

## Poisonous Heritage: Chemical Conservation, Monitored Collections, and the Threshold of Ethnological Museums

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### Abstract

Many of the artifacts collected during the peak of colonization are made from organic materials and vulnerable to being eaten by insects or decomposition from mould. As part of the technical developments of the twentieth century, chemical treatments seemed to provide a viable solution to prevent decay of many collections. A broader awareness of the long-term effects of the employed toxic substances arose only decades later. Based on existing research, and explorative interviews in half a dozen museums in Europe, this text draws connections between the history of colonial collections, the use of chemicals in museum conservation, and the questions raised by shifting conceptions of the role of museums in the light of restitution and access-provision.

**Keywords:** Toxicity, Colonial Collections, Museum practice, Conservation, Restitution, Pests, Life and non-life boundaries

Does the presence of toxic substances in ethnological collections that have sedimented through decades of conservation practices perpetuate the consequences of the object's transformation in European museums? What happens when contaminated cultural goods are repatriated? Can a poisonous past impose obstacles to the opening of collections to stakeholders who claim access? These questions have been present from the start of my research and have led me – as a cultural theorist – to approach the conservation departments of ethnographic museums. In an attempt to understand the cultural and material alterations of artifacts by their presence in museums, I have been interested in the conservation of collections acquired in colonial contexts and the methods employed to that aim – from the use of chemical substances to prevent decay to non-invasive methods of 'pest'-control.<sup>1</sup> On the basis of half a dozen interviews with conservation professionals in Western European Museums, the present article brings together a set of hypotheses on material and semantic 'poisonous heritage' in the context of the renewed 'era of restitution' (Rassool 2018) and the international debate on the necessary dismantling of the ethnological museum (Sarr and Savoy 2018; Deliss 2020).

### From the 'age of chemistry' to *Old Poisons, New Problems*

In October 1977, the Rathgen-Forschungslabor organized the influential exhibition *Kunst und Chemie. Das Unersetzliche bewahren* (*Art and Chemistry: Preserving the Irreplaceable*; Riederer 1977) at the Ethnologisches Museum Berlin. The president of the Confederation of the Chemical Industries prefaces the catalogue and underlines the need for chemistry in the arts, demonstrating that the quality of colours and stability of the materials have relied on the latter for centuries. In an introductory text to the history of conservation, the volume's editor and director of the Rathgen-Forschungslabor, Joseph Riederer, explains the importance of chemist Friedrich Rathgen's research and his decisive role in establishing museum conservation as a science, a specialty that the latter initiated as the director of the Chemisches Laboratorium at the Königliche Museen in Berlin, founded in 1888. Indeed, the Rathgen-Forschungslabor that today bears the name of its first director, is the oldest conservation laboratory of



*Image 1: Joseph Riederer: Kunst und Chemie (1977). Catalogue Cover.*

its kind. In addition, it has participated extensively in the experimental development of museum preservation technologies.<sup>2</sup>

Riederer's introduction finishes with praise for the chemical industries, and their role in the development of conservation methods. Beyond examples from conservation practices as applied to different materials, from leather to wood, the catalogue also contains a comprehensive alphabetical index of the chemicals used in the conservation of artworks and museum artifacts – ranging from acetone to zyklon.<sup>3</sup> It lists highly toxic substances like arsenic, mercury, lead and other heavy metals as well as organochlorine compounds like DDT and lindane. Their potential use in collections is indicated and the virtues for conservation are pointed out. This manual includes images of objects 'before' and 'after' treatment, highlighting the efficiency of the employed methods. As a whole, the catalogue underlines the importance of chemicals for the making of art, and the conservation and restoration of cultural goods. Risks related to the employment of the named substances are not mentioned. In addition, the murderous history of active

substances like Zyklon B, which was used for killing millions of people in the national-socialist gas chambers, or the highly contested implementation of DDT as a pesticide in areas reaching from agriculture to the army, from museum stores to the domestic, is not discussed.<sup>4</sup> The chemical substances are exclusively presented under the aspect of their technical efficiency.

Though the exhibition took place in the Western part of the divided city of Berlin, it is noteworthy that the close alliance between the chemical industry and the belief in progress and ever growing prosperity did not only occur in the context of expanding individual consumer cultures in the capitalist block.<sup>5</sup> In the Eastern block it was just as constitutive of the rationalist belief in scale effects, the increase of productivity, and the possibility of technical solutions for social problems (Homolka 2013).

In 2005, less than three decades after the exhibition in Berlin-Dahlem, Nancy Odegaard and Alyce Sadongei published *Old Poisons, New Problems: A Museum Resource for Managing*

*Contaminated Cultural Materials* (Odegaard and Sadongei 2005). The book is a practical guide to identifying, testing for, and dealing with contaminated cultural materials stored in museum collections. It can be considered a reaction to the growing awareness of the risks provoked by poisoned objects due to treatments reaching back sometimes far in time. The book was published as a reaction to the euphoric 'age of chemistry' (Zalewski 2014: 10) of the postwar era, when employing chemicals in museum collections was a widely shared practice. In spite of early warnings about health hazards and possible long-term consequences of the treatments (Arndt [1932], quoted in Tello 2022: 81), many museums that could afford to buy the products relied on chemical treatments.<sup>6</sup>

In most of the literature, the term 'pesticide' is used to name the employed substances. In this text, I refer to Rachel Carson's seminal book *Silent Spring* (2002 [1962]) that argues in favour of the notion of 'biocide' rather than 'pesticide' or 'insecticide'. Carson explains that the dominion over nature claimed by the postwar culture of science had introduced a broad range of biologically potent chemicals with uncontrollable long-term effects on close to all realms of modern life. For the first time in history, all areas of life were being exposed to hazardous chemicals (Carson 2002 [1962]: 15). Drawing on Carson, Rob Nixon elaborates that, rather than splitting these substances into herbicides, insecticides, pesticides etc., the notion of biocide insists on the 'killing power that exceeds the targeted task of eliminating troublesome insects' (Nixon 2011: 65). In that sense, biocides indiscriminately kill all life, from the micro-organism to mammals.

