

Funeral embalming: the singular evolution of a medical innovation

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This paper studies the trajectory of modern embalming, considered as a technical innovation in the treatment of dead bodies, across time and societies. Tracing the history of technical innovations, it examines the eventful story that results in the evolution of embalming from the field of medical sciences to its re-appropriation by a secular sphere (funeral). The central role of material culture in the spread of innovative embalming techniques is underlined, and notably the leading role of commercial networks and industrial actors as they support the growth of embalmers while products, equipment and technical know-how are normalized. On the basis of the contemporary death organization, the analysis explores how embalming has thus become part of the cooperative chain surrounding death. It describes how embalming innovation entails a set of 'alignments' (Strauss, 1988) in the management of corpse care, supporting various standardization processes, which are both practical and symbolic. Finally, the establishment of a professional body of embalmers points to a new inter-professional interpretation of the corpse and of death care, radically changing the interface between the medical world and the funeral world.

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Studied through the history of technical innovations, embalming techniques can be seen to reflect distinct social spheres involving specific characterizations of the corpse. Funeral embalming put death on show; historically, it involved the iconic staging of the bodies of important individuals as they were exhibited to the people. Anatomical embalming involved preserving the segmented parts of a body for the purposes of research. Embalming was also used to preserve dead bodies for the purpose of hygienic control

(during transport over long distances, epidemics, etc.). However, whether these different branches of embalming were connected or not (each displaying its own singular aspects), over the course of several centuries both were nevertheless linked to a single professional figure: the physician.

This raises the question of how, in the space of several decades alone, embalming became a specialty monopolized by a new segment of practitioners that was separate from the medical world, i.e. that

of embalmers? How did this relatively marginal practice spread and manage to become a practice using a unified and standardized model for treating the deceased in many western societies (North America, UK and France)? This article proposes to trace the uncommon path followed by this innovation born of ancient medicine—the modern embalming process. It explores how the technical process of embalming gradually adopted a new set of practices governed by an established professional group and the influence this has had on adjacent professional groups. It examines how this innovation has contributed to revolutionizing the organizational chain around death, hence reconnecting two physically adjacent but socially and organizationally divided worlds (the medical world and the funeral world).

A number of pragmatic approaches, and mainly symbolic interactionism and the actor-network theory, will help us to explore the various settings behind modern embalming innovation: how the professional boundary between expert groups was defined (Abbott, 1988; Bucher and Strauss, 1961), how trading networks and socio-technical arrangements formed to support the emerging market (Callon, 1998; MacKenzie and Hardie, 2006), and how structuring work and inter-professional coordination was redesigned in the funeral activity (Strauss, 1985; 1988). The focus on material elements and socio-technical arrangements in the chains of interaction inside and between the different social worlds explored acts as a theoretical point of convergence. Thus, we shall investigate the historical trajectory of embalming techniques through professional and market competition, including strategies to reveal or conceal expert processes, instruments and fluids. We shall describe

how professional embalming figures (physicians, surgeons, chemists and undertakers) competed before joining forces to introduce new processes for handling corpses. We shall also see how new configurations have emerged hand in hand with the essential requalification of the social model of “the way to die” (the aesthetics of death, display of the corpse, etc.). In particular, we shall look at the boundary markers and the process of alignments at the interfaces between the social worlds that are brought together around embalming innovation.

History of modern embalming

Medical embalmers and technical innovation in Europe from the Middle Ages to modern times

Historical literature (Aries, 1985 [1877]; Habenstein and Lamers, 2001 [1955]; Mayer, 2000 [1996]) attests to the interest in body preservation and the development of embalming techniques in various settings in Europe as early as the late Middle Ages. In France as in England, funeral embalming was a practice that was developed for royalty, nobles and Catholic dignitaries (Erlande-Brandenburg, 1975; Giesey, 1987). Embalming techniques were first devised to transport mortal remains across long distances. Crude methods of embalming based on evisceration before stuffing the corpse with herbs—or dismembering it—sought to reduce the impact of putrefaction and preserve the mortal remains of corpses as they were carried from the place of death to the sacred land for burial. In the 14th century, a new ritual scenario appeared (Thomas, 1985). This consisted in exhibiting the corpse and hence called for more complex embalming techniques. Embalming became essential for exhibiting the

bodies of royalty to their subjects. With funerals taking place at longer intervals from the time of death, embalmers began to use evisceration and stuffed the royal remains with precious aromatic herbs offering antiseptic and highly symbolic virtues. Thus, the ancient techniques of embalming were based on an empirical process that resembled a form of culinary art using balms, ointments, herbs or powders, to cover or stuff the corpse after evisceration. Through the centuries, the practice of embalming for kings, nobles and higher clergy was exclusively performed by doctors or surgeons. In France and England, it was also practised by barber-surgeons. These formed a corporation of professionals linked to the development of monastic medicine and claiming to have the monopoly of embalming over their lay protagonists (butchers, tailors, wax-chandlers) (Habenstein and Lamers, 2001 [1955]).

From the sixteenth century onwards, embalming techniques underwent significant improvements across Europe, alongside progress in medical science. Aiming to transform this empirical and fanciful art into know-how of a more sensible and positive¹ kind, surgeons introduced balms, ointments and powders able to dehydrate and dry out the corpse, thus changing the traditional operating methods. Based on evisceration, laceration and balsamic applications, the method proposed very quickly became the embalming protocol reserved for the corpses of important individuals, right through to the French Revolution. The 16th to 18th century period was also, and above all, marked by an increasingly substantial embalming application field, i.e. anatomical embalming. This was performed in order to preserve body parts for anatomists and naturalists for

the purposes of research, education and academic science². The effervescence of technical innovations in the field of anatomical embalming was palpable and contrasted sharply with the opposition to change in funeral embalming methods. Anatomists and naturalists exploited the major medical breakthroughs of the period and emulated scientific research to develop new preservation techniques, especially based on arterial and cavity embalming. The principle of anatomic injection, first explored in the 15th century (Vinci (1452-1519)³, Harvey (1578-1657)), was gradually improved and mastered by anatomists over the course of the following centuries (Ruysch (1638-1731), Hunter (1718-1783)). It was thus in the fields of anatomy and natural sciences that embalming underwent a genuine revolution: the empirical craft of funeral embalming gave way to a more rational and positive process. It is this process that forms the basis of today's "modern embalming" practices.

