog of the library
61	/ - Anonymous	?	Dresden Library (Germany)	/	/	Blumenthal 1969, p. 91
62	A Book about Doctors - J. C. Jeaffreson 2 volumes	I .	/	HN	/	A. Cim 1905 p. 295-296 and 300

63	Zwei Hundert berühmte Männer - E. Kaffmann	XIXth century	Bibliothèq ue du Dr. Matthew Wood (UK)	HN	/	A. Cim 1905 p. 295-296 and 300
64	Épisodes de la vie des insectes / - Anonymous 3 volumes		Dr. Matthew Wood Library (UK)	HN	/	A. Cim 1905 p. 295-296 and 300
65	The Imitation of Christ - T. Kempi		Leonard Smithers londonian shop (London, UK)	/	/	Nelson 2000
66		XIXth century	/	/	/	Bouckaert 1929, p. 181
67	Mérite des femmes - G. Legouvré	XIXth century	/	/	/	De Crauzat 1926, p. 147-148 ; Nisiar 1910, p. 319-320
68		XIXth century	Philadelphi a College Of Physicians, USA	HN	/	Thompson 1946, p. 97; Marvin 1994, p. 135; Guelle 2002, p. 88
69	Histoire de Gil Blas de Santillane - A. R. Lesage	XIXth century	Bibliothèq ue du Dr. Matthew Wood (UK)	/	/	A. Cim 1905 p. 295-296 and 300
70	Les trois Dames de la Kasbah - P. Loti	XIXth century	/	Tattoo	/	De Crauzat 1926
71		XIXth century	/	/	/	G. A. C., 1866 (cited by Thompson 1968, p. 137)
72	El Viaje Largo - T. Medina	XXth century	Bailey Library (Slippery Rock University, Pennsylva nie, USA)	PA (DNA, test led in 2014)	Negati ve result *	Catalog of the Bailey Library; * Personnal communication of Judith Silva in Gordon 2017
73	Éloge du sein des femmes - C. F. X. Mercier de Compiègne		/	/	/	De Crauzat 1926; Interview of Dr. Legrain in Mercure de France CXLI, 1920, n° 831 (cited by Thompson 1946, p. 99)

74	Le 40ème d'artillerie - O. Méténier		/	/	/	De Crauzat 1926
75	Mexican codex	?	Told to be in the Imperial Library de Vienne (Autriche) but no book correspond ing to this description in this library* Personnal communic ation of Friedrich Simader, Head of the Sammlung von Handschriften und alten Drucken, Österreichi sche Nationalbi bliothek, to the author (14th of april 2017).			Blumenthal 1969, p. 91
76	Poetical Works - J. Milton	XIXth century	Westcount ry Studies Library (Devon Heritage Centre, UK).		/	Thompson 1946, p. 96, note 15
77	Poetical Works - J. Milton	XIXth century	Brown University, USA	/	/	Thompson 1968
78	Opera Joannis Pici Mirandule Comitis Concordie: littera[rum] principis, nouissime accurate reuisa (addito generali		Library of Université de Notre- Dame, USA	Donald Siegel (Office of Chief	Negati ve Result	

	su[per] om[n]ibus memoratu dignis regesto) quaru[m]cum[ que] facultatu[m] professoribus tam iucunda q[uam] proficua de G. P. della Mirandola			York City) PA (PMF led by Dr. D. P. Kirby)		
79	Fêtes foraines - G. Mourey	XXth century	/	Tattoo	/	De Crauzat 1926
80	The Chronicles of Nawat Wuzeer Hyderabed	XIXth century	Newberry Library, Chicago, USA.	HN	/	Thompson 1946, p. 97
81	Essai sur l'électricité des corps - Brother Nollet	XVIIIth century	Cantonal Library of Maçon	/	/	Anonyme 1910, p. 771
82	<i>Métamorphose</i> s - Ovide	XVIth century	Countway Library's Center for the History Of Medicine, Boston, USA.	PA (PMF)	Negati ve result	Countway Museum's Blogpost
83	Le Traicté de Peyne : poëme allégorique dédié à monseigneur et à madame de Lorraynne/	century	The Grolier Club de New York, USA (callnumbe r \56.3f\ Kauf\ 1868)	/	/	Catalog of the Grolier Club
84		XIXth century	/	Tattoo	/	De Crauzat 1926
85	De integritatis & Corruptionis virginum notis - S. Pineau		Wellcome Collection, Londres (L0030774	HN	/	Thompson 1946; Thompson 1968
86	Praktische Abhandlung über die Hautkrankheit en - S. Plumbe	XVIIIth century	/	/	/	Anonymous 1929, p. 1010 (cited by Thompson 1946, p. 93); Note and Queries 1818
87	Poems - E. A. Poe	XIXth century	/	/	/	Anonymous 1910b, p. 602