Conservation methods in museums have considerably evolved in the past decades. They react to new national legislation and international regulation (like the EU 528/2012 *Regulation concerning the making available on the market and use of biocidal products*, that defines biocidal products as those which 'consist of, contain or generate one or more active substances'.<sup>7</sup> Over and above that, a rising awareness of the hazardous effects on staff and audiences of chemicals in the collections led to changed behaviour (Ruauux 2013).



Image 2: Green light trap in museum storage, Rautenstrauch-Joest-Museum, Cologne, 2020 (photo: Lotte Arndt)

Consequently, the technical possibilities of decontaminating cultural artifacts are studied – and the technical and economical limits of these proceedings are discussed (Tello et al. 2005; Pfister 2008: 76). In the context of preventive conservation, which can be defined 'as the sum of controls and actions on the physical, chemical and human environment of the collections, allowing to prolong the life of the objects without intervening directly on them',<sup>8</sup> most museums now proceed far less invasively, and apply proactive preventive approaches that substitute the generalized use of chemicals by a holistic method combining prevention, monitoring and punctual intervention (see Pinninger 2015). Following acquisition or loan, objects are inspected and frequently exposed to anoxia, coldness or heat to kill living organisms before entering the museum. Collections and stores are regularly controlled, insects and rodents targeted by light, and by sticky or pheromone traps. Excessive humidity and climate fluctuations are tracked through regular measurements, whereby infestations can be rapidly tackled.<sup>9</sup> In many museums, the use of pesticides has become a tool of last resort (Schieweck et al. 2007).

### Toxic vestiges

Nevertheless, decades of chemical treatments have left considerable residues in many collections. The treatments are difficult to reconstruct, as the former used active substances and agents that are often invisible, sometimes odourless, and most frequently poorly documented, and thus difficult to trace (Pool et al. 2005: 5). Despite this frequent impossibility to detect toxins through the senses, they cause damage, often permanently alter artifacts, and have a heavy impact on the collections.

While acquisitions of active substances and agents can sometimes be traced back in museum archives, this does not give any information about their application or exposure to specific objects, nor the synergetic effects of different substances acting together. Time spent in storage has left manifold vestiges: Hawks lists as potentially hazardous contaminants on collections: 'residues from mold, rodent, or insect infestations; soot; asbestos from decrepitating building or pipe insulation; and powdered lead paint from old storage furniture' (Hawks 2001: 2). The list gives an idea that storage facilities can substantially alter the material state of artifacts in museum collections and become part of the object's history.

In the past, some museums like the Royal Museum for Central Africa, Tervuren, Belgium and the Musée du quai Branly – Jacques Chirac, Paris, started to enter the toxicity status of specific objects in their digital databases (Beltrame 2012). Exceeding purely practical information by far, these extended datasets account for toxicity, thus making it an integral part of the characteristics of the object, acquired through its institutional journey. As Noémie Etienne points out, we should

consider the life of an object as the sum of all the states and transformations it undergoes. By focusing on the material existence of objects over time, this reflection approaches the work of art as a continuum, that is, a material object that goes through perpetual transformations (Etienne 2018: 178).

Further, it widens the idea of the 'object' as an entity with stable ontological characteristics. Toxicity, as a relational category, articulates the artifact with its environment, and brings fixed classifications into movement.

In spite of or because of its blurry presence, toxicity easily thwarts the tactile relationship to museum objects. The effects of these alterations are multi-faceted. In daily work processes, protective measures – ranging from reducing the amount of time spent with potentially contaminated objects to wearing personal protective equipment (including nitrile gloves, coveralls, goggles, surgical and sometimes respiratory masks) – have changed curators' relationships with objects. A conservator at the Grassi Museum in Leipzig described to me how wearing gloves and a mask when handling objects, as well as the separation of studios from the storerooms (to reduce the exposure of conservation professionals to toxins), introduces greater distances and prevents the objects from being seen in their everyday environment.<sup>10</sup> Taking the gloves off to photograph the objects (sometimes in a separate room), only to put them on again a minute later, further complicates the proceedings.



In the same vein, a former intern, Leslie Omstein, describes her first day at the National Museum of Natural History in Washington. Upon her arrival, she is told:

Of course, you should always wear your gloves when handling artifacts [...] This is for the safety of the objects, but more importantly, it is for your safety. Many of these objects have been in our collection for over a hundred years, and many have had a variety of pesticide treatments done to them. We mostly don't know what has and what hasn't been treated. Some of the chemicals to which you will potentially be exposed include arsenic, mercury, and lead, to name a few. Thus, you must wear gloves at all times when handling all objects and wash your hands frequently. Since we don't know what has been treated and in what manner, treat every object with suspicion (Omstein 2010: 5)

Omstein's description gives an idea of the uncertainties caused by the unknown toxicity status of the collections.

To better understand the situation and the problems that arise for professionals working in museums, I took a course on the risks of handling contaminated cultural property.<sup>11</sup> Between fall 2019 and spring 2020, I conducted a series of exploratory, semi-directive interviews in the conservation departments of the Royal Museum for Central Africa (Tervuren, Belgium), the Musée du quai Branly – Jacques Chirac (Paris, France), the Rautenstrauch-Joest-

Museum (Cologne, Germany), the Linden-Museum (Stuttgart, Germany), the Grassi Museum (Leipzig, Germany), and the Ethnologisches Museum Berlin, (Germany), to which I will refer selectively in this text. To further explore the connections between colonial collecting and chemical conservation, I have edited the issue *Toxic Afterlives of Colonial Collections*, published in the online journal *Trouble dans les collections*,<sup>12</sup> and this also informs this article.