Whether we are talking about the traditional funeral embalming techniques or the first innovations of anatomical embalming, embalming was nevertheless the prerogative of a dominant professional group, i.e. physicians. Physicians, surgeons and barber-surgeons mainly carried out embalming as a medical specialty. Legal control or institutional authority over the embalming process was rare, with the exception of the corporation of barber-surgeons in England in the 17th century. In fact, knowledge in embalming techniques seemed to be reserved for and confined within this sphere of medical expertise. Moreover, the physicians practising this science tended to keep their precise methods secret, hence limiting the spread of knowledge in the embalming field.

Professional conflict and scientific accreditation

The beginning of the 19th century was marked by the development of chemical embalming, backed up by progress in the fields of chemistry and pharmacy. Right from the start, embalming techniques did not just involve processes but substances and fluids too. With the progress made in arterial injection embalming, research into preserving fluids opened up another possible way to extend this scientific field of expertise through chemistry. In different places across Europe⁴, physicians experimented with new processes and chemical solutions designed to preserve mortal remains for scientific research. In France, the chemist J. N. Gannal (1791-1852) earned his place among the famous figures connected with embalming innovation in the 19th century, alongside two of his contemporaries—Italian physician G. Tranchina and French physician J. P. Sucquet. Considered as the fathers of modern embalming methods, their processes exploited the potential alliance between the chemist and the physician; combining chemical solutions and arterial injection. Their research was not restricted to scientific and medical activities but also covered funeral embalming, using simplified methods that did not involve lacerating the corpse.

However, this potential alliance was quickly upset by the competition between the protagonists in terms of their respective methods (Lemonnier, 2006). Putting the technical debates aside, our hypothesis is that the conflict arose from an indissociable mixture of the stakes relating to professional territory, expertise and commercial monopoly. Let us devote a few moments to exploring this struggle to take the prerogative.

From the middle of the 19th century, when corpses began to be exhibited in

the home in the context of the romantic death (Aries, 1985 [1877]), embalming, which had been reserved for royalty up until then, was extended to nobles and the bourgeoisie⁵. It was practiced by several prosperous and highly respected physicians, who applied their processes themselves or passed them on to other physicians or pharmacists. The spread of processes gave way to both professional and commercial agreements. These were granted to assignees by the inventor and ensured that the invention would carry his name (e.g. the Sucquet process). This partnership might also involve commercial agreements for the purchase of instruments and, above all, fluids. This is reflected in the work of the pharmacist F. Roques (Sucquet, 1857):

Supplier of Dr Sucquet's preservation liquids for the School of Medicine and hospitals. Embalming using the Dr Sucquet method, acknowledged as being superior to other processes in the Report of the Imperial Academy of Medicine. Dear Doctor Sucquet, please find enclosed a new List of Embalming operations practiced by my Pharmacy.

This is followed by seven pages of necrology tables pertaining to the ROQUES pharmacy (generals, duchesses, marquises, marquis, counts, countesses, nobles, politicians, doctors, abbeys, architects, hardware shopkeepers, bankers and unknown individuals).

The arrival of J. N. Gannal, with his patented process (1837), represented a considerable threat to this protected field of activity. The principle of ownership associated with an industrial patent was relatively foreign to the physicians' reserved and secret knowledge model. It nevertheless acted as a powerful appropriation device with respect to the arterial injection embalming method. Gannal's clientele was composed mainly

of dignitaries, ecclesiastics, aristocrats, politicians and bourgeois while the people who worked for him held a monopoly over injection embalming. The success of Gannal's patented method overshadowed other physicians, notably those who continued to embalm using the mutilating laceration method. The threat posed by Gannal reflected the ambitions he displayed: his aim was to spread the practice of embalming to corpses destined to be buried. He even wanted to democratize it by training and professionalizing embalming practitioners. His idea was to offer three price categories (five hundred, one thousand and two thousand francs) corresponding to three types of embalming so that ordinary people could afford it. He introduced aesthetically minded procedures such as cosmetization. He also wanted to create a new occupation ("embalmers"), distinct from the health profession:

The faithful and complete description of the many tests I have attempted will provide me with the opportunity in this chapter to review the most efficient means of preserving parts for the purposes of pathological anatomy and natural history

(...) As for my embalming process, I believed it should remain my property, and that a man who is exclusively devoted to chemical studies is in a better position than a doctor to introduce any changes required for specific cases. (Gannal, 1841: 365 [1838, 366] (emphasis added).

A conflict very quickly broke out between this inventor and the physicians. The physicians discussed his patent, questioned the primacy of the method, and his right to practice embalming. Gannal was reproached for practising

without the slightest medical diploma. This was considered as an insult to the medical corps, which was traditionally entrusted with this task:

In their (the physicians') eyes, it is a crime to practice embalming without knowing anything about the art of healing, in other words, to have no physician's diploma: a professor has reproached me for this. But, knowledgeable professor, please tell me what is the subtle link between the art of healing a person who is ill and that of embalming a dead man.

—As far as I'm concerned, I can't see any worth mentioning.—You ask me what right I have to embalm corpses. What right? Can't you guess? Why, I have the right of an embalmer; the answer is simple. —You are not pleased, you are becoming insistent and want to know where I obtained my diploma? I obtained it in a place where you would have been refused it, for the sake of preservation (Gannal, 1845, 5).

This conflict gradually turned into a competition about the performance of preservation processes and fluids. After a decade of rivalry, the physicians and the chemist brought the controversy before a scholarly body, the French Academy of Medicine, to be examined. Following two years of work by a commission set up by the French Academy of Science (1845-1847), the Gannal process, which had suffered from the ban on arsenic (used in the formula), was stripped of its success before the Sucquet process, deemed to be technically superior. This episode in the history of embalming granted funeral embalming processes with a genuine scientific qualification. However, with Gannal's decline, the posterity of "professional embalmers" was placed on hold. This authoritative

act prevented modern embalming from spreading across France for the whole of the following century.

From Gannal to Holmes

Although history has elected Gannal as one of the fathers of modern embalming, this is probably due less to the precedence⁶ or the superiority of his process (which, as we have seen, was not as good as that of Sucquet), than to his work as an institutional innovator who defended funeral embalming so that corpses could be viewed by family and friends. In our opinion, this is the line we need to follow in order to interpret the historical reach of the Gannal method legend in the history of embalming.

