



Research article

Owning humankind: fossils, humans and archaeological remains

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ABSTRACT

There are a myriad of laws, guidelines and unwritten agreements relating to human, hominid and hominin remains. Legal gaps and inadequate definitions of what constitutes a fossil have meant that a ‘finders keepers’ approach is often applied to the ownership and control of our ancestors’ remains. Such shortcomings expose numerous legal and ethical conundrums. Should any one organisation, individual or government control access to recently-found remains, limiting opportunities to unlock the secrets of evolution? Given that humans can start fossilisation processes immediately after burial, at what point does it become appropriate to dig up their remains? And who should control access to them? Could any prehistoric *Homo* ever have imagined they would one day be exhumed and their remains laid out in cases as the centrepiece of a museum exhibit? This paper surveys a number of implications that arise from these foundational questions, and ultimately challenges the belief that human, hominin and hominid remains are self-evident ‘objects’ capable of clear ownership: rather they constitute creative cultural intersections, which are deserving of greater ethical consideration. Protocols for respecting, protecting and conserving remains while allowing a greater equity in access to information about our common ancestors are both desirable and urgently required.

1. Introduction

All humans can claim a common ancestral link to some hominin and hominid remains: this is one of the reasons that each recent discovery of previously unknown remains has generated tremendous levels of interest from both the scientific community and the general public alike. However, at the moment a ‘finders-keepers’ rule is frequently applied, whereby the person who extracts the fossilised remains from the landscape is allowed not only to keep them in a museum or laboratory, but also to ration access to the information that each specimen may reveal. Laws, principles and understandings on when the remains of a deceased person change from being protected to becoming ‘fair game’ for fossil collectors are at best inconsistent between jurisdictions – and at worst non-existent.

In the past decade, new discoveries in anthropology [1, 2, 3, 4] have completely reshaped our ancestral evolutionary tree and scientific understandings of the origin of our species. However, increased understanding from these discoveries is limited by the laws and/or preferences

governing access to each new find. We are therefore compelled to ask— who owns humankind?

Hominid fossils hold invaluable information about universal human history, yet they are most of the time treated as the assumed ‘property’ of another entity. Depending on where the fossil is found, the custodian may be a museum, a government agency, a public or private research institute, or simply the archaeologist or paleo-anthropologist who discovered the fossil. Each may have their own governance protocols and legal frameworks, and may establish their own rules about who gets access to the remains, and the analytical methods available to extract information. On April 26–27, 2007, a workshop was held at the Max Planck Institute for Evolutionary Anthropology in Leipzig, to answer ‘the question of how to balance preservation of fossil hominid remains for the future against the application of current scientific analyses’. As a result, ‘the participants produced a set of recommendations that might be useful to museums and other institutions as well as scientists that have to make decisions on requests for invasive sampling of hominid remains.’ However, albeit providing useful recommendations, the article fails to take

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into account the existing jurisdictional landscape within which such recommendations are to be articulated. By not engaging with existing regulatory regimes, the article presents a set of desiderata without reference to the baseline from which those desiderata are to be established. As a result, a number of issues arise, all of them relevant to inscribe those recommendations within the tapestry of existing legal provisions.

In this paper we want to begin to explore the ambiguity between the inconclusiveness of the laws of property, the open-ended nature of what is a ‘fossil’, and the increasingly divergent practices of anthropologists and archaeologists who engage in the discovery of fossilised human and human-like remains. We contend that the appropriation and management of access to fossils has been subject to uneven, unequitable and unethical controls for far too long. Far from being a self-evident ‘object’ capable of clear ownership, human, hominin and hominid remains are located at contested and poorly regulated cultural and legal intersections.