The interviews gave an initial idea of widely varying scenarios from one institution to another, and even from one object to another, depending on its materiality, the treatments applied to it before entering the museum, and its singular history of conservation in the museum. Although the archives of some museums keep track of the dates of acquisition of chemical products, their precise use (On which objects? By fumigation in entire collections? With what



**Image 3: Personal Protection Equipment, Grassi Museum Leipzig, 2020 (photo: Lotte Arndt).**

regularity? And what effects deployed over time?) is often not recorded and difficult to reconstruct retrospectively.<sup>13</sup> Over time, many products have changed their commercial names as well as their chemical composition, which makes it difficult to reconstruct their active ingredients and agents in our day (Tello 2006). Cross-referencing the available information requires much work and is not always possible. Testing the objects individually by long and often expensive processes appears as the most reliable way to know their toxicity status – but the costs and the necessary time impose limits to these processes (Tello 2006).

My focus does not lie on the technical requirements caused by contaminated objects, but on the relational dimensions, and their unfolding in the contexts of collections from colonial provenance. The experience caused by the toxic remnants in collections can be traumatic for visitors and researchers coming to the stores for specific objects. Some museums require visitors to sign a form, informing them that they access the storage rooms at their own risk (von Oswald 2022). Cynthia Schimming, an internationally working fashion designer and clothing technologist from Namibia, gave a moving testimony at the conference *Museum Collections in Motion: Colonial and Postcolonial Encounters* at the Rautenstrauch-Joest-Museum, Cologne (July 2019).<sup>14</sup> She had come to do research on the historical collections at the Ethnologisches Museum in Berlin in 2019 as part of the steering committee of the Museums Association of Namibia. With her special interest in fabrics, Schimming was quickly confronted with the impossibility of touching the garments that had been expropriated from her Namibian predecessors during German colonialism (1884-1918) and especially at the time of the genocide (1904-1908), because they were highly toxic. The presentation was conceived as a dialogue between Cynthia Schimming and Julia Binter, curator and provenance researcher at the Ethnologisches Museum in Berlin, reflecting on collaborative research on objects from Namibia. It soon turned into an emotional intervention, voicing the painful absence of these artifacts (among them objects related to burial, or children's toys and dolls) in the Namibian context, and the impossibility of relating to them physically even in the German museum.

### Poisonous restitutions

Beyond the storage facilities, the risk posed by poisonous objects potentially limits participatory practices, obstructs repatriation, and raises questions about the practical, ethical, and epistemological implications of 'preserving' cultural material by means of chemicals. These questions become even more urgent in the present 'era of restitution' (Rassool 2018), as the return of contaminated cultural goods threatens to poison (in a physical or symbolic sense) the receivers and soils, and to restrict possible uses beyond museumization.

Today, museums are confronted with a fundamental questioning of their relational modes and their roles in transnational societies (see for example the intense discussion about the definition of the role of the museum at the International Council of Museums (ICOM) and the restitution debate).<sup>15</sup> After decades of cultural advocacy by African and diasporic authors and activists who questioned the legitimacy of the European ownership of African cultural heritage,<sup>16</sup> the declaration of the French president at Ouagadougou in 2017, and the subsequent publishing of Felwine Sarr's and Bénédicte Savoy's report on the *Repatriation of African Cultural Heritage* (2018) has rendered audible to a broad audience the claim that European museums should cease to decide unilaterally on the future of the collections. While early restitutions have been enacted,<sup>17</sup> decisions and negotiations took place exclusively on a governmental or diplomatic level. Toxicity can potentially become another argument to keep people out of storage rooms and away from physical interaction with artifacts, as Clémentine Deliss warns: 'Toxicity is the latest argument to emerge, implying that not only does touch endangers the artifacts, but that their repeated disinfestation with arsenic and similar poisons has rendered them highly toxic to human contact'.<sup>18</sup> As poisonous remnants, chemicals have an impact on future modes of use, including the risk to prolonging the museumization of objects in showcases, their passive conservation in storage facilities, and their presentation at a distance, behind ropes and alarms. In this sense, toxicity prolongs the separation of people and objects, first put in place by imperial collecting.

Following the experiences of repatriations in the context of the Native American Grave Protection Act (NAGPRA, 1990) in the US, the toxicity of artifacts has slowed down requests for repatriation.<sup>19</sup> In 1996, a paragraph was added to the US law that acknowledges the problems caused by contaminated objects:

The museum official or Federal agency official must inform the recipients of repatriations of any presently known treatment of the human remains, funerary objects, sacred objects, or objects of cultural patrimony with pesticides, preservatives, or other substances that represent a potential hazard to the objects or to persons handling the objects.<sup>20</sup>

The inclusion of this additional paragraph in the law shows the necessity to hold the institutions accountable for the consequences of their conservation practices. After realizing that returned artifacts were poisonous, many entitled groups refused their reception out of fear of physical or spiritual contamination of their soils, bodies, and minds (Davis and Caldararo 2000; Brown and Bruchac 2006).<sup>21</sup> Here, the toxic treatments modify or directly obstruct repatriation. In a broader sense, Chris Caple reports that

Some Native American peoples require certain objects to be handled by specific individuals and insect attack can only be treated with natural plant extracts that are not harmful to human beings. These actions maintain the spiritual purity and power of the object, which is considered a "living" being (Caple 2009: 26).

Conservation policies can contribute to the mistreatment of 'things' (Latour 1993) in museum collections – in this sense, the chemical contamination of artifacts contributes to rendering them culturally sensitive in the sense proposed by Britta Lange: they are sensitive 'in that there are people outside of the museum and collections who may be affected by it, such as descendants and successors' (Lange 2016: 294). An altered material state also changes the meaning and uses of artifacts.

With the rising awareness of chemical hazards in collections comes a semantic shift: pesticides were associated with the guarantee of the stability of a collection for a long time. They were used to expel life from the collections and prevent decay, but were not meant to manifest further agency. Only belatedly has awareness arisen of their persistence over time that can alter and sometimes deteriorate the physical qualities of the artifacts in unforeseeable ways. In addition, human interaction with such contaminated objects is constrained.