However, before turning to the American fate of Gannal, we first need to briefly describe the genesis of embalming techniques in the New World. According to Habenstein, as of the 18th century, colonization was accompanied by the scattering of families, meaning that corpses had to be transported back from the colonies to the family tomb. This context created growth in the demand for embalming, which the emerging professional body of undertakers strove to satisfy. While in Europe, the history of embalming developed well before and independently of the undertaking profession, in the United States, undertakers were among the first to be involved in the development of techniques to preserve corpses so that they could be transported. In the 19th century, the technical innovations developed by undertakers focused on refrigeration processes and resulted in a series of patents for cold storage lockers or other instruments or containers to help preserve corpses (preservation compounds, air-tight receptacles, etc.). At the same time, and closely in line with

the European model, the medical field opened up to a wealth of experimenting on embalming processes and fluids by physicians, anatomists and chemists. Research and innovation in embalming was linked to health-related concerns and the need for anatomical preservation.

Let us now return to J. N. Gannal. Showing genuine institutional entrepreneurship, Gannal had already marketed his process in many countries (London, the Russian Empire, Mauritius, New Orleans, Cuba, Constantinople and Nice) (Gannal, 1841 [1838]). In 1840, his book, "A History of Embalming", was translated by American anatomist Dr Harlan for the purpose of sanitary science in the context of epidemic control. "For a considerable period thereafter this book was the standard reference on matters pertaining to the preservation of the human body" (Habenstein and Lamers, 2001: 205 [1955]). The principle of arterial injection for funeral embalming progressively made its way in both medical and undertakers' circles.

In the context of the Civil War (1861-1865), the American doctor Holmes took over Gannal's institutional work to develop modern embalming for funerals. Before the war, Holmes had been a coroner's physician and had long been interested in experimenting with embalming techniques and new fluids. He earned a legitimate place for himself in the army, initially working with officials and officers (he embalmed Colonel Ellsworth) and then gaining broader popularity for his arterial injection embalming process used for the repatriation of deceased officers and soldiers⁷. For the dead soldier, embalming and restorative art preserved the bodies for the long journey home and enabled the family to take a last look at their lost loved ones. Historians agree that the American civil war (1861-

1865) quickly gave way to the invention of a new funeral model, which included the transportation and exhibition of the embalmed corpse. This model was to become widespread in the next century.

As well as making embalming popular with families in mourning, Holmes acted as a genuine entrepreneur in the spread of modern embalming. He trained the first generation of embalming surgeons to use his process as they accompanied American troops onto the battle field. He also played a determining role in the setting up of partnerships between embalming surgeons and undertakers. The latter put forward packaged service offers including embalming, transport of the deceased and the funeral. This professional network accompanied the commercial development of the embalming process but also the indissociable sale of fluids and injection instruments and the right to use these, which is really where the essential value of this emerging business lay. Holmes combined the transfer of his embalming process with contracts for the exclusive sale of his fluids (based on a secret formula) and ancillary instruments such as the injection pump (Habenstein and Lamers, 2001 [1955]). Over the course of the same period, physicians, chemists and even undertakers experimented with preservation fluids (11 patents filed between 1856 and 1869) hence paving the way for the emergence of a genuine embalming market.

The industrial driving force behind the development of embalming in the United States

Funeral historians agree that the American Civil War marked a turning point in “The American Way of Death”, notably in terms of the legitimization and democratization of embalming for

body display. Underlying this Cultural Revolution, the activity of the embalming physicians fostered the commercial development of embalming (techniques, fluids, instruments, etc.), which was soon to be taken over by the undertakers with whom they had set up alliances. Over the following decades, the professional embalming map was redrawn as physicians were more or less removed and an increasing number of undertakers and embalming chemical companies appeared. This transfer took place without competition or rivalry. Instead, physicians acted as tutors and, initially, remained involved in the business, either through technical innovations, the marketing of fluids and instruments or by providing training.

The embalming market began to develop on a much broader scale with the arrival of chemical companies. Instructors from these companies travelled the land, offering courses in the trade and granting diplomas that certified professional expertise for undertakers. In time, many of these companies established fully-fledged mortuary schools. “Many undertakers and/or their assistants were eager to learn to embalm but were unable to be away from their business or employment to take advantage of such training. Some, however, managed to attend the 3-to-5 day courses sponsored by the embalming chemical companies in their city and where they were taught the basic skills by the itinerant instructors. Others augmented their meagre knowledge by enrolling on home study courses, offered by many of the established schools of embalming” (Mayer, 2000: 474 [1996]). They even designed a new technical innovation, “the trocar” (drainage pipe) (S. Rogers in 1878), which made it easier for them to practice arterial embalming

without having extensive knowledge of the anatomy. At the end of the 1800s, states began to recognize this modern professional occupation with training provided by specialized schools and licensing boards made up of established funeral directors.

Modern embalming: the “come-back” in France

We briefly interrupted our historical account of modern embalming in France with the failure of Gannal before the monopoly of physicians. Following a movement that was diametrically opposed to that taking place in the United States, the practice of funeral embalming remained very marginal in France from the end of the 19th century through to the middle of the 20th. Deterred by severe regulations, embalming was seen as the application of a fastidious, somatic treatment. It was reserved for the political elite, ecclesiasts and personalities from show business in order to meet the ritual need to pay a last tribute by putting the body on temporary display or in order to avoid the difficulty of transporting corpses over long distances (international travel). According to Marette (1999), there were roughly one hundred embalming requests a year in France at the end of the 1950s.

It was not until the 1960s that embalming suddenly grew exponentially. From a few hundred cases in 1964, the number of embalmed bodies increased to 37% of the deceased in 2004⁸, pointing to a radical shift in the tradition compared with the hitherto prevailing situation. This change was accompanied by the emergence of a new professional set of crafts men, i.e. roughly 900 embalmers (2006). One century after being invented as an operating process for handling corpses, modern embalming (called

“thanatopraxy” in France), suddenly found its place in the social history of burial. How did embalming develop in France? How did these modern techniques, previously controlled by physicians, grant embalmers with control over the corpse? In order to understand this movement, we need to take a quick look back at the history of undertakers in France.