2. Fossils, humankind and archaeological remains

Unresolved issues relating to the ownership of and access to remains came to a head following the discovery of *Homo naledi* [5, 6] in the Rising Star cave near Johannesburg, South Africa. The unorthodox ways in which the team of researchers applied excavation and scientific analyses, with a *public* disclosure of the site and its fossils, before an extended excavation was even conducted, was heavily criticised by colleagues in the discipline. This ‘open access’ policy, not only in respect of the publication but also in respect of the fossils and data collection, was judged by many to breach scientific ethics and protocols, arguing that ‘the discovery matters less than the studies that follow’ [7]. In adopting this open-access approach, an important question was raised that challenged orthodoxies of practice: should the discovery of fossil remains and the information disclosed be freely available? This proposition threatened the *modus operandi* of the archaeology discipline, in particular the assumed status of excavated human, hominin or hominid remains based on assumptions about ‘rules’ of discovery and first possession. The ‘finders keepers’ approach was then rapidly applied and remains subject to a range of studies controlled by those who excavated. The public revelation of the site location and also the fact that only part of the site had been excavated raised questions about the rights of those who may choose to follow to excavate and control other remains which may yet be discovered in the cave, regardless of whether they have any scientific training or not. This case raises a number of issues, which clearly need to be properly addressed.

Fossils are often imprecisely defined, as the term has taken on a broader meaning in recent times. The term comes from Latin *fossilis* “dug up”, but has been defined by the Oxford dictionary (<https://en.oxforddictionaries.com/definition/fossil>, 2017), as the remains (or impressions) of a plant or animal embedded in rock and preserved in petrified form. However, this narrow definition does not encapsulate the way scientists use the word in contemporary literature. For example, eggshells or coprolites, when found in archaeological excavation, are neither the direct remains nor the impression of an animal, but are nonetheless described as fossils. Similarly, bones that are in the process of fossilisation, but not yet petrified, are frequently classified as fossils by scientists in their studies. Accordingly, in this paper we propose to broaden the definition of *fossils* to any preserved evidence of a past organism’s biological activity. In doing so, we are including anything that directly survives from the organism’s activity, but excluding technological activities and artefacts such as stone tools, cave painting or fire pits. Furthermore, since fossilisation processes can start immediately after the death of an organism, yet may take millions of years to be fully completed, the term ‘fossil’ can refer to remains from very different times. Therefore, the definition cannot be accurately attached to a specific timing, nor a preservation state.

By ignoring the limitations previously described (e.g. fossil definition, access and implication, and human versus non-human remains), we are

left with generally similar practices, but dissimilar laws. Importantly, this schism between normative practices and the law illustrates a paradox that goes to the heart of ‘owning’ humankind: archaeological practices surrounding claims to ownership of fossils rarely follow law and legislation. Typically, access to samples continues to be up to the discretion of