Museum conservators to whom I spoke describe the 'blossom' of poisonous remnants on object surfaces; the loss or change of colours; the unexplained blooming on showcase windows that keeps insistently coming back; the presence of smells, but also the effects on the bodies of museum staff, such as headaches, skin irritations, or suspicions about the occurrences of cancers (Paz 2013; Tello 2022).

I am interested in thinking about the unsuspected agency of chemicals in museums, as it troubles objectification and classifications. Toxins deploy relationally through bodies. When acting, they take part in the vibrant articulations of animate and inanimate elements that compose bodies, meddling subject and object as no longer strictly divided. While toxins are employed to render objects immune to organic transformation, they react with them in transformative ways. They may contribute to the 'unruliness' described by art historian Fernando Domínguez Rubio (2014) as the resistance to passive objectification. While chemical treatments objectify by killing organic life, they also poison the artifact symbolically, their unplanned long-term agency troubling the docility of what is now treated as an object.

Looking at museum collections through the lens of their toxicity leads to their consideration as 'material configurations' in the sense described by Jane Bennett, and thus to 'horizontalize the relations between humans, biota, and abiota' (Bennett 2010: 112). Matter appears here to be lively, governed by emergent causalities, and taking unforeseen paths. Purposefully aiming to discard life, toxins in collections act as unstable configurations of ambiguous subject-object relations, troubling established 'animacy hierarchies' (Chen 2012: 190). Thus, they bring to emergence 'cosubstantiating contingencies' (Chen 2012: 193), difficult to contain or quarantine, running across delimitations of the animate and inanimate, life and death. As Mel Y. Chen underlines pertinently, 'the very nature of this alteration cannot fully be known. Who is after all, the subject here? What if the object [...] has been substantively [...] altered by the toxin?' (Chen 2012: 195). They propose to think about toxicity as a condition with effects, rather than a property, which has the capacity to transform the animate or inanimate host.

### Colonial collections as heritage

It is noteworthy that the history of chemical treatments in ethnological and natural history museum collections coincides with their rapid expansion since the end of the nineteenth century. Peak collection periods occurred in the context of the 'salvage paradigm', aiming to

'save' the material vestiges of living cultures threatened by and diminishing through the very progression of colonial rule (Clifford 1989). The wave of successive 'collecting missions' as well as individual collecting guided by the instructions published by many museums at that time, displaced tens of thousands of objects to Europe, where the museums were competing over the most prestigious pieces (Reyels *et al.* 2018). In the process, the artifacts (depending on their materials) were often treated directly on site with chemicals such as arsenic to allow for their shipping and material stability over the journey (Tello 2006: 14).

Soon, museums encountered storage problems for the rapidly increasing numbers of objects: as Catherine Hawks underlines: 'Collections grew to great numbers of specimens or objects and tended to be enclosed in cabinets, where they were not readily visible to staff' (Hawks 2001: 4) This rapid increase in the decades proceeding and following the turn of the nineteenth and twentieth centuries produced a change in physical conditions, with

cabinets [...] constructed all or in part of wood, which could and did serve as a harborage for pests [...]. The buildings that housed collections were not built with pest control in mind, and themselves served as habitats for a host of pests, from insects to rodents (Hawks 2001: 4).

Hawks suggests that the vulnerability of ethnological storage facilities must be understood in the broader framework of colonial collecting. As heritage institutions, museums aim to stabilize artifacts in time and prevent their decay. Confronted with the fragility of the collections, chemistry seemed to provide the means to protect the physical integrity of the artifacts. In this context, the term 'pests' also took shape in museum collections. Chemicals that were already widely used in hygiene campaigns (Kinkela 2011) also found their way into museum objects.

### **Pests – the emergence of a modern scientific construct**

Considering insects as a threat to museum collections appears evident today. But as Sarah Jansen (2003) shows in her voluminous transdisciplinary study *Schädlinge. Geschichte eines wissenschaftlichen und politischen Konstrukts 1840–1920* (*Pests. History of a Scientific and Political Construct*), the very notion of 'pest' in the sense of invasive species is a modern concept. She demonstrates that the emergence of the idea of damaging species occurred as late as the 1880s, at the same time as rapid urbanization, poor living conditions for industrial workers, European nationalism and wars, and at the height of colonialism.<sup>22</sup> The modern reorganization of society, driven by the proliferation of urban housing and increased productivity and accumulation, goes hand in hand with the search for human control over nature (see also Simon 1999). Concentrating on the field of agriculture, Jansen traces back how insects and bacteria – often described as being of foreign origin – are tackled to prevent their proliferation – in a forest, a harvest, or a national population.

My point is not to minimize the potentially harming impact of insects, rodents, moulds, or the bodies of human users on museum collections (the prevalence of micro-organisms in the collection is greater near the visitor's cloakroom, I was told by one conservator), but to reflect on conservation as a cultural technique emerging in Europe in the modern age, alongside technologies aiming to take control over nature, including processes of organic decay. What happens to cultural practices and their material components if they are isolated, if their limited material duration is suspended through conservation, and if they are integrated in institutions aiming to produce immutable conditions for maximum preservation over time? As Alison Bracker and Alison Richmond show, 'conservation's faith in science derived from Enlightenment ideas about objectivity, rationality, epistemology, and material evidence' (Bracker and Richmond 2009: xvi). Chemical experimentation, statistics and mathematics started to be employed as a rational control of 'pests' and 'plagues' that were no longer considered an unavoidable fatality. In the modern world, 'pests' were tackled by hygiene policies obtained by chemical treatments. It is thus interesting that, just as the ethnological museum became the locus of the conservation of objectified 'cultures' that should be preserved from the growing impact of colonial policies, scientists suggested creating a 'zoo' for the preservation of insects, mites, and related species, before their genetic composition was further changed by pesticides, as Rachel Carson reports (Carson 2022 [1962]: 79).