88	/ - Anonymous	XIXth century	/	/	/	De Crauzat 1926
89	Qur'an	XIXth century	John Griswold White Collection, Public Libray of Cleveland	/	/	Thompson 1968, p. 146 ; Blumenthal, p. 79
90	/ - Louis-Marius Rambert and Gustave Mailly (Life and confessions of the authors)	century	Private collection	HN	/	Pierre Bergé & Associés 2014, lot 237
91	<i>Vie de Jésus -</i> E. Renan	XXth century	/	HN	/	Anonymous 1919
92	Bérénice de Judée - J. H. Rosny, illustrated by Léonce de Joncières	-	/	Tattoo	/	De Crauzat 1926
93	hvgvenote figurée au	g in 1608, binding in XIXth	(4th Floor - Special	(PMF conducte d by Dr.	ve result	Catalog of the library
94	Les soliloques du pauvre - J. Rictus		/	HN	/	Blumenthal 1969, p. 80
95	The Poetical works of Rogers, Campbell, J. Montgomery, Lamb, and Kirke White: complete in one volume	century	Canberra's National Library of Australia	PA		Catalog of the library
96	Justine ou les Malheurs de la Vertu & Juliette ou les prospérités du vice - Marquis	century	/	/	/	Thompson 1946

	de Sade					
97		XIXth century	/	HN	/	Anonymous 1910c, p. 96-97
98	Scrutinium scripturarum - P. de Santa Maria	XIXth century	Library of Congress, Washingto n, USA	PA (PMF analysis)	Negati ve result (cow leathe r)	Thompson 1968, p. 149; * Marvin 1994, p. 133-134
99	Le portier des chartreux - Saturnin	XIXth century	/	/	/	Anonymous 1898, p. 137
100	Das Rätsel des Menschen : die geistigen Hintergründe der menschlichen Geschichte - R. Steiner		Previously in Friedenthal 's collection (Germany)	/	/	Blumenthal 1969, p. 78
101	The Life and Opinions of Tristram Shandy, Gentleman - L. Sterne	XIXth century	Personnal library of Mr. G. William, a book seller from Cincinnati (USA)		/	Thompson 1968, p. 143
102	A sentimental journey - L. Sterne		Personnal library of Mr. G. William, a book seller from Cincinnati (USA)		/	Thompson 1968, p. 144
103	Les Mystères de Paris - E. Sue 2 volumes	1874	/	/	/	De Crauzat 1926
104	Bibliotheca politica; or, A discourse by way of dialogue, whether monarchy be jure divino: collected out of the most approved authors, both	XVIIth century	Beeghly Library, Juniata College, Pennsylva nia, USA	PA (PMF led by Dr. D. P. Kirby)	ve Result	https://anthropodermicbooks.org