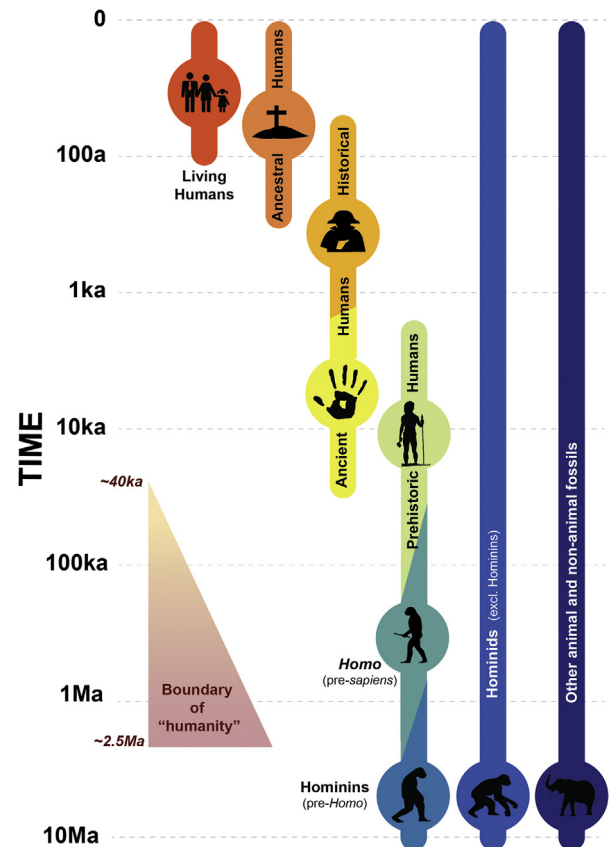


Figure 1. Illustration of the ambiguity and complexity between legal, anthropological definitions, and in some extent dogmatic aspects, of distinct organisational units. (ka refers thousands of years and Ma millions of years). (i) Living human (0–120 years); (ii) Recent human remains (recently deceased and direct relative up to 6 generations, 0–250 years); (iii) Historical human remains (historical or ancestral figures, recent – ? years); (iv) Ancient human remains (Ethnic or cultural remains, recent ~ 50ka); (v) Prehistoric humans (ancestral species, ~400ka); (*) complexity of the potential *Boundary of “humanity”* (*Homo neanderthalensis* interbreeding, *Homo erectus* likely direct ancestor, *Homo floresiensis* side branch not directly related, first early *Homo*, 40ka ~ 2.5Ma); (vi) Hominin (excl. *Homo*, but includes taxon such as *Australopithecus*, *Paranthropus*, *Ardipithecus*, 0.8Ma ~ 5Ma); (vii) Hominid (excl. Hominins, but includes other great apes and their ancestral lineage, 0 ~ 18Ma); (viii) Other animals and non-animal fossils (0 ~ 4Ga); While the first group (i) do not require any additional definition, the second (ii) and third (iii) groups obviously overlap. The main difference between the two groups will come from the legal definition of the degree of separation to which remains can be claimed as direct ancestors. Cluster (iv) includes two particular aspects of the individual, the ethnic group (perceived by the individual or according to DNA) and the cultural ancestry. One individual does not systematically identify himself to the culture traditionally associated with its DNA ethnic group. This introduces complex ramifications for legal status and certain rights depending on the country. To some extent, the same complexity can be seen for cluster (v), where interbreeding between modern Human and *Homo neanderthalensis* can be seen in the DNA of individuals today. *Sensu stricto*, the entire *Homo genus* is regarded as being Human (anthropologically but not legally), while obviously some members have no direct ancestors with modern humans. To the contrary, some hominin species (cluster vi) could potentially be directly related to all living humankind. Nonetheless, for biological reason that will not be discussed here, anthropologists no longer consider human, the “*hominins cluster (excl. Homo)*” such as *Australopithecus* or *Paranthropus*.

the ‘owner’, often the archaeologist who discovered the fossil in the first place, and generally irrespective of (and sometimes against) the legislative framework governing the locus of discovery. Such practice induces the ‘gentleman’s club’ syndrome, whereby being part of an influential group gives a higher chance of accessing important fossils. It also implies a restricted approach to scientific innovations, since by restricting the work to a similar small pool of scientists, and therefore limiting new ideas, new technological applications and new discoveries are made more slowly. More transparent approaches are already in place in many countries, with attempts to standardize access procedure and impartial decisional committees being made [12], yet these efforts are yet far from commonplace.

In these contexts, existing laws on the status of fossils are likely to require revision, especially if the definition of a fossil itself is to be revised. Humans and human remains have a particular status in most of the world’s dominant legal systems, when compared to animals. But once again, the definition of ‘human’ itself is constantly evolving and still debated amongst scientists, making the law subject to interpretation when it comes to archaeological human remains (Figure 1). Moreover, in view of the recent DNA discoveries of interbreeding with *Homo neanderthalensis* [8] and *Denisovans* [9], or with the young but archaic species of *Homo floresensis* being indirectly related to modern humans [10], scientists are continuing to struggle in search of consensus. Scientific beliefs in this field frequently have a direct or indirect impact in shaping laws. Not long ago, it is worth noting, several nations even excluded certain ethnic groups from the definition of humans [11].

In order to initiate a discussion about current codes of conduct and research practices of fossil remains, and pointing to a new ethical framework, it appears necessary to firstly describe, compare and understand existing legal frameworks. From a legal perspective, the jurisdictions discussed in this paper only engage at a very protean level with the nuanced problems mentioned above, which serves as an invitation for further – and deeper – comparison; further, they reflect the most classic duality of the Western legal tradition: that is, the classic distinction between civil and common law.