In France, “undertakers” are known as “Pompes Funèbres”, meaning the company that provides the “pomp” for the funeral ceremony. Historically, the growth of the urban funeral trade supported the broader commercialization of funerals accompanied by a vast range of associated products (hearse, bearers, casket, drapes, flowers, cushions, ornaments and all kinds of accessories) (Kselman, 1993). Based on a municipality concession system, the “pompes funèbres” business grew throughout the nineteenth century and gradually led to the development of an industry with a national network (Trompette, 2009). Until the last few decades, undertakers were not in charge of the corpse. Indeed, corpse washing, dressing and handling for public display was traditionally entrusted to certain categories of women (a nun, a nurse, a midwife or an experienced laywoman called the “ensevelisseuse”, which literally means the “burier”, in the country, while in towns and cities this task was carried out by the concierge).

During the after-war decade, this model went into crisis mode, owing to an accelerated social move to simplify the ceremonial aspects. Indeed, mechanization brought about the disappearance of horse-drawn hearses and the new doctrine of the Church (Vatican Council 2) put an end to funeral drapes (used to decorate the home). This change notably affected the biggest

nationwide firm of undertakers, PFG (Pompes Funèbres Générales)⁹. Owing to the after-war context, PFG had to be innovative in the way it provided funeral services. It was time to meet the American promoters of embalming, as they progressed from North America (Canada) to Europe. In association with J. Marette, director of a small funeral sanitation company¹⁰, PFG brought the methods of arterial embalming back from America. J. Marette created an embalming school and a French association for the development of embalming (Institut Français de Thanatopraxie). This very quickly led to a first generation of embalmers who worked as specialized technicians in PFG branches. PFG promoted embalming by building on death care infrastructures: the French “funeral parlor”, fitted with specialized equipment, was separate from the funeral shop (where coffins and other accessories were sold), and offered various funeral services such as preservation (refrigerated cases and tables), embalming (laboratory) and display (private room). It was the right moment to develop such establishments given that hospitals were confronted with a growing number of deaths¹¹ within their walls and did not have the appropriate equipment for post mortem care.

A century after the confrontations with Gannal, physicians were no longer putting up any opposition¹². On the contrary, they were facing a crisis in the way hospital deaths were managed. This time, the medical corps seemed to readily accept this new frontier between caring for the living and caring for the dead. In 1980, while thinking began about how to manage the profession of embalmer, State Counselor J. Aubert suggested the possibility of hospitals including embalming in their health care offer. What he actually observed was as follows:

“The current exercise of preservation care by hospital staff is not authorized by the deontology of paramedical professions, neither do some of these workers even wish to be involved in it. Indeed, hospitals maintain a distinction between care for the living and care for the dead in an often very dogmatic manner” (Aubert, 1981, pp XX-XXX). This opened up the way for “pompes funèbres” and embalmers to conquer the post-mortem care market.

The driving force of embalming companies

In just two decades, the funeral service underwent a marked change with the rise of embalming and funeral parlors. Like in the United States some fifty years earlier, funerals moved from the family home to the funeral director's establishment. As both a social and technical innovation, embalming accompanied this change in traditional undertaking activity, with corpse care becoming a professional service (preservation, beautification and embalming). “Body viewing” became a major part of funeral parlor economics (Clark and Sziming, 2003; Habenstein and Lamers, 1955).

It is interesting to note that, as with the American history of embalming, French history points to a close link between the professionalization of embalmers and the partnerships set up by embalming companies with the funeral industry, notably through the provision of equipment, instruments, fluids and disinfection products. As previously documented, the original structure of the funeral market in France at this period resulted from the supremacy of one big company (PFG) built upon a national network of branches covering the whole country. The partnership between Hygecobel and PFG, which gave rise to the construction of two hundred new funeral

parlors over a period of twenty years (1962-1982), unquestionably spurred the growth of embalming practices. At the same time, J. Marette founded the IFT (French institute of thanatopraxy), which initially organized training for thanatopractitioners who then worked for PFG. In the 1970s, a rival network was set up to face this consortium. It brought together the company Raffault¹³, the Fédération Française des entreprises de Pompes Funèbres (representing small undertaking businesses) and the EFSSM, a training school founded by this same federation in 1978. Given the influence of industrialists in the development of embalming in France, the first regulatory provisions relating to “preservation care” and included in the decree of 1976 mainly concerned the approval of fluids. The organization of the French embalming market thus stemmed from the control wielded by three major companies (Raffault, E.I.H.F. Isofroid. and Hygeco)¹⁴, who, on one hand were closely linked to the main schools and, on the other, were allied with the major players in the funeral business (PFG, federation of small undertaking businesses, etc.).

Professionalization of the embalmers' group

From the first “preservation care” developments in France to the emergence and structuring of a trained and organized professional group of embalmers (referred to as thanatopractitioners in France), there were two main driving forces at work. On the one hand, as part of the industrial partnership between product and equipment suppliers (Hygéco and Raffault) and major funeral market players, the leaders of the profession (Marette, Raffault, Clerc and Comtet) worked on organizing access to it mainly by controlling training. The threat posed by the appearance of unqualified

professionals on the market meant that thanatopractitioners had to get on with each other and set up a collective organization in order to define the bases for their professional empowerment. On the other hand, it was by remaining annexed to the funeral service business that embalmers managed to obtain real jurisdiction enabling them to organize their professional monopoly. Following several legislative procedures (1986, 1993), the liberalization of the undertakers' profession led to the restructuring of their field and the conditions for accessing the profession (funeral director). Embalmers benefitted from this in two ways: first with the monopoly excluding other potential candidates from practicing preservation care (notably the paramedical professions and hospital staff) and then through a proper certificate, i.e. a State diploma.

One century after being defeated by the monopoly of physicians, embalmers were able to build their occupation as an independent body of experts, mainly thanks to the strength of the network of professionals (undertakers) and industrialists (equipment suppliers). However, physicians were not entirely excluded from this movement, even though they contributed to it through a relationship that was strongly marked by their ambivalence towards this “related” professional segment. On the one hand, they were called on by embalmers to help with training and hence acted as tutors teaching them the rudiments of anatomy to improve their expertise. This role was consecrated by the sanctioning authority institutionally entrusted to them via the national jury. On the other hand, fearing that this authority would only back up the labelling of this marginal segment as a paramedical profession, they tended to distance themselves from embalmers and play down their importance.