Image 4: Insecticide advertisement, Paris, 2021 (photo: Lotte Arndt).

In European cultural history, poisonous substances have been used in conservation for several centuries (Pequinot *et al.* 2013). Heavy metals like arsenic, mercury and lead can be found in Renaissance paintings, on canvas and wood to increase their duration or assure the stability of colours (Marte *et al.* 2006). Artists and collectors combated pests using metal salts, aromatic herbs and oils, and possibly toxic derivatives from plants. In the nineteenth century, active substances of botanical origin such as strychnine, camphor, perfume of lemon, and tobacco were used in collections (Goldberg 1996). But it is mainly since the late nineteenth century that organic pesticides, and especially fumigants, became widely employed in conservation (Pool *et al.* 2005), and evolved closely with the chemical industries. During World War I the latter began to aggregate toxic gases, which were henceforth not only used in the battlefields, but also progressively applied as insecticides, mostly in forests and agriculture. The insecticidal agency of Dichlorodiphenyltrichloroethane, commonly known as DDT, was established in the 1940s; its regular application in museum collections started in the post-War era (Simon 1999; Carson 2002 [1962]; Kinkela 2011; Stiftung Deutsches Historisches Museum 2015). In the second half of the twentieth century, the history of museum conservation is materially closely entwined with the chemical industries.<sup>23</sup>

When Friedrich Rathgen started his work at the Chemisches Laboratorium at the Königliche Museen in Berlin in the late nineteenth century, his experimentations led him to publish, a decade later, a foundational work of conservation science, *The Conservation of Antiquities* (1898). The voluminous book is divided into two parts: the transformation of artifacts following their excavation, and the treatments applied in museums (Gilberg 1987). Referring to this period, the groundbreaking importance of the work of the laboratory, and intense evolution in subsequent years, the scholar Chris Caple states that 'it was, perhaps, only in 1888 that conservation as a professional discipline can truly be seen to have started' (Caple 2000: 53).

The simultaneous constitution of science-based museum conservation and the peak of colonialism comprise material (the arrival of the objects and constitution of the collections, the experimental use of chemistry in collections) and disciplinary (the constitution of new fields of knowledge) dimensions that both rely on the museum as an 'objectification machine' (Dominguez Rubio 2014).

### Museumization

The art historian Fernando Dominguez Rubio describes in detail the work of the museum against the entropic processes of degradation and decay in order 'to prevent, or at least to slow down, this unremitting process of change and degradation so that artworks can retain their meaning and value as timeless "objects" of formal delectation' (Dominguez Rubio 2016). He studies the technologies used for this purpose (such as climatic conditions, conservation practices, and display techniques), that include physically eliminating all organic life carried by the objects, such as insects, mould and micro-organisms. As the anthropologist Frédéric Keck stresses: 'The cultural life of objects starts at [the] threshold where its biological life is destroyed' (Keck 2016: 217). While I would argue that it is the *institutional*, rather than the *cultural* life of artifacts that starts with the object entering the museum, I agree with Keck's highlighting of the museum's threshold as a primary dividing line that separates objects belonging to the living world, and to the collection. At the entrance to the museum, a series of treatments aims to isolate the object physically from any living organisms that it might carry (Pinninger 2015). Albeit to different degrees, chemical treatments and non-invasive procedures for conservation ultimately contribute to the same aim; life-span prolongation by means of reducing organic life as much as possible. Inspection and punctual or systematic treatment mark the passage from cohabitation with multiple bodies outside the museum to entry into the collections and exhibition spaces. Once inside the storage or the galleries of a museum, objects are protected as much as possible from light, humidity, and non-monitored contact with living bodies (May and Guillemard 2011).

Museum conservation bears the conflict between the primacy of material preservation and access, which many museum professionals describe as a constant negotiation between the areas of mediation, audiences, (invasive) research, and conservation.<sup>24</sup> Looking back at her years as a director of the Weltkulturen Museum in Frankfurt/Main (2010-2015), Clémentine Deliss describes the opposition to the work in the stores that she had initiated at the museum. She organized artists' residencies in the collection which were strongly criticized from the point of view of object conservation (Deliss 2014). 'Each movement – of opening and closing, of handling and manipulating – carries the risk of advancing deterioration, thereby shortening the "life span" of the object'.<sup>25</sup> Actively working with the objects quickly raised the question of the limits of physical alteration that is permitted of an object classified in the epistemological category of museum heritage. When entering a museum, cultural artifacts are decontextualized from the interconnections in which they have participated. In the museum they undergo a series of resignifications and participate as 'semiophores' in more than one frame of reference (Pomian 1987). They are no longer in use but deploy a broad range of cultural significations. As heritage, artifacts are separated from the living worlds in which they took part as one component of a web of gestures and things. 'When statues die, they enter the museum', states the first line of Alain Resnais' and Chris Marker's (Paris, 1953) film *Statues Also Die*. It is precisely because the museum pretends not to participate in specific living worlds that it can appear as the place that could contain all worlds and thus occupy a 'universal position'. In 2002 this aspect was arduously defended by 18 major Western museums faced with restitution requests.<sup>26</sup>

Historically, cultural heritage (*patrimoine* in French, derived from the Latin word *patrimonium*, heritage of the father), refers to inherited goods that are preserved to be transmitted to future generations.<sup>27</sup> Ensuring this preservation is the very purpose of heritage protection: a cultural tradition to be preserved, transmitted from generation to generation and, in the case of France (for example), made inalienable by French heritage law. This andro- and anthropocentric normative concept does not include the possible illegitimacy of collections and the resulting claims for restitution. This applies in particular, when they were acquired

in historic conditions of violence or unlawfulness, especially colonialism, prior to the 1970 UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property. Interrupting the status quo, changing the law in order to redress historical crimes that are materialized in these collections, is required to right a wrong, to introduce rights where they were effective only for a few, as Gayatri Chakravorty Spivak pertinently writes (Spivak 2004). Non-amended, patrimonial law and the mission of conservation extend the history written by the colonial metropolises and ensure its validity in the present time.<sup>28</sup>

Critics of the Western Museum system, such as the Cameroonian writer Patrice Nganang, establish a link between colonial expropriation and the classificatory system of single entities applied by the museum:

Each piece of art stolen from the African continent entered not only into a corpus, with all the legal ramifications it entails, but it also became part of a specific system of the arts that ranges from documents to monuments, from the writerly to the figurative arts, from precomposed theories to aesthetics of the art, and within a particular order with its watch guards and gatekeepers, its monitoring systems and alarms, and its specific organization of the world and techniques of conservation (Nganang 2021: 6).