Key countries were chosen as introductory examples, based on a number of key considerations, including relevance of fossils found in the country with regards to human evolution, ease of access to information (e.g. language, availability of expertise), quality of the scientific research and recent discovery, and lastly current events, incidents, or measures in the country relating to ownership of human remains (Table 1). The jurisdictions selected for this paper reflect the sites of well-known discoveries of human and human-like remains that represent important aspect of the ownership of humankind, but are, by no means, exhaustive or fully representative of the full palette of legal approaches. The examples will show that while the law purports to provide some degree of clarity, it remains muddled by divergences between key legal traditions (Figure 1).

2.1. Common law remains in common

Australia, the United Kingdom, and Kenya provide a snapshot of the common law’s treatment of the human dead. The UK is the doctrinal ‘home’ of common law; a legal tradition exported throughout its empire. As former colonies, Australia and Kenya exemplify how the common law adapts to divergent ‘foreign’ contexts.

All jurisdictions share a starting premise, that there is no ‘property’ in a human corpse. A corpse cannot own anything and ownership of a corpse is not regulated – only the dissection or removal of tissue from a corpse. However, license for burial and exhumation is regulated. Frequently attributed to jurist Edward Coke in *Haynes Case* (1614), the apparent simplicity of this core tenet is misleading. The common law’s central logic frays as soon as its jurisdiction moves beyond the intact corpse. Thus, human intervention may ‘excise’ propertized human tissue (like cryogenically stored semen) provided there is sufficient ingenuity, alteration or modification, Lockean ‘sweat equity’. In a landmark case, the Australian High Court propertized the unborn fetuses of 40 year-old

Table 1. Representation of the different jurisdictions statute against the ownership of human, hominin, hominid, animal and general fossil remains. The disparity of legislations between countries highlights the complexity of dealing with remains and fossils on a legal point of view. (Unspecified: UNSP). The lack of homogeneity, regulation, statute, and common practise between countries facilitate unconventional and unethical practises.

Jurisdictions	Living humans	Deceased humans	(contd) kin	(contd) old	(contd) cultural/archaeological significance	Hominin remains	Hominid remains	Animal remains	(contd) fossilized	All other fossil remains
Common law	Intact bodies cannot be propertized but body parts, excised as a result of human skill, may form objects of property rights	Deceased human bodies cannot be an object of rights. Rights of disposal vested in the person, or named personal representative.	UNSP	UNSP	Statute may intervene					
China	UNSP	Punishment for interfering with cadavers	UNSP	UNSP		Strictly owned by the state. Private ownership and sale heavily restricted and regulated.	UNSP	UNSP	Strictly owned by the state. Private ownership and sale heavily restricted and regulated.	
Italy	Body and body parts cannot be an object of rights.	Deceased human bodies cannot be an object of rights. Rights of disposal vested in the closest relatives (with rules on degrees of consanguinity), or if no relatives can be found, disposal is done by the state, and if no relatives can be found, guardianship of remains defined as archaeological goods is vested in the state				Owned by the state. Private ownership and sale heavily restricted and regulated.	UNSP	UNSP	Owned by the state. Private ownership and sale heavily restricted and regulated.	
France	Body and body parts cannot be an object of rights.	Punishment for interfering with cadavers	UNSP	UNSP						

embalmed conjoined twins on the basis of the embalmer's care and skill [13]. Despite its early 20th century vintage, and many unresolved questions, the case remains definitive a century and more later, suggesting an institutional reluctance to confront the vexed boundaries of owning humanity.