	ancient and modern. Dialogue the first - J. Tyrrell					
105		XIXth century		Tattoo (Phallus. Heart pierced by an arrow)	/	De Crauzat 1926 ; Dussert & Walbecq 2014
106	Femmes - P. Verlaine	XIXth century		Tattoo (Muskete er. Heraldic shield)	/	De Crauzat 1926
107	De Human Corporis Fabrica - A. Vesalius		Brown	PA (PMF analysis led by Dr. P. D. Kirby)	Positi ve result	Notice of the online catalog of the library : https://search.library.brown.edu/catalog/b2010003
108		century	Private collection, probably an inheritor of the laywer Edmund Leroy	/	/	De Crauzat 1926 ; Blumenthal 1969, p. 85
109		XIXth century	/	Т	/	Carrington 1856, p. 299
110		XVIIIth century	of Cincinnati Library's Rare	PA (PMF analysis by Dr. Daniel P. Kirby)	/	Gordon 2016, p. 122
111	/ - Anonymous	century	Christophe r Wren's Library (Trinity College of Cambridge )		/	Hurren 2016, p. 244

Table 1: Summary of the unpublished census of books bound in human skin (Kerner 2017). The source of attribution of anthropodermic bibliopegy has been quoted as follows: T = Testimony reported by historians or by journalists at the moment of the alleged facts, PA = Physicochemical Analysis (followed by the nature of the testing), MO = Microscopic Observations, HN = Handwritten note on the book.

When known, the identity of the researcher who led the analysis or of the person who made the testimony is mentioned.

## Figures

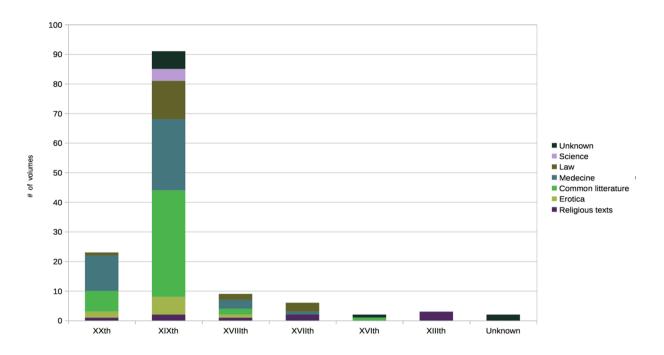


Figure 1: Chart summarizing the ratio of topics per century.

le curieur petit livre sur la Virginité et les fonctions génératrices fiminines me paraissant m'esiter une reliure congruente au sujet est revietu d'un morceau de peau de femme tanne par moi - même arec du jumas. Di L. Bouland

Figure 2: 'De integritatis & Corruptionis virginum notis' by S. Pineau (Photo by Wellcome Library, London)



Figure 3: 'Huguenot Idolatry' by Richeome (Photo by P. N. Harrisson, 2015)

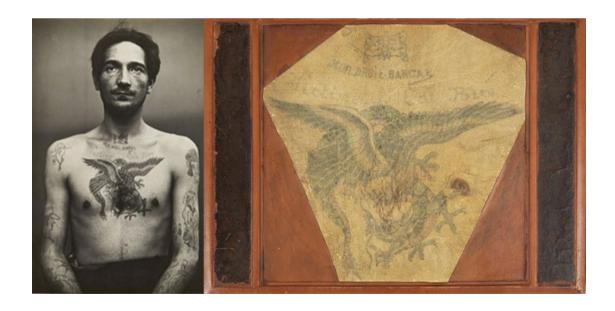


Figure 4: Bookbiding made of Rambert's skin (Photo by Pierre Bergé & Associés, 2014)

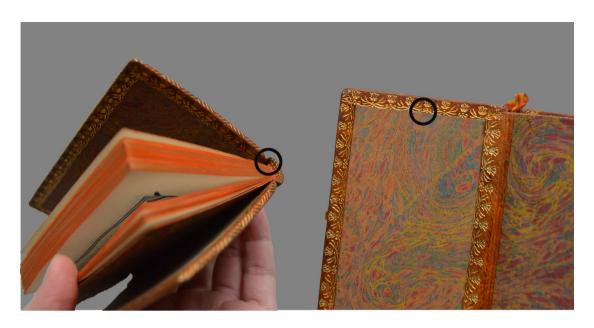


Figure 5: Zones of the binding that are inadequate for sampling (Photo by the author)