Experts, business men and industrialists in the history of embalming innovation

Over the course of this historical account of modern embalming, we have identified different forces behind this innovation, which can be defined as both technical (invention of injection embalming, chemical solutions, etc.) and social (preservation, display and aesthetics of the deceased). The first comes from the embalming de-compartmentalization process: before belonging to a specialized occupational group (embalmers), embalming had to extract itself from the medical field (anatomic research, health control, etc.) in order to evolve into a profession focused on care of the deceased with an essentially aesthetic goal (display of the corpse). The fact that history only remembers J. N. Gannal as the father of modern embalming reflects this symbolic shift: he is decidedly the driving force behind the requalification of embalming, as a democratized practice focused on caring for the deceased and, with this redefinition, the establishment of a new category of practitioners (Abbott, 1988; Abbott and Meerabeau, 1998). The episode of the Civil War in the United States, like that of the interruption followed by the advent of embalming in France, shows that physicians indeed constitute an obligatory point of passage: legitimization of the new embalming qualification (aesthetic embalming), transfer of technical and professional knowledge to a related professional segment and, in short, control over the trajectory followed by the innovation (Freidson, 1988 [1970]).

The second movement reveals the central role of material culture in this innovation (in the sociological sense of the term, i.e. including its spread): throughout the “pre-history” of modern embalming (from the end of the Middle

Ages to the 19th century), innovative embalming processes sprung up here and there without these innovations being linked in any way or benefiting from capitalized knowledge. On the contrary, the processes were often kept secret and their spread limited to the group of peers (physicians, barbers, surgeons). Following an almost diametrically opposed movement, the fluids (such as Sucquet’s or Gannal’s preservation fluids) or instruments (such as Holmes’ pump) acted as powerful accelerators of innovation and vectors of business activity. For Gannal and Holmes alike, keeping the processes and formulae secret was more a question of controlling trade in fluids and instruments than serving a professional monopoly¹⁵. The major turning point in the history of modern embalming concerned the first businesses launched in France by Sucquet and Gannal and in the United States by Holmes and his embalming physician colleagues. Closely related to the process, the instruments and fluids constituted the essential links in the setting up of the first networks bringing together the different protagonists of the innovative enterprise: Gannal or Sucquet and their concessionaires, Holmes and the embalming physicians during the Civil War, the first embalming companies and undertakers in the United States, followed by the same companies and funeral businesses in France fifty years later. Moving from the experimental field to industrial production, they also represented a powerful vector of market expansion, as reflected in the essential role of embalming industrialists in the training of embalmers and in the professionalization of the activity.

The trajectory followed by this innovation underlines the importance of these material elements as vectors

of business dynamics with positive externalities such as the perpetuation of technical knowledge, capitalization on inventions, and the spread and stabilization of associated processes, etc. In the same way, the material culture of embalming has played an essential role in the setting up and stabilization of activity standards. It has largely supported the normalization of practices in the commercial and industrial operations accompanying the innovation and its increasing popularity. Today, as in the past, an oligopoly of mortuary product and equipment firms has transformed a trend into a uniform practice. As in America fifteen years ago, the French embalming market is today controlled by two major companies (E.I.H.F.-Isofroid and Hygeco). The control of the national license by these same market players is determining in the spread of a unique method¹⁶, backed up by the close connection between process and fluids¹⁷. The firms not only provide all the embalmers with equipment and fluids, but also the entire chain of funeral professionals (from those working in the hospital cold room to those working in the funeral parlour, including the necessary equipment for the hearse). The hegemony enjoyed by these embalming market leaders fosters standardization dynamics, which in turn support the professionalization of the embalmers' group. Thus, the standardized industrial production of equipment and products goes hand in hand with the accelerated development of intermediary professional and prescriptive networks (of embalmers) and, with this, the building of a new model for the "right way to die".

Structuring work along the chain of professionals involved in treating the corpse

This historical account of modern embalming as an innovation has emphasized the role played by the various "entrepreneurs" in terms of the invention, appropriation, commercialization and spread of the innovation. We now propose to develop an additional reading of contemporary history, focusing on the way the innovation has triggered the extended reconstruction of the socio-material *agencements* in which it is embedded. This "ecological" perspective looks more closely at how the innovation has spread along the chain of professional and business interactions, highlighting the rising of standardization and rationalization in the process of disposing the dead.

Embalming practices seem to have developed inseparably from the growth of "corpse handling" as a new service area, including the building of equipment and infrastructures dedicated to body viewing. As we have seen, the specialized organization of funerals lead to industrial determination, and hence to the production of infrastructures (funeral parlours), equipment (laboratories), material means (refrigerated boxes, ambulances), and technical tools. Improvements in corpse care had further effects on the centralized and specialized management of funerals. The ritual of death—which used to take place in the family home—moved to the private mortuary (funeral home), with practitioners performing specialist tasks (arterial embalming). Following our examination of the emergence of this type of organization, we now propose to investigate the implications of this new "funeral organization" service economy,

looking at the way the corpse is handled from the hospital through to its final place of disposal. What knock-on effects does the disposal of the dead have on inter-professional coordination? What transformations have taken place at the interface between health professionals and undertakers? How do health professions feel about the way the corpse has been appropriated by this marginal profession? Our analysis here shall focus on the contemporary French funeral service organization.

Development of a new care sector

This subsection focuses on the material *agencements* governing socioeconomic interactions in the funeral area (Callon, 1998; MacKenzie and Hardie, 2006). We shall examine how embalming takes place in the cooperative arrangements between the protagonists and, more generally, how it contributes to the close link between distinct professional spaces (hospital room—funeral parlor—private-sector business). We shall see how the management of this professional “interface” increases the force of standardization mechanisms in death care tenfold.

The previous sections touched upon the relationship between the medicalization of death and the development of embalming. However, a more in-depth investigation highlights the reasons behind this correlation. Until 1980, when death was medicalized in France, hospitals were overwhelmed by the sudden increase in mortality within their walls. On the one hand, they were not suitably equipped to accommodate the deceased. On the other hand, they did not provide any “services for the deceased” as part of their scope of activity. “Funeral parlors” gave private operators the lucky opportunity to win

customers “upstream”. The funeral business’s interest in moving in closer to where mortality was concentrated did much to further the substitution of private morgues for the public hospital variety. The offer was immediate, efficient and less costly, while at the same time it temporarily dispensed hospitals from investing in ad hoc equipment.