Nganang understands conservation as fully participating in and supporting the museum as an epistemological machine that interrupts the physical and semantic dynamics that precedes colonial institutions.

In the same vein, Ariella Aïsha Azoulay's groundbreaking book *Potential History: Unlearning Imperialism* shows that the separation of objects from the contexts in which they take an active part in cultural practice lies at the heart of the museum as an imperial enterprise (Azoulay 2019). She analyzes how the material documentation of societies in rapid transformation due to colonization, dissociates the now isolated bodies and objects in the museum from those who remain outside, in a transformed environment, made extractable by its insertion into an expanding global capitalist economy (Azoulay 2019). Artifacts and social worlds are now dissociated and are fundamentally affected by this material and relational intervention:



Image 5: Ariella Aïsha Azoulay: *Undocumented. Unlearning Imperial Plunder*, 2019, film still.

If what [archives and museums] preserve is extracted from living worlds, [...] their study cannot be confined to what is in them but should include the role they play in this enterprise of world destruction – in the production of what Hannah Arendt calls *worldlessness* (Azoulay 2019: 19–20).

While the museum produces a setting in which it appears as 'natural' that objects remain as little changed as possible, this very aim participates in their transformation from porous components of a living culture into classified and muted material entities. In the museum, the temporal distinction between a dynamic modernity and an atemporal past is materialized: as Johannes Fabian has shown, the object of colonial anthropology is built on this temporal divide (Fabian 1983). In the history of science since the eighteenth century, these operations have been accompanied by a hierarchical taxonomic organization, placing the (white, male) human at the top, and inanimate matter at the bottom (Chen 2012). The success of the epistemological operation, however, requires a material counterpart: the stabilization of the artifact in time, produced historically by conservation methods including treatments with chemicals.

### Collectives of beings in monitored spaces

Since the publication of Rachel Carson's *Silent Spring* in 1962, the devastating effects of chemical treatments, especially of DDT, have been ceaselessly pointed out. Critics have formulated models of species' coexistence as an alternative to the aspiration of mono-cultural purity obtained by means of chemistry.

Yet, conservation practices themselves show that storage and exhibition spaces are far from being lifeless. Based on a two-year study of maintenance practices in the collections of the Musée du quai Branly, Tiziana N. Beltrame proposes an understanding of the museum and its collections as a 'living system of a collective of beings' (Beltrame 2018: 68), where animated (including insects and humans) and unanimated beings (such as artifacts and furniture) coexist, struggle, and transform themselves reciprocally. She analyzes in detail the attempt to 'perpetuate the perishable', which she describes as 'the oxymoron of heritage' that engenders a

double erasure linked to the materiality of artifacts: that of the historical dimension of the contexts in which certain objects had the right to be transformed, even to perish; and that of the temporal dimension of the institution, within which objects must be stabilized at all costs (Beltrame 2018: 67).

Beltrame looks closely at the day-to-day operational modes of preventive conservation in the museum and its storerooms, and describes the dynamic constellations between bodies whose boundaries are less clear-cut than the framework would suggest:

The museum is conceived here as an "object-sustaining environment" (Dominguez Rubio, *ibid.*) through devices designed to separate entities, such as display cases or air-conditioning systems, and ultimately to control the relationship between the form and matter of objects. But these attempts sometimes give way to the fluctuating inseparability that animates the conservation spaces (storerooms or exhibition rooms), for example the moths that nest in the showcases or the unusual nooks and crannies of the museum space (Beltrame 2018: 68).

Following her approach, visitors, museum professionals and other users are part of the museum space, understood as an 'arrangement of entities'. Conservation work acts in this arrangement by creating 'parameters of ambient life' that establishes 'boundaries of cohabitation between entities' (Beltrame 2017: 165).

This concept can lead us to think differently about the collections as a process, in constant exchange with living organisms, humidity and spores, and the conservation process struggling to control their uncontrollable presence and burgeoning evolution.

Contemporary modes of preventive conservation recognize these permanent processes. They rely widely on methods like 'Integrated Pest Management', a holistic approach based on prevention and monitoring that has widely replaced the chemical treatments of entire collections. It was developed in the 1950s in the food industry, and subsequently applied in



museums (since the 1980s), first in the UK, USA, Canada and Australia (Pinninger 2015). IPM includes the sealing of the building against pest entry, adapting the micro-climate (the cooler the indoor climate, the slower they develop and reproduce), maintaining high hygiene standards (cleaning is an important part of IPM to reduce food sources for pests), training staff, quarantining all new and incoming objects and monitoring pest infestations with traps. If an active infestation is found, objects are isolated as fast as possible and non-chemical methods like freezing, heating or anoxia treatments are preferred to prevent damage to the objects or harm museum staff. Chemicals are only employed as a last resort (Querner 2015: 598).

With IPM, the precise knowledge of organic life in a collection, the tracing of species, and spotting of insects and moulds are central to thinking about conservation as a process rather than a fixed state. Some approaches even propose the introduction of species (like larvae-eating wasps) to keep other species under control (Querner and Biebl 2011), thus changing fundamentally the concept of the collection as a space of coexistence of different bodies.