Another boundary marker, that between humans and 'non-human' animals, further exposes deep fault-lines in the common law. Non-humans may be owned, unequivocally if domestic animals, and contingently if wild. This then leads us to question the extent to which extinct species cross over the imperfect human/animal divide, and how differently we would treat *Homo neanderthalensis* or maybe *Homo naledi*, compared to species outside the genus *Homo*. The additional layer would be to consider temporal implications, and explore the difference in how common law treats the human remains from the modern era in comparison to ancient remains. The Manchester Museum's policy on 'human remains' speaks to such problematic tensions: "Human remains include the bodies of people who lived thousands of years ago, and of those who have died within recent of living memory. The Museum uses the term 'human remains' to mean the bodies, and parts of bodies of once living people. These are most commonly regarded as being confined to members of the species *Homo sapiens*. The Museum recognises that some communities feel a local or ancestral connection to other ancestors not classified by scientists as *Homo sapiens*." [14].

Into this jurisprudential uncertainty, legislation sometimes offers certainty, albeit in an *ad hoc* way. In the UK, the *Human Tissue Act 2004* regulates the removal, use and storage of human tissue for listed activities that include research and public display. It draws an arbitrary line in the temporal sand, exempting human remains older than 100 years from the Act's operation. However, consent obligations, or lack thereof, do not equate to ownership. This was reinforced when a 2008 re-interpretation of the *Burial Act 1857* required reburial of 'all human remains archaeologically excavated in England and Wales... after a two-year period of scientific analysis' [15]. Human remains persist in a 'peculiar legal limbo in that they cannot be technically owned', a *status quo* that is 'complex, uncertain and obscure' [16].

In Kenya, the *National Museums Act* and *Antiquities Monuments Act* likewise draw a temporal line in the sand, deeming as arbitrary the cut-off date for regulatory control. Under these Acts, it is illegal to remove or trade in fossilized human remains that pre-date 1895. In cases of illegal sales, the National Museum of Kenya is authorised to compulsorily acquire remains. Importantly, the Acts vest ownership of pre-1895 human remains in the State, with the complexities of common law property reserved for post-1895 remains.

In Australia, unlike Kenya, key statutes leave ownership questions to the uncertain common law. The *Protection of Movable Cultural Heritage Act 1986* (Commonwealth of Australia), prohibits the export of 'Class A' cultural heritage, which includes 'human remains'. Australia also has a national repatriation program for Indigenous cultural patrimony that seeks to restore 'stolen' human remains to affected communities. But like the UK, state-based legislation that regulates scientific use of human tissue (for example the *Human Tissue Act 1983* (NSW)), does not require consent for human samples pre-dating 2003.

2.2. Civil law remains in codes

Civil Law jurisdictions lack the cohesiveness displayed by the above Common Law examples, particularly due to the absence of shared precedents as a source of legal authority.

In Italy, for example, human remains cannot be object of rights, as they are not considered goods pursuant to Article 810 of the Italian Civil Code. Human remains are not considered a 'thing', but rather a prolongation of the deceased person [17]. Similarly, in France a person cannot be considered an object of rights, with Articles 16–19 of the *Code Civil* identifying the inviolability of the human body, in its entirety as well as in its parts, including, in this case, for commercial purposes. However, with the donor's consent, body parts can be collected for

medical or scientific purposes, pursuant to Article L1211-2 of the *Code de la sante' publique*. In addition, the criminal punishment, pursuant to the *Code Penal*, can be imposed for interference with a cadaver located on French soil [18]. Spain, in contrast, has articulated a highly precise definition of what constitutes a 'human cadaver' and how it should be treated [19]. China, albeit not a country usually grouped under the civil law tradition, displays many traits typical of civil law systems, and under Article 3 of the *Supreme People's Court's Interpretation on Several Issues on the Decision on the Civil Liabilities for the Infringement of Moral Damages* (Adopted at the 1161th Meeting of the Judicial Committee of the Supreme People's Court on 26 February 2001, promulgated by on 8 March 2001, and effective as of 10 March 2001), the People's Court authorises a deceased's near relatives with regard to the compensation of moral damages caused by illegal use or damage of human remains, or infringement of human remains in the way of violation of public interests.

However, in each of these cases, there does not appear to exist any special regulation governing the ownership of 'fossilized human remains'. In Italy, hominin and hominid remains are not considered 'human remains' *per se*, but rather archaeological goods, and the state claims sole guardianship if they have archaeological or natural value. Similarly, in China, fossils of paleovertebrates and paleoanthropoids of scientific value are protected by the State and private individuals and organizations are allowed to own and exchange cultural relics in certain, highly regulated cases (Article 50).