Competition in the funeral sector aimed to stabilize the socio-technical networks involved in the death-to-disposal process (Trompette, 2007). By shifting the focus from the hospital to the funeral parlor, the funeral director has shortened the gap between him and his customers. The efficiency of these facilities in capturing the customer is undeniable; the imbalance they cause in market distribution is a source of numerous conflicts and lawsuits between funeral businesses. Consequently, private funeral parlor operators set up official or tacit agreements with hospitals. As a crucial facility in the service relationship, the funeral parlour exerts a strong pull on the channelling of death, with the construction of an operational and symbolic continuum between health spaces and death places. “Funerariums” (French term for “Funeral parlor” or private mortuary) have thus become a kind of health care institution annex; “funerarium” workers can now immediately start work handling and treating the cadaver. Keeping it in a refrigerated compartment is both a practical and symbolic supplementary stage in the chain linking treatment with “post-treatment.” Since there is no hospital unit exclusively devoted to this end, hospital caregivers readily contact funeral operators to have bodies removed. Funeral business staff moves freely through hospitals to remove bodies, and takes over the task of mortuary bathing,

thus relieving hospital staff altogether of the handling of the deceased.

Let us look at how a corpse is transferred from the health care institution to the funeral parlor. Physicians, orderlies, and even relatives themselves often see it as a godsend to have an agent who will immediately take charge of the body. From hospital room to private funeral parlor, no one (least of all the corpse) asks questions about how the body is discretely moved from one place to the other. Doffing their dark suit for an orderly's white coat, funeral business employees stage a symbolic continuum between the hospital ward and the funeral service: "My mother saw two people dressed in white arrive with a stretcher. She thought they were hospital staff. They put the body on the stretcher and took it away. She didn't understand that it was the funeral operator, and that my grandmother was being taken to the funeral home. The orderly later explained to her that they couldn't keep the body in the clinic,"¹⁸ recounts a young woman questioned about her choice of operator (Sandrine, interview, February 2003).

Occurring at the core of the "capture-the-customer" economy of the funeral business, the work involved in formatting and channelling the circulation of the deceased includes the entire chain of people treating the dead. This chain is based on cooperation and affiliation between health professionals and death professionals. Socio-technical networks connect spaces and create a continuum of action between the health care establishment (hospital, old people's home, etc.) and the funeral parlor (Thrift, 2004). The death care field establishes an immediate continuity with that of disease care. Owing to the competitive strategies at play, the management of the interface between life and death relies on

powerful material and practical links that organize the standardized circulation of the deceased.

The search for professional assimilation with the medical world

Through the history of embalming, we witnessed the emergence of an ambivalent relationship between physician embalmers and undertakers. We also saw that the control over the body exerted by embalming triggered a constant reassertion of the boundary between experts and laymen.

In spite of the professionalization of practitioners in France today, the relationship between physicians and embalmers continues to attest to the formers' constant concern to reinforce the distance between them and this illegitimate segment. Conversely, when morticians first adopted embalming as an occupational specialty, the pendulum swung the other way. They attempted to benefit from the legacy of embalming in order to move in closer to the medical professions. In the professional funeral field, the group of corpse care experts rooted itself in a practical and symbolic affiliation with the medical world while at the same time remaining independent of that world. In the French context, the independence of embalmers is reflected in the fact that they form an internal but distinct segment. This reinforces their position as belonging to a separate, more expert and honorable occupation than that of simple undertaker. Their technical expertise has helped them to fulfil their quest for professional status through the "pseudo-scientific nature of the work" (Parsons, 1999). "Contemporary funeral directors do attempt to ride the rhetorical coattails of the medical professions, borrowing their terminology and favourably comparing their own

dirty work to the medical professions' allegedly dirtier work", comments E. C. Cahill (Cahill, 1995, p. 129).

French embalmers aspire to the same assimilation. Their affiliation to the medical world is stamped in the material culture used in the funeral parlour's back office. The *modus operandi* of the technology applied—termed “preservation treatment” by the authorities in 1976 - underlines the extent to which the process of treating the deceased follows a natural continuum from the world of health care. From the equipment in the back office where the embalmers work to the instruments they use to operate on the body and stop it from decomposing, everything reminds us of the health care universe (Cahill, 1995). Referred to as “a care-giving room” or “a laboratory”, the preparation room in funeral parlours has much in common with the hospital world; it is even located midway between the operating theatre and the post-mortem examination room. The whiteness of the flooring, the stainless steel equipment (preparation table, work schedule, etc.) and the very strict hygiene regulations (sink functioning automatically, recovery containers for corpse care waste presenting a risk of contagion, etc.) provide ideal working conditions (suitable lighting, ventilation and disinfection systems, etc.). Dressed as a surgeon (mobcap, mask, gloves, apron, footwear, etc.), the practitioner works with instruments that are as complex and specific as those used in surgery (bistouries, pliers, syringes, etc.).

As well as the similarities created by the sanitized configuration and professional equipment, the development of “mortuary science” as a source of knowledge generation brings the two worlds even closer together. Mortuary science has improved ability and

expertise, especially with respect to the “restoration” part of embalming (Cahill, 1995). This expert field originated in the United States in 1910 with Joel E. Crandall, who invented the term “demisurgery” and initiated restorative science: “The art of building or creating parts of the body that have been destroyed by accident, disease, decomposition or discoloration, and making the body perfectly natural and lifelike” (Mayer, 2000: 575 [1996]). Over the course of the 20th century, much progress was made in this field in the United States. In France, on the other hand, this subfield has only recently emerged and is reserved for more experienced practitioners. Restorative art is different from the routine, standard techniques inherited from physicians. Restoring a body and, in particular faces that have been damaged by accidents or disease, is a pretext for practitioners to further cultivate their techniques and know-how. Using medical terminology, they perform “reconstructive surgery” at the outskirts of the medical field, their aim being not only to preserve the body of the deceased but also to repair and beautify it (Lemonnier, 2006).

Embalming to support the “structuring process” in funerals

Embalming as a specialized occupational activity has developed materials and a social culture in relation to the medical world. Nonetheless, embalmers act as intermediaries between bodily care and funeral services in the handling of the deceased. This two-sided role is interesting insofar as embalming is also strongly embedded in the cooperative and coordinating relationships with undertakers.

Embalming tasks can be interpreted as a form of ‘structuring activity’ in the organizational process of handling

death (Straus et al., 1985). “Funeral organization” involves complex arrangements, including inter-professional coordination, for the management of the corpse from the place of death to its final destination. Today, governance of the entire process of care of the deceased is undergoing substantial rationalization. The challenge is to create a continuum of care for the deceased and their family by coordinating all agents (nursing staff, palliative services, public authorities, funeral staff, representatives of the church, psychologists, etc.). This is especially important in large organizations aiming to rationalize their means and equipment (centralized logistics for the provision of hearses and staff). At the same time, a dead body can never be considered as something that is “routine” but rather as a source of uncertainty and tension. Decomposition, family drama, urgency, heterogeneous stakeholders, etc., are just some of the potential disruptions in the continuum.