Following Tiziana Beltrame's work, preventive conservation as conceived within the paradigm of IPM effectively shifts the boundary between life and non-life from the threshold of the museum to its interior and opens it to an evolving (a perpetual negotiation of entropic processes) rather than a static temporality. Thinking about conservation from the perspective of the instability of materials and the changing configurations between animate and inanimate bodies in collections includes both an analytical and a normative dimension: understanding a collection as the articulated co-existence of active entities requires approaches other than fumigating an entire storeroom or systematically prioritizing conservation over use.

Nevertheless, this approach can neither undo the remnants of chemical treatments, nor resolve the question of access to the stores, the right to touch and to be in touch with what goes beyond the object and, ultimately, to take them out of the museum, and thus out of the realm of conservation.



*Image 6: Trap in the context of Integrated Pest Management, Rathgen Forschungslabor, Berlin, December 2020 (photo: Lotte Arndt).*

## Heritage and poison – towards a conclusion

If chemicals have been employed in museum collections over decades in order to protect them from insects and mould, they finally turn out to trouble precisely the aims of stabilization and preservation that they were used for. The poisons' material agency destabilizes the object status of museum collections, turning the rationalist policies of conservation into its opposite. While more recent approaches to conservation like IPM no longer poison collections, but operate with the presence of organic life, the work to render former colonial collections accessible for stakeholders and interested audiences and to shift the structures of decision-making still has a long way to go. The growing awareness of toxicity in museum collections suggests that restitution and co-curation of these collections cannot simply erase the history of their expropriation and century-long exhibition and storage in European museums. They have left lasting traces, both materially and relationally, that need to be addressed in order to interrupt their poisonous legacies.

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## Endnotes

- <sup>1</sup> This text owes a lot to the exchanges with and the careful reading of Dr. Helene Tello, whom I warmly thank for her precise comments. As a non-professional in conservation, detailed knowledge from the practice, but also work on the history of the profession is of crucial importance to me, and I am grateful to those who share their insights with me. While fundamental work is done in the profession, I hope to contribute to a conversation beyond disciplinary borders that may connect the scholarship in conservation studies to a decolonial critic of colonial collections.
- <sup>2</sup> In honour of its founding director, it is today called Rathgen-Forschungslabor.
- <sup>3</sup> Zyklon, or Zyklon B, contains the active ingredient hydrocyanic acid and was commercialized by the German company Degesch. The gas is closely associated with the history of concentration camps and genocidal extermination in gas chambers in national-socialist Germany.
- <sup>4</sup> For the history of DDT, see Simon (1999) and Kinkela (2011).
- <sup>5</sup> See Kristin Ross' (1995) analysis of the promise of limitless, even timeless, development offered by modernization ideology. For the close connection between belief in progress and oblivion of colonial crimes, see for example Čeginskas et al. (2022).
- <sup>6</sup> Some conservators from French regional museums told me that it was the precarity of their situation that prevented them from employing pesticides. The urgencies for the conservators focused rather on poor storage conditions, deficient inventories, and the lack of trained staff. Béatrice Kool, interview by author, digital recording, 22 November 2021, online.
- <sup>7</sup> EU 528/2012, paragraph 9. The same text indicates: 'Biocidal products are necessary for the control of organisms that are harmful to human or animal health and for the control of organisms that cause damage to natural or manufactured materials. However, biocidal products can pose risks to humans, animals and the environment due to their intrinsic properties and associated use patterns'. EU 528/2012, paragraph 1.
- <sup>8</sup> Ministère de la Culture, 'Conserver les collections des musées de France', 2020. <https://www.culture.gouv.fr/Thematiques/Musees/Pour-les-professionnels/Conserver-et-gerer-les-collections/Gerer-les-collections/Conserver-les-collections-des-musees-de-France>, accessed 23 April 2022.
- <sup>9</sup> See also the European Norm NF EN 16790: 2016 on the conservation of Cultural Heritage.