2.3. Law and cultural rights

Both domestic and international law protects the right of access to fossilized remains by specific cultural groups, in particular providing Indigenous peoples with rights to repatriate remains when cultural relationships are proven. Moreover, a number of issues become apparent as a result of this very protean foray into different jurisdictional regulatory frameworks concerning human, hominin and hominid remains. Firstly, and more clearly in relation to human remains, questions arise in relation to the belief systems and related regulatory practices in practice at the time of burial. An ethical paradigm now exists, leaving many to contemplate if such practices be simply ignored, and thus, as a consequence, if contemporary practices should be conducted with the caveat that they can be legitimately ignored by future generations. Secondly, human remains, particularly ancient ones, represent a unique window into our species [20] as they constitute an irreplaceable source of direct information on our ancestors that no object can substitute. However, as Laure Cadot suggests, 'although the scientific value of human remains is evident to museums, it's not possible to forget the symbolic value that they embody for others, in particular for those communities to which they can be connected' [20]. Depending on the context, human remains can be simultaneously considered, as Cadot says, human remains, scientific objects with possible patrimonial value, and 'cultural subjects'. This legal tension is underpinned by an even deeper ontological tension: between scientific beliefs on the one hand and diverse spiritual beliefs on the other, with rather contrasting interests. This tension becomes apparent in the context of repatriation of human remains to Indigenous communities, such as in the United States and Australia. Since, according to legal regimes, the dead have no agency, it is those with closest ties that have a say in their remains. Finally, the boundaries of the 'human' are far from being uncontroversial and uncontested. For this reason, existing legal regimes, located in multiple jurisdictions and related to access to human, hominid, hominin and all other remains (fossilized or not) need to be further investigated and coordinated.

3. Conclusion

In conclusion, the identification and possession of a fossil is a challenging, complex and culturally-inscribed event. The variability of definitions of the term 'fossil' and scientific interest in remains from multiple

eras mean that it is important to define ‘fossil’ to mean any preserved evidence of a past organism's biological activity. Given that fossilisation processes can start immediately after death of an organism, it is necessary to develop clear and consistent legislation to identify the point at which a deceased individual can be exhumed and studied for scientific purposes.

In addition, analysis of legislation across multiple jurisdictions indicates there are rarely special regulations governing the ownership of ‘fossilized human remains’. In some countries, such as Italy, hominin and hominid remains are not considered human remains, but are considered archaeological goods which are under sole guardianship of the State if they have special value.

Finally, there is a clear tension between the potential knowledge that science can yield through analysis of fossilised remains and the rights of individuals and their descendants to ceremonies and burial that align with local belief systems.

Therefore, since ownership and control of human, hominid and hominin remains is often poorly regulated and varies greatly between jurisdictions, decisions to make discovery locations public and to regulate access to recent discoveries of remains have highlighted the importance of developing common standards for ownership, protection and access controls in relation to remains.

In the field, archaeologists frequently resort to notions of first possession, using raw access to the fossilized resource, and the information fossils yield, as the default normative benchmark to determine questions of ‘owning’ humankind. Where the party granting access is ‘generous’, the need for transparency and certainty is less dire. But where the access-giver adopts arbitrary, unpredictable practices, access outcomes are far from desirable. Clearly, property law is uncomfortable in dealing with the deceased human, irrespective of its vintage. This institutional discomfort implies an urgency to rethink the approach towards information availability.

The establishment of a large workshop with key stakeholders, including scientists, lawyers and policy makers would benefit greatly the discipline. Only then, will it be possible to embark upon a dialogue to collectively decide the most appropriate practice of access to fossilized human remains.

Declarations

Author contribution statement

Renaud Joannes-Boyau, Alessandro Pelizzon, John Page, Nicole Rice, Anja Scheffers: Conceived and designed the analysis; Analyzed and interpreted the data; Contributed analysis tools or data; Wrote the paper.

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