Embalming plays a major role in the ‘alignment’ of tasks, deeds and work as part of a complex process where heterogeneous resources are aggregated with spatial and temporal conditions (Fujimura, 1987; Strauss, 1988). Aiming to both preserve and beautify¹⁹, embalming processes improve the transport and handling of the deceased, as well as sanitization²⁰, worker comfort²¹ and management of family tensions (a beautified corpse appeases pain). For this reason, funeral parlour managers will invariably recommend embalming when the family wishes to display the body. As in other countries, with the euphemistically termed “temporary preservation” or “preservative treatment”, the absence of a family’s objection is taken as permission to embalm. Thus, by improving logistics, embalming enhances the standardization

of the complex process of handling death.

The central role of embalmers in the organization of funerals draws attention to alternative embalming practices. In fact, the “medical” pattern previously examined cohabits with a more pragmatic *modus operandi*. This primarily concerns other death places like the home and is commonplace in the countryside. According to a recent study on embalming activity, around 20% of cases are still performed in people’s homes or other places considered as such, with the absence of specialized equipment. In the situation where the family asks to keep their dead, embalmers can operate in the home. They convert a bedroom or a living room into a makeshift workspace and operate using basic instruments (jerry can, manual pump). However, this “travelling” thanatopraxy is often criticized by part of the profession who demand “normalized” practices. The existence of these two types of practice reflects the embalmer’s propensity to deal with two different itineraries when handling the corpse. As intermediaries, they are required to interface either with the health establishment or the undertaker.

Standardization of the process and “intimization” of death²²

This final section will examine how a standardized professional rhetoric has emerged as thanatopraxioners have worked on their relationship with adjacent professions concerned with care of the deceased. The operational continuum between the health care establishment and places of death is also reflected in the standardization of meanings. The process of death care professionalization has not only brought substantial change to funeral practices but also a new way to qualify “death” and “the dead”.

In the medical field, sociologists have identified the rise of the hospice model advocating "death awareness" in the context of palliative care in which the individual is placed in the middle of the end-of-life process. This model conveys representations of death marked by *"a clear-cut will to produce practices where personal meaning prevails over the concerns of etiquette: individuals want to give meaning to an experience which they have undergone, and lived through as a personal one. With the "death awareness" model, it is the dead person who presides over their own burial, the burial having the purpose of celebrating their innermost self"*. J.H Déchaux qualifies these developments as the **"intimization" of death** (Déchaux, 2000:161).

In funeral directors' and embalmers' claim to be involved in the (re) socialization of death, there is an echo of the construction of scripts and meanings by health professions in the context of palliative care over the last few decades (Memmi, 2003; Seale, 1998). Within the palliative care area, Seale (1998) staged a confrontation between various cultural scripts relating to the categorization and treatment of the dead. In this confrontation, he sets medical and paramedical speeches against speeches with psychologically dominant revival features (referred to by the author as the "revival of death awareness"). Just as the dying person finds himself at the centre of a controversy about how to read the script about the right way to die, the dead body becomes an essential element in the rationalized management of the process of mourning. Funeral practitioners are engaged in the production of "models of death" supported by a range of either alternative or additional theoretical resources (medical speech, psychology, sociology, etc.). Only the models supported by these different worlds

(health profession/funeral director) differ slightly. Undertakers defend an "aesthetic" conception and construction of death, far removed from the "death awareness" advocated by health professionals, notably in the context of palliative care (Seale, 1998).

This conception reflects morticians' view of themselves as the "producers of symbolic goods" (Bourdieu and Nice, 1980) and ministers of the modern social caretaking of the dead, even if this is not something they claim openly. As the agents who traditionally handled this work (priests, brotherhoods, etc.) moved out, funeral directors and embalmers became the new protagonists of the burial ritual and provided their own specific meanings (Chamboredon, 1976). In the sociological theory of the denial of death, they have found a theoretical foundation for this rhetoric.

Today, funeral operators' programs include an increasing amount of "ritual" services. Large firms have worked hard to create "ritual products", called "civil ceremony", "personal homage" (graveyard), "personalized ceremony", etc. This activity links up with a wider demand to be an agent of the (*re-*) **socialization** of death. It draws deeply on theories about the social denial of death (decline of traditional rites, thanatophobia of modern societies, etc.), which are moreover supported by certain sociological and psychological speeches, with the argument that there is a need to re-tame our bodies.

Thanatopraxy primarily contributes to the aesthetics of this intimate theatre of display, with its increasing focus on luxury and harmony (beauty of lounges, exhibition of the body in a dressed coffin, etc.). From a more fundamental point of view, thanatopraxy is considered as a fundamental part of the death approval and mourning process. Embalming

encompasses almost all the care that is not directed at cure but at the physical and social aspects of the (dead) body, including the bereaved ones' need for care. Embalming is intended to bring psychological comfort to families who can see the familiar and peaceful face of their loved one for the last time in the funeral parlor viewing rooms. This argument feeds off one of the contemporary leitmotifs, stemming from psychological ideas that have thoroughly permeated conceptions of mourning (Bacqué, 2000; Hanus, 2000): these notably suggest the necessity "to see the deceased" to make the mourning process easier. The embalmer has thus become one of the main mediators of this obligatory point of passage, i.e. the confrontation with the deceased, by being the artisan of a calmer meeting in which the living are relieved of the anxiety of being confronted with decomposition. The serene expression on the face, the pinkish color of the skin, the restored integrity of the body, death here becomes confused with endless sleep, very much like that which came over Snow White in her glass coffin.

The privacy of the exhibition rooms, the falling back on family and friends, and the exhibition of the body reflect the same death "intimization" process described by J. Déchaux. They convey the privatized expression of feelings and mourning process, which was traditionally shared out between the family, social agents (the people keeping vigil over the dead body, priors, hired mourners, etc.) and local people. The expression of emotions is today restricted to the family circle (Segalen, 1975). Thanatopraxy plays an essential role in this social construction by providing the family with a body reconciled with its own image. Contemporary embalmers rhetorically champion the therapeutic benefits of their profession for the grief-

stricken. "We are sellers of the last image, facilitators of the mourning process", says one of the most important figures of thanatopraxy in France.