- <sup>10</sup> Anonymized, interview by author, digital recording, 20 February 2020, Grassi Museum, Leipzig.
- <sup>11</sup> 'Sicherer Umgang mit kontaminiertem Kulturgut/Safe Handling of Contaminated Cultural Goods', Hornemann Institut, Hildesheim, 20 April - 28 June 2020.
- <sup>12</sup> Lotte Arndt, 'The Toxic Afterlives of Colonial Collections', *Trouble dans les collections*, 2, September 2021. <https://troublesdanslescollections.fr/2246-2/>, accessed 3 October 2022
- <sup>13</sup> Siska Genbrugge, Objects Conservator at Royal Museum for Central Africa in Belgium, interview by author, digital recording, 17 September 2019, online.
- <sup>14</sup> Cynthia Schimming in discussion with Julia Binter at the conference *Museum Collections in Motion: Colonial and Postcolonial Encounters*, Rautenstrauch-Joest-Museum, Cologne, 15-17 July 2019.
- <sup>15</sup> See the new definition of museums proposed by the ICOM following its 139th session, 21-22 July 2019 in Paris: <https://icom.museum/fr/ressources/normes-et-lignes-directrices/definition-du-musee/>, accessed 26 September 2022.
- <sup>16</sup> See in particular the actions of the group gathered around Mwazulu Diyabanza in 2020, who defied the ban on touching to seize objects exhibited at the Musée du quai Branly and the Louvre, among others. Transmitted live on Facebook, these actions aim to recall the historical kidnappings, and to make visible the original expropriation through the infringement of the property established by the imperial violence. See also Kwame Opoku, 'How Long Will Europeans and Other Westerners Keep Insulting Africans in Restitution Matters?', *Modern Ghana*, 16 September 2019. <https://www.modernghana.com/news/955546/how-long-will-europeans-and-other-westerners-keep.html?fbclid=IwAR2RohhJBft44kqs47daVrzMLTxafLCvf4nrwoqyvkI0MFnthQkpn0jBZ53w>, accessed 3 October 2022.
- <sup>17</sup> In November 2019, the French Prime Minister handed to the Senegalese President Macky Sall the spear of El-Hadj Oumar Tall as a long-term loan, before confirming the restitution. On 4 November 2020 the Senate voted unanimously for the law on the restitution, within a year, of 26 objects from Benin. The law was confirmed by the deputies on 17 December 2020 and the restitution took place in November 2021. However, so far, no change in the general patrimonial legislation requiring a law for each restituted (group of) artifacts has been made.
- <sup>18</sup> Clémentine Deliss and Frédéric Keck, 'Occupy Collections!', *South as a State of Mind*, Issue #7 [Documenta 14 #2], 2016. [https://www.documenta14.de/en/south/456\\_occupy\\_collections\\_clementine\\_deliss\\_in\\_conversation\\_with\\_frederic\\_keck\\_on\\_access\\_circulation\\_and\\_interdisciplinary\\_experimentation\\_or\\_the\\_urgency\\_of\\_remediating\\_ethnographic\\_collections\\_before\\_it\\_is\\_really\\_too\\_late](https://www.documenta14.de/en/south/456_occupy_collections_clementine_deliss_in_conversation_with_frederic_keck_on_access_circulation_and_interdisciplinary_experimentation_or_the_urgency_of_remediating_ethnographic_collections_before_it_is_really_too_late), accessed 26 September 2022.
- <sup>19</sup> See for example the former Comanche Nation Tribal Administrator Jimmy W. Arterberry, who describes the suspicion of the communities in receiving contaminated cultural vestiges from the Federal museums. Jimmy W Arterberry and Annette Arkeketa, 'The Damage is Permanent. Now What are We Going to Do?', *Trouble dans les collections*, 2021. <https://troublesdanslescollections.fr/2021/07/19/article-3-engl/>, accessed 3 October 2022.
- <sup>20</sup> Native American Graves Protection and Repatriation Regulations, 43 CFR Part 10, Sub Part B §10.10. [https://www.ecfr.gov/cgi-bin/text-idx?SID=913a018b2e6e6b978b0040e805b8e6fe&tpl=/ecfrbrowse/Title43/43cfr10\\_main\\_02.tpl](https://www.ecfr.gov/cgi-bin/text-idx?SID=913a018b2e6e6b978b0040e805b8e6fe&tpl=/ecfrbrowse/Title43/43cfr10_main_02.tpl), accessed 26 September 2022.
- <sup>21</sup> Arterberry and Arkeketa, 'The Damage is Permanent' <https://troublesdanslescollections.fr/2021/07/19/article-3-engl/> accessed 16 October 2022..

- <sup>22</sup> See also Audeval 2019.
- <sup>23</sup> See Helene Tello's detailed reconstruction of the history of chemicals in museums, focusing on the Ethnologisches Museum Berlin, 1887-1936 (Tello 2022).
- <sup>24</sup> A conservator at the Rautenstrauch-Joest Museum in Cologne carefully described to me in February 2020 the often difficult attempts to reconcile the two concepts and missions and their implicit imperatives.
- <sup>25</sup> Deliss and Keck, 'Occupy Collections!'
- <sup>26</sup> *Declaration on the importance and value of universal museums*, December 2002.
- <sup>27</sup> Vie Publique: La protection du patrimoine monumental français, un état des lieux, 2020 <https://www.vie-publique.fr/eclairage/273873-la-protection-du-patrimoine-monumental-francais-un-etat-des-lieux#:~:text=Issu%20du%20mot%20latin%20patrimonium.%C3%A9tre%20transmis%20aux%20futures%20g%C3%A9n%C3%A9rations.>
- <sup>28</sup> For the political statements on the restitution of cultural property to Africa made by the French president during his speech in Ouagadougou (28 November 2017) to have any real basis, beyond the ad hoc declassification of limited and individual groups of objects, it would be necessary to rethink the notion of heritage itself, and to modify the legislation concerning the inalienability of cultural property acquired under violent circumstances. Éric Chaverou and Stanislas Vasak, 'Bénédicte Savoy. Restitutions d'oeuvres d'art au Bénin et au Sénégal: un premier vote unanime des députés', France Culture (radio program), 7 October 2020.

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## Bio Statement

Researcher and curator Lotte Arndt (Paris, Berlin) accompanies the work of artists who question the postcolonial present and the antinomies of modernity in a transnational perspective. As part of the international project Reconnecting Objects. Epistemic Plurality and Transformative Practices in and beyond Museums, she is currently conducting a research project on biocides and the antinomies of curation in ethnographic museums. Between 2014-2021, she taught at the École supérieure d'art et design Valence Grenoble. She is part of the artistic research group On-Trade-Off, co-founder of the online journal Trouble dans les collections, and member of the editorial board of the journal of the Centre d'art La Criée, Rennes.

Her PhD research has been published under the title *Magazines Do Culture! Postcolonial Negotiations in Parisian Africa-related Periodicals (2047-2012)*, Trier, WVT, 2016. Among her curatorial projects: *Elvia Teotski: Molusma*, La Criée, Rennes, Sep 2021; *Extractive Landscapes* (with Sammy Baloji, Salzburg 2019); *Tampered Emotions. Lust for Dust*, Triangle France (2018); *Candice Lin: A Hard White Body* (2017, curated with L. Morin, Bétonsalon, Paris; 2018, with P. Pirotte at Portikus, Frankfurt/Main). Selected publications: *Toxic afterlives of colonial collections*. *Trouble dans les collections*, no. 2, September 2021 <https://troublesdanslescollections.fr/2246-2/>; *Candice Lin. A Hard White Body* (ed. with Yesomi Umolu), Chicago University Press, 2019; *Crawling Doubles. Colonial Collecting and Affect* (ed. with Mathieu K. Abonnenc and Catalina Lozano), B42, 2016; *Hunting & Collecting*. Sammy Baloji (ed. with Asger Taiaksev), MuZEE, Galerie Imane Farès, 2016.