Like palliative care, embalming and the display of the corpse are a major part of the dead body re-qualification process. This process is characterized by the central place granted to subjectivity: that of the deceased, through the will to give some meaning to their life by drawing on the most intimate details of their personality; that of the families, as they are confronted with a process of detachment and biographic reconstruction. Embalmers, like funeral directors, play a very important role in the implementation and directing of emotions.

Conclusion

This paper has traced the evolution of a technique in the field of medical anatomy and its re-appropriation by a secular sphere (funeral) and marginal professional groups (embalmers and undertakers). It has examined the long process of embalming de-compartmentalization as embalming has shifted from a medical speciality to the funeral area, with the resulting emergence of a marginal group of practitioners/experts indirectly related to the medical corps. Our study of this process has shown the extent to which this shift could not have taken place without the de-compartmentalization of knowledge, understanding and innovations, long contained by professional secrecy. It has explored the role of physicians, as professionals monopolizing access to the human body, in processes aiming to reveal or conceal knowledge. It has also underlined the central role of material culture in the spread of embalming innovation: as a vector of emerging

trading networks, as back-up to the industrialization of the sector and as a setting for the normalization of processes and equipment (tools, devices, spaces, etc.) through public action.

The professional dynamics behind this process have relied on constant connections and re-connections between adjacent worlds. As a specialized segment, embalming has thus become part of the cooperative chain surrounding death, forming a bridge between the medical world and the funeral world. It supports the re-qualification of the corpse along the cooperative chain, from health institution to funeral parlor. Embalming innovations appear here as “embedded” in the renewal of all inter-professional coordination around death and in the re-definition of new professional identities. Using an ecological approach to innovation and profession, the analysis has drawn on different points of view with respect to the various forms of alignment between these related professional spheres (care of the dying, care of the dead and organization of the funeral): a) channelling of the deceased from the health care establishment to the death care site; b) adoption of medical terminology, material culture and expertise; c) enhancing of the funeral service organization rationalization process; d) creation of a coherent sense of mission for the “professionals of death”, related to the social construction of death. These four aspects involve many different factors that guide the itineraries followed and modes of disposal of the dead. Finally, the material and symbolic continuum between “care of the dying” and “care of the dead” has tended to standardize the organization of funerals in the way the corpse journeys from the hospital to the final place of disposal. This standardization movement proves to be inseparable from the construction

of a social conception of “the right way to die” in the field of “death work”.

Notes

- 1 E.g. A. Paré (1509-1590) cf. (Malgaigne 1840-1841); Guybert (Guybert 1629).
- 2 Naturalist physicians worked on collections for the history of anatomic science museums.
- 3 Historians report the original but marginal embalming experiments conducted by Leonardo da Vinci (1452 – 1519), where anatomical studies were associated with artistic goals (anatomical plates).
- 4 Doctors G. Tranchina (Italian), T. Marshall (England), Morgan (Ireland) and J. P. Sucquet (France) are just some of the names associated with this new phase in the history of embalming (Mayer, 2000 [1996]).
- 5 We are drawing here on the testimony provided by the embalming physician Doctor Gervais who was moreover an exclusive user of the Gannal process (Gervais, 1845).
- 6 At the same time, several physicians and anatomists experimented with embalming processes involving the arterial injection of a chemical compound.
- 7 According to historical stories, Holmes himself treated around four thousand corpses, charging \$100 each for officers and \$25 for enlisted men (Quigley, 1996).
- 8 Source: “Décès Massifs” report - 12 March 2004. Prof. D. Lecomte & INSERM.
- 9 Based on a large network of branches, it enjoyed a “quasi-monopoly”, having inherited this from the former system of state franchises granted by parishes and communes. PFG’s market share over this period is estimated at around 55% of the national market.

- 10 Originally, Hygeco was a launderette founded by Louis Marette in 1887 in France. Later on, the business also disinfected bed linen for hospitals following a death. In 1946, the company started using dry ice to preserve the deceased for longer.
- 11 It is worth recalling the extent of this movement to hospitalize death. In 1964, 63.2% of deaths occurred in the home, compared with 33.5% in medical establishments (hospitals, hospices, retirement homes). Twenty years later, the ratio was reversed. In 1983, on a nationwide basis, 66% of deaths took place in medical establishments while only 30.5% took place in the home (Barrau, 1987)
- 12 According to the testimonies of thanatopractitioners at the time, a small number of country physicians practising embalming apparently claimed to have a monopoly over this business, although there is no proof that they ever achieved any kind of institutional reach (French physicians' association).
- 13 After having worked for the company Marette (Hygéco), C. Raffault founded his own company in 1974 and initially specialized in toiletry and preservation using carbon dioxide snow. After following several courses in England and Belgium, he obtained his diploma as an embalmer and developed his own training system. The company then specialized in subcontracting out care and selling equipment and sterilization products.
- 14 In 2008, the company Raffault was bought by EIHF-Isofroid, reducing the market to two major companies.
- 15 Although he systematically published his anatomical preservation methods, Gannal never published the embalming process he used to control its exclusive application. Holmes filed three patents pertaining to embalming but kept the process and the solution used secret ("Inominata") in order to control its commercialization.
- 16 It is by working closely with a certain number of instructors affiliated with the training schools that the trainee practitioner learns how to embalm. The techniques are invariably transferred from the training officer to the trainee embalmer according to the same teaching and the same practical know-how, thus tending to standardize both embalming know-how and forms of body viewing in France.
- 17 The physical feedback of the body depends on the specific fluid composition and its mode of administering.
- 18 This particular clinic has a small mortuary, but no staff assigned to run it. It is therefore much easier for the clinic to call in a private organization.
- 19 A slightly coloured antiseptic solution is injected into the arterial system of the deceased. This helps slackened body tissues (e.g. the eyeballs) to recover a certain amount of elasticity and does away with the deathly pallor. Once the expert has done his job, the body offers a face with some colour in it and repositioned features for the family members to gaze down on one last time; a beautiful corpse, looking like a "living person in eternal sleep".
- 20 24 hours after the officially reported time of death, public regulations require a corpse to be embalmed for transportation before it is laid in the coffin.
- 21 Less handling operations and lower health risks.

22 We refer directly here to the concept of “intimisation de la mort” proposed by J. H. Déchaux.

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